

## Cultivating Positive Teacher–Student Relationships: Preliminary Evaluation of the Establish–Maintain–Restore (EMR) Method

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*Abstract.* Strong teacher–student relationships have long been considered a foundational aspect of a positive school experience. The aim of the current study was to evaluate the effects of the establish–maintain–restore (EMR) method for improving teacher–student relationships and students’ classroom behavior while providing elementary teachers with structured professional development and follow-up support. A matched randomized design with a sample of fourth- and fifth-grade teachers and students was used to investigate whether the EMR method produced significant improvements in teacher–student relationships and student outcomes using hierarchical linear modeling to account for nesting at the classroom level. Results indicated that the EMR method was associated with significant improvements in teacher-reported teacher–student relationships as well as improvements in observed indices of students’ classroom behavior (academic engaged time and disruptive behavior). Findings also revealed that teacher-reported changes in teacher–student relationships were significantly associated with moderate changes in student classroom behavior. The implications of this study for school-based universal prevention and directions for future research are discussed.

*Keywords:* teacher–student relationships, universal prevention, teacher–student interactions, teacher professional development

Strong teacher–student relationships have long been considered a foundational aspect of a positive school experience (Brophy & Good, 1974). Most students spend more time during the week with their teachers than with any other adult in their lives outside of their families. Multiple studies have illustrated the association between teacher–student relationship quality and future social and academic performance across childhood and adolescence (Allen, Pianta, Gregory, Mikami, & Lun, 2011; Hamre & Pianta, 2001; Wu, Hughes, & Kwok, 2010). Research has also shown that positive teacher–student relationships may have protective effects for elementary-age children who experience learning and behavioral problems (Baker, 2006; Bierman, 2011) and that children who demonstrate externalizing problems in the classroom often have weaker relationships with their teachers (Fowler, Banks, Anhalt, Der, & Kalis, 2008). Despite the growing body of research demonstrating the importance of teacher–student relationships, there are few research-to-practice examples of how relationship practices can be operationalized and integrated feasibly and effectively into teacher professional development.

In light of this current void, the purpose of this study was to develop and preliminarily evaluate the efficacy of a relatively brief professional development experience (i.e., didactic training and follow-up support) for teachers to facilitate their strategic use of relationship-building practices with upper elementary students. The intervention—titled establish–maintain–restore (EMR)—serves as a heuristic to guide teachers to a menu of concrete relational practices they can implement to strategically establish, maintain, and restore relationships with students.

### Conceptualizations of Positive Teacher–Student Relationships

Specific conceptualizations of the teacher–student relationship have been advanced by educational and psychological researchers. Developmental psychologists emphasizing a transactional perspective have described relationships as a dyadic system in which two individuals engage in reciprocal interactions (Hinde, 1987; Sameroff, 1995). Pianta (1992) and others have specifically described teacher–student relationships from an attachment perspective (Bowlby, 1969), suggesting that positive teacher–student relationships help develop students’ emotional connection and sense of safety that serves to enhance engagement in academic pursuits and serves as a buffer against risk (Meehan, Hughes, & Cavell, 2003; Verschueren & Koomen, 2012). Interactions between students and their teachers are the means by which teacher–student relationships are established. However, relationships are not solely characterized by the quality of interactions between two parties, as relationships are also characterized by an individual’s perceptions and internal feelings toward another person, such as perceptions of belonging, trust, and connection (Juvonen, 2006; Sabol & Pianta, 2012).

Findings across multiple disciplines all point to the importance of relationships as a core construct of human

well-being that can be targeted via intervention. For example, research in developmental psychology has revealed a wealth of evidence linking adult–child attachment to children’s emotional competence, prosocial behavior, and academic performance (Bergin & Bergin, 2009). Neuroscientific research has uncovered that healthy brain development and functioning requires positive social relationships and that positive relationships with others can help buffer and repair areas of the brain from traumatic experiences (Siegel, 2015). Social psychological research has demonstrated that relationships are a key source of achievement motivation (Cohen & Steele, 2002; Ryan & Deci, 2000). In a review of the research on teacher–student relationships, Pianta, Hamre, and Stuhlman (2003) argued that “relationships with adults are like the keystone or linchpin of development; they are in large part responsible for developmental success under conditions of risk and—more often than not—transmit those risk conditions to the child” (p. 204). In fact, negative relationships with caregivers and teachers are known risk factors for mental and behavioral health problems (Crews et al., 2007) and poor academic achievement (Christle, Jolivet, & Nelson, 2005; Henry & Huizinga, 2007).

### Correlates and Outcomes of Teacher–Student Relationships

A large body of research has focused on examining the correlates and outcomes associated with teacher–student relationships (Pianta, 2001; Rudasill, Reio, Stipanovic, & Taylor, 2010). Several studies demonstrate that teacher–student relationship factors predict student outcomes separately from individual student and teacher characteristics, and these findings appear to hold across preschool (Hamre & Pianta, 2001), early and upper elementary (Birch & Ladd, 1997; Decker, Dona, & Christenson, 2007; Wu et al., 2010), and secondary (Duong, Pullmann, & Cook, 2018) samples of students. Additional research has demonstrated buffering effects of relationships, where positive teacher–student relationships confer protective benefits on emotional and behavioral development for at-risk children (Hughes & Cavell, 1999; O’Connor, Dearing, & Collins, 2011) and adolescents (Wang, Brinkworth, & Eccles, 2013), while students perceived by teachers as more competent receive disproportionately more positive affect from teachers (Pianta, La Paro, & Payne, 2002). Although findings from some studies suggest that teacher–student relationship quality has a direct impact on students’ academic performance (Birch & Ladd, 1997; Roeser & Eccles, 1998), findings from other research point to academic engagement as the mechanism by which teacher–student relationship influences students’ academic performance. For example, research conducted by Furrer and Skinner (2003) with mid- to upper-elementary students found that academic engagement mediated the link between students’ sense of belonging and their academic performance. Thus, positive teacher–student relationships appear to impact learning outcomes through greater academic engagement.

Furthermore, elementary students' classroom problem behaviors have demonstrated a bidirectional effect on teacher–student relationship quality, with more classroom problem behaviors associated with both poorer relationships and lower teacher ratings of students' academic competence (Fowler et al., 2008). Moreover, in a peer nomination study with third- and fourth-grade students, Hughes, Cavell, and Willson (2001) found that students' relationships with teachers uniquely predicted positive peer evaluations of their social competencies and whether other children endorsed liking them. In addition, elementary-age students of color have endorsed significantly lower sense of belonging due to more negative punitive interactions with their teachers (Bradshaw, Mitchell, O'Brennan, & Leaf, 2010; Irvine, 1986). Considering all of this, it is clear that teacher–student relationships have a significant impact on student behavior and learning; however, it is important to understand developmental nuances that have implications for conceptualizing teacher–student relationships and informing intervention development and use in schools.

### Teacher–Student Relationships in Upper Elementary

When designing and delivering interventions that can be applicable across different age groups, it is important to take into account how the student–teacher relationship might change over the course of development. For example, young children tend to rely more on adults for guidance on what is appropriate behavior and exhibit greater attachment than older children. However, as children progress toward upper elementary, they are increasingly able to regulate their own behavior, without a need for as much guidance from adults (Rueda, Posner, & Rothbart, 2005). As a result, relationships with teachers may play a different functional role in children's school lives during the upper elementary years. For example, evidence suggests that students' closeness and amount of conflict with teachers subsides over the early elementary years (Pianta & Stuhlman, 2004). Moreover, research suggests that teacher–student relationships become less intimate from early to later elementary school as children continue to develop (Wu & Hughes, 2015). However, there is developmental evidence that sense of belonging to teachers may become increasingly important as children progress beyond early elementary years and eventually transition into middle school (Furrer & Skinner, 2003; Goodenow, 1992, 1993).

### Social Belonging as Malleable Construct

The body of empirical and theoretical research on marital and parent–child relationships serves as a source for conceptualizing the development of interventions to improve social belonging through teacher–student relationships (Bakeman & Gottman, 1986; Bornstein, 1995). Baumeister and Leary (1995) argued that “belongingness can be almost as compelling a need as food” (p. 498). There is a substantial body of research that shows belonging to be a fundamental human need and a key requisite of healthy development

(Davidson & McEwen, 2012; Klem & Connell, 2004; Osterman, 2000). Social belonging represents an individual's sense of connectedness to another person or social setting, such as a classroom (Walton & Cohen, 2007). Social belonging is related to but distinct from the concept of attachment, which refers to dyadic interactions that make children safe, secure, and protected (Baumeister & Leary, 1995). Belonging uncertainty appears to be a common experience among many elementary students, particularly as they transition into classrooms with new teachers (Quin, 2016).

Even a single instance of social rejection or exclusion can undermine well-being and lead to lower self-esteem, self-defeating behavior, decreased prosocial behavior, and aggression (Twenge, Baumeister, DeWall, Ciarocco, & Bartels, 2007; van Prooijen, van den Bons, & Wilke, 2004; Walton & Cohen, 2011).

Social belonging has been shown to represent a malleable construct that can be targeted dynamically via strategic relationship-oriented practices (e.g., Walton & Cohen, 2011). For example, research findings suggest that it is imperative for teachers to engage in strategic interactions to establish relationships with students for whom belonging uncertainty or mistrust may be present (e.g., Yeager & Walton, 2011). Additionally, once a sense of belonging and connection are established, it is important for teachers to maintain the positive relationship through ongoing positive interactions (Canary & Yum, 2015). Last, evidence suggests that students' sense of belonging can be harmed via negative interactions with adults, and it is critical to repair the relationship through strategic restorative conversations (Gregory, Clawson, Davis, & Gerewitz, 2014). Collectively, the aforementioned phases of teacher–student relationship development (e.g., establish, maintain, and repair) can serve as targets for intervention and provide teachers with a straightforward heuristic to conceptualize their relationship standing with each student to inform intentional efforts to promote sense of belonging.

### Gaps in Training and Practice

Unfortunately, data indicate that many classrooms are characterized by strained relationships between teachers and their students (Murray & Murray, 2004; Yoon, 2002), creating a sense of belonging uncertainty for students that may undermine their engagement and performance in school (Yeager et al., 2014). Although most teachers endorse the importance of positive relationships (Hargreaves, 2000), many are unlikely to espouse an intentional approach to cultivating relationships and restoring them when conflict or disagreement arises. Moreover, economically and racially diverse students often have weaker relationships with their teachers than White students (Hughes & Kwok, 2006; Saft & Pianta, 2001), which can contribute to less engagement in the classroom and widen the gap between their academic performance and that of their more advantaged peers (Burchinal, Peisner-Feinberg, Pianta, & Howes, 2002). In fact, some have argued that teacher–student relationships can partially

explain achievement–opportunity gaps (Cohen, Garcia, Apfel, & Master, 2006). Moreover, research findings are somewhat mixed regarding the moderating role of gender as it relates to relationship interventions (Roorda, Komen, Split, & Oort, 2011), with some studies favoring more positive teacher–student relationship gains for girls (Baker, 2006), some favoring boys (Furrer & Skinner, 2003), and some finding no gender effect (Hughes, 2011). Collectively, this begs additional research to examine the moderating role of race, gender, and socioeconomic status as it relates to teacher–student relationships broadly and responsiveness to relationship-focused interventions specifically.

Current teacher preparation programs and professional development activities typically enfold discussions or information about the importance of relationships within broader preservice training (Darling-Hammond, 2000). Although this approach has its merits, research has shown that marginally exposing educators to information does not have statistically nor practically meaningful effects on teachers' uptake and use of specific practices (Joyce & Showers, 2002). Instead, educators need to receive professional development that emphasizes the adoption and use of intentional, practical strategies they can implement to establish and maintain positive relationships with their students (Simonsen, Fairbanks, Briesch, Myers, & Sugai, 2008). Moreover, with limited professional development time and funding available, there is a need for feasible and cost-effective options for teacher professional development. Indeed, leading frameworks for teacher evaluation require administrators to offer assistance or remediation to teachers for whom deficits were noted during observation (Donaldson 2009; Papay, 2012). This increased emphasis on teacher evaluation and remediation necessitates availability of modular options (i.e., customized approaches) for professional development that administrators can employ both proactively and reactively to address specific teacher needs.

### Purpose and Overview of This Study

The aim of the current study was to experimentally evaluate the impact of a professional development and follow-up implementation supports designed to increase teachers' strategic use of relationship-focused practices to improve their relationships with students and their students' classroom behavior—EMR. The framework for organizing specific relational practices was derived from previous research on relationship-strengthening practices within education and family settings and was organized along the dimensions of positive *relationship formation* (i.e., establish), *relationship maintenance* (i.e., maintain), and *reestablishment* following episodes of teacher–student conflict (i.e., restore).

The initial phase in any relationship, and first intervention component of EMR, involves intentional efforts to establish positive relationships with each student. The goal is to ensure all students feel a sense of belonging that is characterized by trust, connection, and understanding. Once teachers establish positive relationships with their students, it can serve

as motivational leverage for instructional (e.g., motivating students to engage in academic tasks) and behavioral purposes (e.g., promoting on-task behavior and correcting student problem behavior). The key practice during this relationship phase is to schedule individual time (i.e., banking time) with specific students for whom teachers believe sense of belonging has not been established. In the context of EMR, banking time consists of a student-led activity and conversation in which the teacher adopts a stance that is nondirective, validating, and responsive to the student's actions and feelings (Driscoll & Pianta, 2010; Pianta & Hamre, 2001; Williford et al., 2017). The teacher uses a variety of communication techniques, such as open-ended questions, reflective listening, validation statements, and expressions of enthusiasm and interest. The theory underlying banking time is best understood using a bank metaphor: The teacher intentionally makes deposits into the relationship that cultivate the student's attachment to and sense of belonging with the teacher to make withdrawals from the relationship (e.g., providing constructive feedback, encouraging the student to engage in a nonpreferred activity or correcting problem behavior). Other practices that fall under the establish phase include secondhand compliments, positive greetings at the door to welcome students in to the classroom (Cook et al., 2018), and relationship logs to reference and acknowledge important information about particular students.

Once a relationship is established, ongoing positive interactions are required to maintain the relationship. Without purposeful maintenance practices, relationship quality can deteriorate over time as the ratio of positive to negative interactions naturally diminishes (Gehlbach, Brinkworth, & Harris, 2012; Steinberg & Morris, 2001). For instance, people may miss important opportunities to acknowledge or recognize the other person or fail to meaningfully connect with others even though they are in the same setting (Dirks & Ferrin, 2001). As a result, interactions may involve higher proportions of criticism, disapproval, or negative judgments in reaction to unwanted behavior (Gottman & Levenson, 2000). Maintaining a positive relationship requires ongoing positive interactions with students. The primary practice associated with the maintain phase is the 5-to-1 ratio of positive to negative interactions. That is, teachers engage in specific positive interactions with students (e.g., general compliments, behavior specific praise statements, demonstrating empathy when a student is upset, asking questions to inquire how a student is doing) at least five times for every one negative interaction (e.g., reprimand, complaint, disapproving statement, or punitive interaction; Flora, 2000). Research has shown the positive impact of the 5-to-1 ratio to improve student classroom engagement (Cook et al., 2017). This practice is included in the maintain phase because in order for a teacher's attention to be reinforcing to another, there needs to be a trusting relationship in place (Maag, 2001). Outside the context of a trusting relationship, attempts to positively interact with others could be viewed as self-serving or disingenuous (Crosnoe, Johnson, & Elder, 2004). Additionally, maintenance behaviors such as positive, individual greetings at the classroom door can offer teachers the opportunity to make

a positive connection with students at the outset of the class period (Allday & Pakurar, 2007).

Conflict and other negative interactions (e.g., discipline for a problem behavior or feelings of being ignored or misunderstood) between teachers and students is common and difficult to avoid in the context of ongoing interactions in the classroom (Osher, Bear, Sprague, & Doyle, 2010). When left unattended, however, negative interactions can weaken the relationship, leaving the student less engaged in class, less responsive to efforts to correct problem behaviors, and more challenging to motivate to take on academic work that s/he perceives to be challenging or boring. The aim for the restore phase is to intentionally repair harm to the relationship after a negative interaction occurs between the teacher and student. Restorative practices in schools provide a model for rebuilding of the student–teacher relationship after disruption, conflict, or harm has occurred in the relationship. While research on restorative conferencing in schools is limited (Evans, Lester, & Anfara, 2013), there is preliminary evidence that engaging in restorative efforts contributes to improvements in relationships between students and teachers (Cameron & Thorsborne, 2001). Consistent with restorative practices, the last component of EMR is the restore phase. The restore phase is triggered when harm to the student–teacher relationship has occurred because of a misunderstanding, a conflict, neglect, or some other negative interaction. The aim of this phase is to enhance teachers’ awareness and recognition of event (e.g., argument with the student, delivery of a punitive consequence) and behavioral (e.g., rolling eyes, ignoring instructions) cues that indicate a need to restore the relationship through a relational repair process. Once a student is deemed in need of a restorative interaction, the main practice is a skillful communicative interaction with the student that involves the teacher selecting and engaging in one of five communicative strategies with the student (see Appendix): (a) letting go of the previous event, (b) taking responsibility for/ownership of the problem, (c) validating student feelings with an empathy statement, (d) solving problems collaboratively to identify a mutually agreed upon solution, or (e) making a statement of care by separating the deed from the doer.

Although prior research has explored teacher–student relationships, the extant literature has several voids that the current study sought to address. First, the bulk of prior research has been correlational or quasi-experimental, with limited experimental studies evaluating specific teacher–student relationship interventions. Although research on teacher–student interactions includes elements of establishing relationships with students, this is often embedded within a broader framework that targets multiple factors that go beyond teacher–student relationships (e.g., *My Teaching Partner*; Pianta, Mashburn, Downer, Hamre, & Justice, 2008). Second, much of the existing experimental research focuses on relationships as part of a larger class-wide program that includes instructional strategies and other classroom organization variables, which limits the ability to isolate the impact of specific relationship-focused strategies. Last, there

is limited research examining a sequential process to guide teachers’ efforts to establish, maintain, and restore positive relationships with their students.

Given the abovementioned gaps in the literature, this study sought to experimentally examine the effects of a low-cost, feasible method of professional development for teachers to strategically improve teacher–student relationships. Specifically, this study represents a preliminary investigation of the impact of EMR on teacher–student relationships and students’ classroom behavior. It was hypothesized that EMR training would be associated with increases in teacher–student relationship quality and that students whose teachers received EMR training would demonstrate increased academic engaged time and decreased disruptive behavior. Moreover, this study examined student demographic variables as potential moderators of intervention effectiveness to examine whether the EMR method differentially impacts students. The following three research questions guided this study:

1. Does EMR produce greater improvements in teacher-reported teacher–student relationships for those in the intervention group than for those in the attention control group?
2. Does EMR produce greater improvements in classroom behavior—as measured by academic engaged time and disruptive behavior—for the intervention group relative to an attention control group?
3. Are the outcomes associated with EMR moderated by student demographic variables (race, gender, and socioeconomic status of the student)?

## METHOD

Participants were students in 10 classrooms from three elementary schools in a public school district located in the Pacific Northwest of the United States. At the time of this study, the schools were not actively implementing a school-wide positive behavior support system or a relationship-focused program. Classes from these schools were recruited for participation using a multigating procedure.

### Setting and Participants

The first gate consisted of each site’s administrator nominating a grade level that was characterized by (a) a relatively higher rate of disruptive and off-task behaviors than other grades and (b) teachers who could benefit from improved relationships and interactions with students. The second gate consisted of conducting direct observations in the nominated classrooms to confirm that the students in these classes were engaging in disruptive and off-task behaviors (see the following section for a description of observation procedures). Classrooms that were associated with off-task behavior for greater than 20% of the observed intervals and teachers who engaged in more negative than positive interactions with students were considered for participation in this study. In total, 10 elementary classrooms (six fourth-grade classes and four fifth-grade classes) passed

through all the gates. Prior to commencing this study, informed consent was obtained from the teachers and passive permission was obtained from the parents, who had to actively opt their child out of participation in the data collection aspect of this study. All teachers consented to participate and only two parents denied their child's participation.

In total, 220 students and 10 teachers participated in the study. Data on student demographics for the sample revealed that the majority of participants were female ( $n = 117$ ; 53.2%). The ethnic breakdown of the participants was 56% ( $n = 122$ ) Caucasian, 21% ( $n = 45$ ) Hispanic/Latino, 20% ( $n = 43$ ) Asian/Pacific Islander, 1.8% ( $n = 4$ ) African American, and 3% ( $n = 6$ ) other. As for other diversity characteristics, 47% of the students qualified for free/reduced-price lunch (FRL), 13.8% of the students qualified for special education services, and 8% were identified as English language learners. Demographics for participating teachers indicated that all 10 were general education certified and four had advanced degrees. All but one teacher (who indicated Asian) indicated Caucasian as their ethnicity. The teachers' average age was 34.3 years ( $SD = 6.7$ ; range = 23–58), with an average length of teaching experience of 8.2 years ( $SD = 5.7$ ; range = 2–28).

## Procedure

This study used a participatory action research approach to evaluation, in which a collaborative partnership was established between a school system and a research institution, and practitioners were involved in the research process from the initial design of the study through data gathering and analyses to inform future actions for the school district (Nastasi et al., 2000). Given the participatory action research nature of this study, principals from the three participating schools were invited to select the grades they wanted to participate in the study, as well as the timing of the project, the format for delivering the EMR training to teachers, and the nature of the attention control condition. To maintain consistency across the school sites, the principals were asked to work collaboratively to identify the same grades.

## Design

A randomized-block longitudinal design was used to evaluate the efficacy of the EMR method. Classes were matched and placed into five pairs according to their baseline estimates of academic engaged time and percent of students receiving FRL to increase the likelihood of comparable groups at baseline. Each class within the matched pair was then randomly assigned to either the treatment or attention control condition. Preliminary analyses indicated that the groups were comparable across baseline estimates of class-wide teacher–student relationships,  $t(1) = .48$ ,  $p = .63$ ; academic engaged time,  $t(1) = .44$ ,  $p = .67$ ; disruptive behavior,  $t(1) = -.27$ ,  $p = .79$ ; and FRL,  $t(1) = 0.72$ ,  $p = .47$ .

## Training and Follow-Up Support

Trained support staff working within the schools (i.e., the counselor and the social worker) collected the pre- and posttest data. Approximately 2 months elapsed between the

pre- and posttest data-collection periods. Immediately after the collection of the pretest data, all teachers in the treatment group convened in the same location to participate in a 3-hr training on the EMR method, while teachers in the attention control group met with their respective school administrator to discuss classroom instructional practices. The trainings used a tell–show–do approach (Birman, Desimone, Porter, & Garet, 2000), and “how-to” scripts were provided to teachers as reminders of key implementation components. PowerPoint presentations of the training content with detailed note sections were provided to the teachers to use as a guide and basis for reviewing the specific practices associated with EMR (e.g., see Appendix). The site principals attended all the training sessions to provide support to the teachers based on their respective conditions. Teachers had time to ask questions and receive detailed feedback. One week into implementation, a 30-min follow-up session via Skype was held with all the teachers present to review content, plan next steps, answer any questions, and assess understanding using a brief competency exam (i.e., a 10-item quiz) based on their assigned condition. Teachers could not fail the competency exam, because if they answered a question incorrectly, the first author continued to review the question using Socratic questioning techniques until they fully comprehended the answer. Additionally, teachers were sent e-mail prompts as reminders to implement the EMR method. The attention given to teachers in the intervention condition could serve as a potential confound. To protect against this threat to internal validity, an attention control group was used to mimic the amount of time and attention received by the teachers in the intervention condition (Lindquist, 2007). The attention control condition consisted of teachers meeting with and receiving attention from their administrator by holding a discussion about their classroom instructional practices for the same duration as the EMR training and follow-up Skype consultation session (i.e., 30 min). The main differences between the two conditions were their content and the fact that only e-mail prompts were used with teachers in the treatment condition. This was intended to control for potential threats to internal validity, given that improvements in teacher functioning and interactions could be the result of increased attention from and interaction with a person providing support.

A critical implementation support was the participation of the three site administrators in the EMR training to learn alongside their teachers the importance of delivering the message with fidelity and making themselves available to solve relationship issues with particular students. To prevent contamination, the authors worked with the administrator to refrain from sharing information about EMR during the 3-hr meeting. They understood the importance of preventing contamination by conducting a test of EMR impact and evaluating the merits of continuing its implementation in their school. A follow-up check was also conducted by the first author with administrators to review what was discussed during the attentional control condition to ensure no EMR content was shared with the teachers.

### **Intervention: Establish–Maintain–Restore Approach**

EMR was designed as a free, brief universal approach to establish common language and practice around teacher–student relationships to ensure that all students experience a sense of belonging at school. EMR embodies features of a positive, healthy relationship that are based on prior empirical research to provide teachers with a heuristic that guides their intentional efforts to engage in relationship building practices as part of their ongoing interactions with students. The EMR phases can fluctuate over time depending on changes in the student–teacher relationship (e.g., teacher discipline of the student may present result in a need to restore the relationship). Teachers were trained on the three distinct, interrelated phases of a relationship (i.e., establish, maintain, and restore) that are linked to concrete relationship practices. Moreover, teachers use a relationship reflection form that involves assessing their relationship status with each student in the classroom. The aim of the reflection form is to help teachers identify the students who are most need of relationship practices (i.e., those in the “establish” and “restore” columns on the form). The aim is for teachers to strive to move all of the students into the maintain phase, which indicates that all students feel a sense of trust, connection, and understanding. The Appendix summarizes the specific practices that are linked to each of the EMR phases.

### **Measures**

This study included measures capturing teacher–student relationships, student classroom behavior, and implementation-relevant outcomes (acceptability and fidelity). Each of these measures will be described.

#### **Teacher–Student Relationships**

A modified version of the Student–Teacher Relationship Scale–Short Form (STRS-SF; Pianta, 1992) was used to measure changes in the quality of relationships between teachers and their students. The STRS-SF is a 15-item scale that has been shown to have evidence of reliability and validity as a teacher-report tool for measuring the quality of teacher–student relationships (Pianta & Steinberg, 1992). For the purposes of this study, only the five STRS-SF items that were deemed most relevant to middle-to-upper elementary teacher–student relationships and the EMR method were used: (a) “This child values his/her relationship with me”; (b) “When I praise this child, he/she beams with pride”; (c) “It is easy to be in tune with how this child is feeling and doing”; (d) “This child openly shares his/her feelings and experiences with me”; and (e) “This child and I always seem to be struggling with each other.” Confirmatory analyses have demonstrated the technical adequacy across preschool- to upper-elementary-age students (Koomen, Verschueren, van Schooten, Jak, & Pianta, 2012). Internal consistency estimates indicated that the modified STRS-SF possessed adequate reliability in the present sample at both pretest ( $\alpha = .78$ ) and posttest ( $\alpha = .81$ ).

#### **Class-Wide and Individual Student Behavioral Observations**

To record classroom student behavior, a behavioral observation system was developed based on the Behavioral Observation of Students in Schools (Shapiro, 2010). The behavioral coding categories consisted of academic engaged time and disruptive behavior. *Academic engaged time* was defined as instances when the student was paying attention to instruction by looking at the teacher or speaker or working on the academic task at hand. Examples of academic engaged time included writing, reading aloud, raising a hand and waiting patiently, talking to the teacher or other students about assigned material, and looking things up that are relevant to the assignment. *Disruptive behavior* was defined as behaviors that were not related to the task at hand and were disruptive to the classroom environment (e.g., call outs, talking to peers when not permitted, getting out of seat, getting peers off-task, making noise with an object).

With regard to recording format, academic engaged time was measured on a momentary time-sampling basis at the beginning of each interval, while disruptive behavior was measured using a partial-interval recording format. Each observation lasted 60 min and was divided into 10-s intervals. To obtain class-wide estimates of academic engaged time and disruptive behavior, observers were instructed to begin with the student in the back right seat in the classroom and systematically move one student to the left after each interval. Once reaching the end of the row, they were instructed to go to the student at the far right of the next row. After the observers made their way through all students in the class, they were instructed to repeat the same process until the observation time elapsed. By the end of each observation session, there were roughly 360 class-wide intervals recorded and 16 intervals per student. This observation system allowed for the calculation of class-wide and individual student estimates of academic engaged time and disruptive behavior. Using this system, the individual recorded behavior is capable of being synthesized to represent class-wide behavior as a whole. Moreover, student descriptors (e.g., hair color, clothing, gender) were used to allow for the pre- and posttest data to be linked for purposes of data analysis.

Prior to conducting the observations, three observers were trained on the observation system using a tell–show–do approach. Before beginning baseline data collection, they had to reach at least 90% agreement on a 30-min classroom observation. Interobserver agreement was collected and calculated on 20% of the observation sessions, and results indicated that the interobserver agreement averaged 91% (minimum = 72%, maximum = 100%), which is considered to be an acceptable level of reliability (Bailey & Burch, 2002).

#### **Treatment Acceptability**

Treatment acceptability was measured with the 15-item Intervention Rating Profile (IRP-15). The IRP-15 was selected because it is widely used to assess teachers’ perceived acceptability of interventions (Martens, Witt, Elliott, & Darveaux,

1985). The items are on a 6-point Likert-type scale ranging from *strongly disagree* to *strongly agree*. Example items include, “This would be an acceptable intervention for relationships with children” and “Most teachers would find this intervention suitable for the problem described.” The IRP-15 has demonstrated evidence supporting its reliability and validity (Lane et al., 2009).

### Intervention Fidelity

Intervention fidelity data were gathered via a self-report checklist that included a total of 10 items that assessed adherence to the EMR method. Three items were designed to capture components of each of the EMR phases, and one item assessed whether teachers used the EMR tool to engage in weekly reflection of the relationship status with each student. For example, items included, “I devoted individual time with a student or multiple students in my class for the purposes of positively interacting to establish a relationship” (i.e., establish); “For students who I have a positive relationship with, characterized by connection, trust, and understanding, I engaged in a brief relationship check-in with them to connect with them and to hear how they are doing and what they have been up to” (i.e., maintain); and “When I had a negative interaction with a student, I made the time to engage in a restorative conversation with the student to repair any harm that may have been done to the relationship” (i.e., restore). A *yes/no* response format was used to calculate the percent of implementation for each EMR phase and for the EMR method as a whole. Participating teachers from the treatment condition completed the fidelity checklist on a weekly basis, whereas teachers in the control condition completed it once during posttest data collection.

### Data Analytic Plan

Two-level hierarchical linear modeling (HLM) was used to evaluate the effect of the EMR method on the three student outcome variables. Individual student variables (outcome variables, FRL status, gender, race) were in Level 1, while treatment (EMR method) was placed in Level 2. This HLM approach was selected for the following reasons. First, the nature of the educational data in this study indicated that students were nested within classrooms. The nesting introduced a potential violation of the assumption of independence between observations, which prohibited use of multiple regression. Second, teachers were randomly assigned to conditions, indicating that treatment took place at the classroom level, so the corresponding predictor in the model should be included in the Level 2 equation. Finally, HLM accounts for both classroom- and individual-level influences, which will yield more accurate estimations of effects and coefficients. It is noteworthy to mention that the number of Level 2 units (classrooms) was relatively small ( $N_{\text{classroom}} = 10$ ), which meant our analyses were underpowered and the results of statistical significance and coefficient estimations were conservative.

Two-level models were built for each of the change scores of the three outcome variables through two phases: null model and treatment-included model. Student gender, FRL status, and race were controlled at Level 1 in all models. Of specific interest was the relationship between changes in student outcomes (teacher–student relationship quality, academic engaged time, disruptive behavior) and the introduction of the EMR method after controlling for the variance attributable to gender, FRL status, and race. As a first step, intraclass correlations (ICC) were calculated for each of the three outcome change scores.

To estimate the magnitude of the effect produced by the EMR method, standardized mean difference effect sizes were computed. Specifically, the chosen formula was used because it enables controlling for preexisting differences between intervention and control groups (Morris, 2008). This formula subtracts the change in pretest–posttest mean scores from the control group from the change in the pretest–posttest mean scores from the intervention group and divides this number by the standard deviation of the pretest scores. Therefore, the difference between intervention and control is interpreted in standard deviation units.

## RESULTS

Means and standard deviations for EMR and control group classrooms on each outcome measure at pretest and posttest as well as pretest–posttest change scores are presented in Table 1. EMR and control groups were compared to determine whether they differed on pretest measures of teacher–student relationship quality and classroom behavior. An independent-samples *t* test was conducted to compare pretest scores on the modified STRS and the disruptive behavior, academic engaged time in EMR, and control conditions. Results indicated that the conditions did not differ significantly at pretest on the teacher–student relationship measure,  $t(157) = .43, p > .05$ ; the disruptive behavior measure,  $t(157) = .48, p > .05$ ; or the academic engaged time measure,  $t(157) = -.27, p > .05$ .

### Intervention Fidelity

The results from the intervention fidelity indicated that teachers in the intervention condition delivered EMR with adequate levels of fidelity, with variability found between teachers’ self-reported fidelity. The breakdown for each of the EMR phases was as follows: establish, 89% (84%–100%); maintain, 93% (86%–100%); and restore, 81% (70%–100%). As a whole, EMR was implemented with 89% fidelity, which provides evidence supporting the internal validity of the following findings from the analyses examining the impact of EMR. Fidelity data were also gathered from control teachers using the fidelity rubric, and results indicated teachers delivered the EMR components with low levels of fidelity: establish, 37% (10%–50%); maintain, 54% (26%–75%); and restore, 15% (0%–50%).



**Table 1. Pretest–Posttest Means and Standard Deviations for Establish–Maintain–Restore (EMR) and Attention Control Conditions**

Condition	Teacher–Student Relationship		Disruptive Behavior		Academic Engaged Time	
	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)
EMR (N = 106)	17.07 (3.17)	18.58 (2.68)	14.65 (8.67)	3.66 (3.27)	59.72 (16.97)	79.53 (11.06)
Control (N = 114)	16.66 (2.88)	16.80 (2.81)	15.18 (9.57)	12.59 (8.06)	55.32 (18.94)	59.11 (20.15)
		$\Delta$		$\Delta$		$\Delta$
		1.51		-10.99		19.81
		0.14		-2.59		3.79

**Does EMR Produce Improvements in Relationships and Classroom Behavior?**

The variance components and the corresponding percent of variance explained (ICCs) are presented in Table 2. Results suggested a significant amount of variation at the classroom level for each outcome variable, indicating a correlation between observations within each classroom. This further validated the use of HLM.

**Teacher–Student Relationships**

To examine whether the EMR method improved the relationships between teachers and students, two-level models were built to explain the effect on the change score on the teacher–student relationship measure attributable to the introduction of EMR. Bryk and Raudenbush (1987) recommended that the Level 1 variable was maintained if (a) there was evidence of a significant fixed effect or (b) there was evidence of significant Level 2 variance. The two control variables of gender,  $t(216) = -1.08, p > .05$ , and race,  $t(216) = 1.37, p > .05$ , failed to meet either of the criteria. For the sake of parsimony and efficiency, they were subsequently removed from models. The next model was fitted by introducing treatment (EMR) on the second level (for details about both models, see Table 3).

As shown in Table 3, results from Model 1.2 for Level 1 indicated FRL status was associated with a 0.78-unit increase in the change score on STRS measure on average ( $\beta_{1j} = 0.78$ ),  $t(217) = 3.41, p < .01$ . On Level 2, receiving EMR was associated with a 1.40-unit increase ( $\gamma_{01} = 1.40$ ),  $t(8) = 4.83, p < .05$ , in the change score on the STRS as compared to the control group. The Cohen’s *d* effect size was .55, indicating a moderate effect.

Analyses also examined the random (residual) terms to determine the amount of variance in the outcome explained at each level of the models. Results for Model 1.1 revealed a statistically significant ICC of 0.07 (variance component = 0.47),  $\chi^2(9, N = 220) = 24.63, p < .05$ , which indicated a considerable amount of the variance (7.20%) in changes on the STRS measure was attributable to between class differences. When treatment condition was included as a predictor on Level 2 (Model 1.2), the resulting ICC became less than 0.01 and statistically nonsignificant (variance component = 0.01),  $\chi^2(8, N = 220) = 6.8, p > .05$ . This indicated that the addition of EMR as a predictor explained almost all the variance accounted for by between-class differences. Additionally, by calculating the proportion of variance explained by adding EMR, 98.06% of the variance in the change score on the STRS was attributable to the addition of EMR as a Level 2 predictor. These results provided evidence in support of a treatment effect of EMR in facilitating favorable change in student–teacher relationships.

**Academic Engagement Time and Disruptive Behavior**

The same approach for examining the effect of EMR on STRS was used to test the impact of EMR on classroom behaviors. For both outcome variables, two-level models were built to explain the effect of EMR on change scores.

**Table 2. Intraclass Correlations (ICCs) and Variance Components of Random Effects for Two-Level Hierarchical Linear Models**

Outcome Variables/Model	Random Effect	Variance Component	<i>df</i>	$\chi^2$	ICC
STRS Model 1.1	Intercept ( $\mu_{(STR)0j}$ )	0.47	9	24.63**	0.07**
	Level 1 Residual ( $r_{(STR)ij}$ )	6.01			
AET Model 2.1	Intercept ( $\mu_{(AET)0j}$ )	75.03	9	36.39***	0.12***
	Level 1 Residual ( $r_{(AET)ij}$ )	549.65			
DB Model 3.1	Intercept ( $\mu_{(DB)0j}$ )	18.07	9	49.7***	0.17***
	Level 1 Residual ( $r_{(DB)ij}$ )	87.32			

Note. Level 1,  $N = 220$ ; Level 2,  $N = 10$ . The three models were all null models without adding EMR as a second level predictor. STRS = student–teacher relationship scale; AET = academic engaged time; DB = disruptive behavior. \*\* $p < .01$ . \*\*\* $p < .001$ .

Models 2.1 and 3.1 were null models with only the control variable and random intercepts fitted for academic engaged time and disruptive behavior, respectively. Furthermore, for academic engaged time, the three control variables of gender,  $t(216) = 1.25$ ,  $p > .05$ ; FRL status,  $t(216) = 1.57$ ,  $p > .05$ ; and race,  $t(216) = -1.89$ ,  $p > .1$ , did not meet either of the aforementioned criteria for retaining predictors recommended by Bryk and Raudenbush (1987). These variables were removed from models examining impact on academic engaged time. This was similarly reflected in the model with disruptive behavior, in which none of the three variables met the criteria for retention: gender,  $t(216) = -0.37$ ,  $p > .5$ ; FRL,

$t(216) = 0.06$ ,  $p > .05$ ; race,  $t(216) = 0.14$ ,  $p > .05$ , and were therefore excluded from the final models. By introducing the treatment predictor (EMR) at the second levels, Model 2.2 and 3.2 were fitted for academic engaged time and disruptive behavior, respectively (see Table 4).

In Model 2.2 for academic engaged time, results on Level 2 indicated that receiving EMR was associated with a 15.95-unit increase ( $\gamma_{(AET)01} = 15.95$ ),  $t(8) = 4.83$ ,  $p < .05$ , in the change score on academic engaged time as compared to the control group. Cohen's  $d$  was 0.89 (Morris, 2008). In Model 3.2 for disruptive behavior, receiving EMR was associated with a decrease of 8.45-unit ( $\gamma_{(DB)01} = -8.45$ ),

**Table 3. Results of Final Two-Level Hierarchical Linear Models for Teacher–Student Relationship Outcome Variable**

Model	Fixed Effect/Predictor	Coef.	SE	<i>t</i>	Approximate <i>df</i>
Model 1.1	Level 2 Intercept for $\beta_{0j}$ ( $\gamma_{00}$ )	0.45	0.32	1.41	9
	FRL ( $\beta_{1j} = \gamma_{10}$ )	0.74	0.252	2.93**	218
Model 1.2	Level 2 Intercept for $\beta_{0j}$ ( $\gamma_{00}$ )	-0.24	0.14	-1.76	8
	FRL ( $\beta_{1j} = \gamma_{10}$ )	0.78	0.23	3.41**	217
	EMR ( $\gamma_{01}$ )	1.4	0.29	4.83**	8

  

Model	Random Effect	Variance Component	<i>df</i>	$\chi^2$	ICC
Model 1.1	Intercept ( $\mu_{0j}$ )	0.47	9	24.63**	0.07**
	Level 1 residual ( $r_{ij}$ )	6.01			
Model 1.2	Intercept ( $\mu_{0j}$ )	0.01	8	6.8	< 0.01
	Level 1 residual ( $r_{ij}$ )	5.98			

Note. Level 1,  $N = 220$ ; Level 2,  $N = 10$ . The dependent/outcome variable is change score on the modified Student–Teacher Relation Scale. Symbols in parentheses represent the predictor's corresponding coefficient in the model. Coef. = coefficient; FRL = free or reduced-price lunch; EMR = establish–maintain–restore; ICC = intraclass correlation coefficient. \*\* $p < .01$ .

**Table 4. Results of Final Two-Level Hierarchical Linear Models Fitted for Academic Engaged Time (AET) and Disruptive Behavior (DB)**

Outcome Variable/Model	Predictor	Coef.	SE	<i>t</i>	Approximate <i>df</i>
AET Model 2.1	Level 2 Intercept for $\beta_{0j}$ ( $\gamma_{(AET)00}$ )	11.33	3.19	3.56**	9
AET Model 2.2	Level 2 Intercept for $\beta_{0j}$ ( $\gamma_{(AET)00}$ )	3.71	2.23	1.66	8
	EMR ( $\gamma_{(AET)01}$ )	15.95	3.27	4.87**	8
DB Model 3.1	Level 2 Intercept for $\beta_{0j}$ ( $\gamma_{(DB)00}$ )	-6.82	1.42	-4.82**	9
DB Model 3.2	Level 2 Intercept for $\beta_{0j}$ ( $\gamma_{(DB)00}$ )	-2.6	0.37	-7.04***	8
	EMR ( $\gamma_{(DB)01}$ )	-8.45	0.91	-9.34***	8

  

Outcome Variable/Model	Random Effect	Variance Component	<i>df</i>	$\chi^2$	ICC
AET Model 2.1	Intercept ( $\mu_{(AET)0j}$ )	75.03	9	36.39***	0.12***
	Level 1 Residual ( $r_{(AET)ij}$ )	549.65			
AET Model 2.2	Intercept ( $\mu_{(AET)0j}$ )	8.34	8	10.7	0.06
	Level 1 Residual ( $r_{(AET)ij}$ )	550.02			
DB Model 3.1	Intercept ( $\mu_{(DB)0j}$ )	18.07	9	49.7***	0.17***
	Level 1 Residual ( $r_{(DB)ij}$ )	87.32			
DB Model 3.2	Intercept ( $\mu_{(DB)0j}$ )	0.02	8	4.79	< 0.01
	Level 1 Residual ( $r_{(DB)ij}$ )	85.99			

Note. Level 1,  $N = 220$ ; Level 2,  $N = 10$ . The dependent/outcome variables are change scores on academic engaged time and disruptive behavior. Symbols in parentheses represent the predictor's corresponding coefficient in the model. Coef. = coefficient; EMR = establish-maintain-restore; ICC = intraclass correlation coefficient. \*\* $p < .01$ . \*\*\* $p < .001$ .

$t(8) = -9.34, p < .05$ , in the change score on disruptive behavior as compared to the control group. The standardized mean difference for disruptive behavior was .27 (Morris, 2008). Both findings lend evidence supporting the impact of EMR to improve student classroom behavior by increasing academic engaged time and reducing disruptive behavior.

Like the STRS, analyses examined the random terms to determine the amount of variance explained at each level of the models. With respect to academic engaged time, results for Model 2.1 revealed a statistically significant ICC of 0.12 (variance component = 75.03),  $\chi^2(9, N = 220) = 36.39, p < .05$ , which suggested a significant amount of variance (12%) in change score of academic engaged time was attributable to between class differences. When treatment was introduced as a predictor on Level 2 (Model 2.2), the resulting ICC became 0.02 and statistically nonsignificant (variance component = 8.34),  $\chi^2(8, N = 220) = 10.7, p > .05$ , indicating that the addition of EMR explained almost all

the variance accounted for by between-class difference. The proportion of variance on Level 2 explained by EMR was 98.06%. In terms of disruptive behavior, results from Model 3.1 revealed a notable ICC of 0.17 (variance component = 18.07),  $\chi^2(9, N = 220) = 49.7, p < .05$ , which suggested 17% of the variance in change scores of students' disruptive behavior was attributable to within class similarities. When treatment was included as a predictor in Level 2 (Model 3.2), the resulting ICC was less than 0.01 and statistically nonsignificant (variance component = 0.02),  $\chi^2(8, N = 220) = 4.79, p > .05$ . This indicated that the addition of EMR accounted for all the variance explainable by between-class differences. Furthermore, 98.06% of variance in the change score of disruptive behavior was accounted for by EMR as a Level 2 predictor. The results provided evidence supporting the impact of EMR to improve students' classroom behavior with regard to academic engaged time and disruptive behavior.

## Associations Between Teacher–Student Relationships and Classroom Behavior

Pearson correlation coefficients were computed to assess the degree to which changes in teacher–student relationships corresponded with changes in classroom behavior. A summary of correlation results is presented in Table 4. There was a small negative correlation between change in teacher–student relationship quality and change in disruptive behavior,  $r = -.19$ ,  $n = 159$ ,  $p = .016$ , indicating that improvements in teacher–student relationship quality were associated, albeit weakly, with decreases in disruptive behavior. Additionally, a positive correlation was observed between change in teacher–student relationship quality and change in academic engaged time,  $r = .51$ ,  $n = 159$ ,  $p < .05$ , with increases in teacher–student relationship quality being moderately associated with improvements in academic engagement. Last, a negative correlation was observed between change in academic engaged time and change in disruptive behavior,  $r = -.36$ ,  $n = 159$ ,  $p < .05$ , indicating a small association between increases in academic engaged time and decreases in disruptive behavior.

## Cross-Level Moderation on the Effect of EMR

To examine the cross-level moderation effect of race, FRL status, and gender on the association between EMR on relationship quality, EMR as a second-level predictor was added to the slope equations on Level 2 of the model with change scores on the STRS as the outcome. The results revealed no significant interaction effect between the treatment variable and any of the three moderators (i.e., race, FRL status, or gender), with  $p > .05$  for all of the coefficients for corresponding interaction terms,  $\gamma_{11} = 0.56$ ,  $t(212) = 1.87$ ,  $p > .05$ ;  $\gamma_{21} = -0.12$ ,  $t(212) = -0.29$ ,  $p > .05$ ;  $\gamma_{31} = 0.08$ ,  $t(212) = 0.15$ ,  $p > .05$ . These results suggest that the EMR produced comparable results for White/non-White, FRL/non-FRL, and male/female students.

## Social Validity

Only the teachers in the EMR group were asked to complete the social validity measure. The items ranged from 1 (*strongly disagree*) to 6 (*strongly agree*). The results for the IRP-15 indicated that teachers found the EMR method to be reasonable, acceptable, and effective. The average rating across all 15 items for the three teachers was 5.8 (minimum = 5.4, maximum = 6.0), indicating that teachers either “agreed” or “strongly agreed” with items assessing the reasonableness, acceptability, and likely effectiveness of the EMR method.

## DISCUSSION

Despite the wealth of research demonstrating the importance of positive relationships (Hamre & Pianta, 2005), there is limited experimental research investigating specific interventions to improve teacher–student relationships among elementary-age students. The present study devised and

experimentally evaluated a professional development experience aimed at supporting teachers to reflect on their relationship status with students to inform more purposeful and strategic interactions (establish, maintain, or restore) with students to cultivate student sense of belonging. Results provided preliminary support for the effectiveness of the EMR method for improving teacher–student relationships and students’ classroom behavior. Teachers who were trained with the EMR method demonstrated significant and practically meaningful change (i.e., moderate effect sizes) in their relationships with their students when compared to teachers in the comparison group. Although underpowered, the effects associated with the EMR method were not moderated by student demographic variables such as race, socioeconomic status, and gender.

Consistent with prior research on teacher–student relationship quality (Hamre & Pianta, 2001; Pianta, 1999; Wu et al., 2010), the results of this study demonstrated significant associations between measures of teacher–student relationship quality and improvements in students’ classroom behavior, with STRS being significantly and positively correlated with direct behavior ratings of academic engagement and disruptive behavior. These results suggest that changes in teacher–student relationship quality may mediate the relationship between teacher behavior and students’ classroom behavior. Moreover, results from the intervention fidelity and social validity data indicated teachers delivered EMR with fidelity and found it to be acceptable, reasonable, and fair for use with upper elementary students. This finding is important considering the implementation gap that exists in education when translating research to practice, with one of the more significant barriers to the adoption and use of effective practices being staff buy-in (Forman, Olin, Hoagwood, Crowe, & Saka, 2009). There are a couple of noteworthy points to mention when interpreting findings. First, future applications of EMR may not produce effect sizes of similar magnitude if implemented with all teachers in a given school, as the sample included classrooms experiencing relatively low academic engagement and high disruptive behavior, resulting in greater potential for changes from pre- to posttest data. Moreover, the findings may also reflect the nature of the implementation supports provided to aid teachers’ implementation, which were aligned with best practice and not necessarily representative of the typical training and follow-up support that teachers receive (Joyce & Showers, 2002).

Overall, the results from the current study confirm previous findings from the extant literature (e.g., Pianta, 2001; Rudasill et al., 2010) highlighting the importance of teacher–student relationships. Research needs to continue to innovate beyond descriptive, correlational research that provides evidence of the importance of teacher–student relationships to more developmental and experimental research that evaluates feasible, appropriate, and effective relationship-oriented practices (Split, Koomen, Thijs, & van der Leij, 2012). The null findings regarding demographic moderating variables (race, gender, socioeconomic status) are promising considering previous research that has shown differential responsiveness according to these demographic factors. Given that EMR is ultimately

designed to enhance dyadic interactions between teachers and students, it may represent a more equitable approach than other relationship approaches that emphasize more class-level interactions. There are several implications that for future research and practice that emerge from this work.

### Implications for Practice

The results of this study have implications for professional development practices for teachers. First, the promising results suggest that a relatively brief, small-group-format model of professional development for EMR training may be effective in improving the quality of teachers' relationships with students. As discussed earlier, school administrators who identify specific teacher needs in relationship practices during evaluation may be well served by feasible, cost-effective models such as EMR. Furthermore, EMR offers an operationalized approach to training teachers how to intentionally build and maintain positive relationships with students, which are commonly associated with teacher well-being (Hamre, Pianta, Downer, & Mashburn, 2007; Spilt, Koomen, & Thijs, 2011; Yoon, 2002). The potential to proactively and responsively address teachers' needs for developing relationship-building skills may therefore serve to both improve teacher well-being and reduce teacher burnout and stress, which are common correlates of poor teacher–student relationship quality. Although further study is needed to fully explore the impact of the EMR on teachers and students, the potential to directly improve an area that is associated with effective teaching should prove attractive to school administrators and teachers.

The results of this research also have implications for universal prevention within multitiered systems of support (MTSS). Numerous researchers have embraced and advocated for the use of MTSS as a way to efficiently and effectively organize and deliver a continuum of school mental health services (Cook, Burns, Browning-Wright, & Gresham, 2010; Doll & Cummings, 2008). The aims of MTSS are to prevent, reverse, and minimize mental health problems while promoting social, emotional, and academic success among all individuals in a school (Strein, Hoagwood, & Cohn, 2003). The foundation of MTSS is the universal level of support, which entails the delivery of evidence-based programs and practices to all students to prevent the emergence of mental health problems and promote social, emotional, and academic success (Rones & Hoagwood, 2000; Walker, 1996). EMR could be integrated as a universal prevention practice that complements other evidence-based programs or practices, such as social-emotional learning curricula (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011) or school-wide positive behavior supports (Horner et al., 2009) to achieve primary prevention goals. Indeed, research indicates that positive teacher–student relationships can potentially offset the impact of trauma (Kataoka et al., 2003) and prevent the emergence of delinquency later on (Meehan et al., 2003), suggesting that improving such relationships is likely a worthwhile aim of universal programming.

### Limitations and Future Directions

This study includes several methodological weaknesses, and results should therefore be interpreted as preliminary and warranting further study. First, this study included a small number of randomized units (i.e., classrooms), and therefore, the HLM analyses were underpowered. Furthermore, the small units are less likely produce equivalent groups at baseline. Notwithstanding this limitation, randomized-block design was used to increase the likelihood of comparable groups at baseline, and results from *t* tests indicated that the intervention and control conditions were comparable at baseline. Although analyses yielded statistically significant results even with relatively low statistical power, this study should be replicated with a larger sample of classrooms or schools to obtain more accurate estimations of coefficients and to cross-validate the current findings. Second, the sample in this study consisted of a convenience sample of teachers who were identified by school principals as potentially benefitting from professional development and who agreed to participate in the training. Additionally, a multiple-gating procedure was used to select teachers (i.e., nominated by administrators and then followed up with classroom observations), which may not be generalizable to other school implementation contexts outside of a research study. Third, intervention fidelity for relationship practices was measured only by teacher self-report and may not represent an accurate measure of true implementation fidelity. Fourth, the findings found in this study may not generalize to other schools that have less participation and support from administrators than those who partnered in this study. Considering all of this, further study of EMR using rigorous methods that involve a larger and more diverse sample of schools, teachers, and students is called for to replicate the results of this study.

The present study indicates several directions for future research. This study focused on the effectiveness of the EMR method with teachers of upper-elementary students. Future research should explore the effectiveness of this method among teachers in a broader range of grade levels. Additionally, further study should include measurement of the long-term effectiveness of the EMR method throughout the school year, as well as possible long-term effectiveness for both teachers and students in subsequent years. Long-term follow-up on EMR effectiveness would provide helpful information regarding a possible need for continued support of relationship practices through booster training sessions or collegial support. Finally, the present study included only teacher ratings of teacher–student relationship quality. Inclusion of student feedback on relationship quality in response to teacher training would increase the understanding of students' perceptions about the relationship practices employed by teachers. A final direction for further study of the EMR method involves analysis of the components of the method in terms of their impact on relationship and classroom behavior change.

## Conclusions

Positive teacher–student relationships are valued by teachers and have beneficial effects for teachers and students, but few cost-effective, feasible professional development methods exist for improving these relationships. The current study offered preliminary support for the EMR method as an effective approach for improving teacher–student relationships and, in turn, students’ classroom behavior. Specifically, this study demonstrated that teachers who received EMR training showed significant improvements in the quality of their relationships with their students as well as accompanying improvements in student classroom behavior. Future research should continue to advance methods of training teachers to acquire and implement strategies that enable them to establish relationships with

students, maintain those relationships, and repair any damage to the relationship when conflict has occurred.

## AVAILABILITY OF DATA AND MATERIAL

Please contact the lead author for more information.

## CONFLICT OF INTEREST

All authors declare that they have no competing interests.

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## Appendix. Outline of the Rationale and Specific Practices for Each Phase of the Establish–Maintain–Restore (EMR) Method

EMR Phase	Rationale	Intentional Relationship Practices
Establish	The aim for the <i>establish</i> phase is to engage in intentional practices to cultivate a positive relationship with the student. When a teacher establishes relationships with all students, they feel connected, safe, and respected. When this is in place, students are most likely to learn, engage in desired behaviors, and respond to attempts to correct their behavior. A teacher cannot maintain a relationship she does not have, so it is essential to first establish relationships with all the students to build a sense of trust, connection, and understanding.	<ul style="list-style-type: none"> <li>• Identify a window of time to spend individually with the student to inquire about interests and validate who they are as a person using open-ended questions, affirmations, reflective listening, and validation</li> <li>• Gather, review, and reference, when appropriate, information about the student</li> <li>• Positively greet at the door using the student’s name</li> <li>• Deliver <i>wise feedback</i> message</li> <li>• Find an opportunity to recognize/acknowledge the student through a <i>second-hand compliment</i></li> </ul>
Maintain	The aim for the <i>maintain</i> phase is to sustain the quality of an established positive relationship with a student over time by intentionally striving for a 5-to-1 ratio of positive to negative interactions. Research has shown that the quality of relationship can diminish over time because there is a tendency take one another for granted (ignore good behavior or miss opportunities to positively interact and reinforce) and unintentionally engage in more negative interactions by paying more attention to problem behavior than positive behavior. Maintaining a relationship requires ongoing positive interactions with students.	<ul style="list-style-type: none"> <li>• Aim for a 5-to-1 ratio of positive to negative interactions with students</li> <li>• Send a positive note home to parents via email or written note to acknowledge something the student <i>said, did, or achieved</i> in class</li> <li>• Positively greet at the door using the student’s name</li> <li>• Check in on the relationship (brief interaction to see how things are going or check in about something specific that you know is important to the student; e.g., sport, club, test in another class, birthday)</li> </ul>
Restore	The aim for the <i>restore</i> phase is to intentionally repair any harm to the relationship once there has been a negative interaction between the teacher and student. This is important because negative interactions can weaken the relationship and correspondingly cause the student to be less engaged in class, less responsive to efforts to correct problem behavior, and more challenging to motivate to take on academic work that is perceived to be challenging or boring. As such, teachers must intentionally reconnect with the student to repair the harm and restore the relationship back to its previous positive state.	<ul style="list-style-type: none"> <li>• Intentionally reconnect with the student to repair any harm that was done to restore the relationship back to its previous state</li> <li>• Attempt to repair harm using one or more of the effective communication techniques: (a) taking personal ownership for the negative interaction, (b) delivering an empathy statement, (c) letting go of the previous incident and starting fresh, (d) communicating your care for the having the student in the class, and/or (e) engaging in mutual problem-solving (seeking input from the student) to jointly figure out how to avoid similar negative interactions in the future</li> </ul>

## REFERENCES

- Allday, R. A., & Pakurar, K. (2007). Effects of teacher greetings on student on-task behavior. *Journal of Applied Behavior Analysis, 40*, 317–320. doi:10.1901/jaba.2007.86-06
- Allen, J. P., Pianta, R. C., Gregory, A., Mikami, A. Y., & Lun, J. (2011). An interaction-based approach to enhancing secondary school instruction and student achievement. *Science, 333*(6045), 1034–1037. doi:10.1126/science.1207998
- Bailey, J. S., & Burch, M. R. (2002). *Research methods in applied behavior analysis*. Thousand Oaks, CA: Sage. doi:10.4324/9781315543369
- Bakeman, R., & Gottman, J. M. (1986). *Observing behavior: An introduction to sequential analysis*. Cambridge, United Kingdom: Cambridge University Press. doi:10.1017/CBO9780511527685
- Baker, J. A. (2006). Contributions of teacher–child relationships to positive school adjustment during elementary school. *Journal of School Psychology, 44*, 211–229. doi:10.1016/j.jsp.2006.02.002
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 111*, 497–529. doi:10.1037/0033-2909.117.3.497
- Bergin, C., & Bergin, D. (2009). Attachment in the classroom. *Educational Psychology Review, 21*(2), 141–170. doi:10.1007/s10648-009-9104-0
- Bierman, K. L. (2011). The promise and potential of studying the “invisible hand” of teacher influence on peer relations and student outcomes: A commentary. *Journal of Applied Developmental Psychology, 32*(5), 297–303. doi:10.1016/j.appdev.2011.04.004
- Birch, S. H., & Ladd, G. W. (1997). The teacher–child relationship and children’s early school adjustment. *Journal of School Psychology, 35*, 61–79. doi:10.1016/S0022-4405(96)00029-5
- Birman, B. F., Desimone, L., Porter, A. C., & Garet, M. S. (2000). Designing professional development that works. *Educational Leadership, 57*(8), 28–33.
- Bornstein, M. H. (1995). *Handbook of parenting*. New York, NY: Psychology Press. doi:10.4324/9781410612137
- Bowlby, J. (1969). *Attachment and loss*. New York, NY: Basic Books.
- Bradshaw, C. P., Mitchell, M. M., O’Brennan, L. M., & Leaf, P. J. (2010). Multilevel exploration of factors contributing to the overrepresentation of black students in office disciplinary referrals. *Journal of Educational Psychology, 102*, 508–520. doi:10.1037/a0018450
- Brophy, J. E., & Good, T. L. (1974). *Teacher–student relationships: Causes and consequences*. New York, NY: Holt, Rinehart and Winston. doi:10.1086/443230
- Bryk, A. S., & Raudenbush, S. W. (1987). Application of hierarchical linear models to assessing change. *Psychological Bulletin, 101*(1), 147–158. doi:10.1037/0033-2909.101.1.147
- Burchinal, M. R., Peisner-Feinberg, E., Pianta, R., & Howes, C. (2002). Development of academic skills from preschool through second grade: Family and classroom predictors of developmental trajectories. *Journal of School Psychology, 40*, 415–436. doi:10.1016/S0022-4405(02)00107-3
- Cameron, L., & Thorsborne, M. (2001). Restorative justice and school discipline: Mutually exclusive? In H. Strang & J. Braithwaite (Eds.), *Restorative justice and civil society* (pp. 213–225). Cambridge, United Kingdom: Cambridge University Press.
- Canary, D. J., & Yum, Y. O. (2015). Relationship maintenance strategies. In C. R. Berger & M. E. Roloff (Eds.), *The international encyclopedia of interpersonal communication* (1st ed., pp. 1–9). doi:10.1002/9781118540190.wbic248
- Christle, C., Jolivet, K., & Nelson, M. (2005). Breaking the school to prison pipeline: Identifying school risk and protective factors for youth delinquency. *Exceptionality, 13*, 69–88. doi:10.1207/s15327035ex1302\_2
- Cohen, G. L., Garcia, J., Apfel, N., & Master, A. (2006). Reducing the racial achievement gap: A social-psychological intervention. *Science, 313*(5791), 1307–1310. doi:10.1126/science.1128317
- Cohen, G. L., & Steele, C. M. (2002). A barrier of mistrust: How stereotypes affect cross-race mentoring. In J. Aronson (Ed.), *Improving academic achievement: Impact of psychological factors on education* (pp. 305–331). Oxford, England: Academic Press.
- Cook, C. R., Burns, M., Browning-Wright, D., & Gresham, F. M. (2010). *Transforming school psychology in the RTI Era: A guide for administrators and school psychologists*. Palm Beach, FL: LRP Publications.
- Cook, C. R., Fiat, A., Larson, M., Daikos, C., Slemrod, T., & Holland, E. (2018). Positive greetings at the door: Evaluation of a low-cost, high yield proactive classroom management strategy. *Journal of Positive Behavior Interventions, 20*, 149–159. doi:10.1177/1098300717753831
- Cook, C. R., Grady, E. A., Long, A. C., Renshaw, T., Coddling, R. S., Fiat, A., & Larson, M. (2017). Evaluating the impact of increasing general education teachers’ ratio of positive-to-negative interactions on students’ classroom behavior. *Journal of Positive Behavior Interventions, 19*, 67–77. doi:10.1177/1098300716679137
- Crews, S. D., Bender, H., Cook, C. R., Gresham, F. M., Kern, L., & Vanderwood, M. (2007). Risk and protective factors of emotional and/or behavioral disorders in children and adolescents: A mega-analytic synthesis. *Behavioral Disorders, 32*, 64–77. doi:10.1177/019874290703200201
- Crosnoe, R., Johnson, M. K., & Elder, Jr., G. H. (2004). Intergenerational bonding in school: The behavioral and contextual correlates of student–teacher relationships. *Sociology of Education, 77*(1), 60–81. doi:10.1177/003804070407700103
- Darling-Hammond, L. (2000). Teacher quality and student achievement. *Education Policy Analysis Archives, 8*, 1. doi:10.14507/epaa.v8n1.2000
- Davidson, R. J., & McEwen, B. S. (2012). Social influences on neuroplasticity: stress and interventions to promote well-being. *Nature Neuroscience, 15*, 689–695.
- Decker, D. M., Dona, D. P., & Christenson, S. L. (2007). Behaviorally at-risk African American students: The importance of student–teacher relationships for student outcomes. *Journal of School Psychology, 45*, 83–109. doi:10.1016/j.jsp.2006.09.004
- Dirks, K. T., & Ferrin, D. L. (2001). The role of trust in organizational settings. *Organization Science, 12*(4), 450–467. doi:10.1287/orsc.12.4.450.10640
- Doll, B., & Cummings, J. A. (2008). *Transforming school mental health services: Population-based approaches to promoting the competency and wellness of children*. Bethesda, MD: National Association of School Psychologists and Corwin Press.
- Donaldson, M. L. (2009). *So long, Lake Wobegon? Using teacher evaluation to raise teacher quality*. Washington, DC: Center for American Progress. Retrieved from [https://cdn.americanprogress.org/wp-content/uploads/issues/2009/06/pdf/teacher\\_evaluation.pdf](https://cdn.americanprogress.org/wp-content/uploads/issues/2009/06/pdf/teacher_evaluation.pdf)
- Driscoll, K. C., & Pianta, R. C. (2010). Banking time in Head Start: Early efficacy of an intervention designed to promote supportive teacher–child relationships. *Early Education & Development, 21*(1), 38–64. doi:10.1080/10409280802657449
- Duong, M., Pullmann, M. D., Buntain-Ricklefs, J., Lee, K., Benjamin, K. S., Nguyen, L., & Cook, C. R. (in press). A brief training for teachers improves student behavior and student–teacher relationships in middle school. *School Psychology Quarterly*.
- Durlak, J. A., Weissberg, R. P., Dymnicki, A. B., Taylor, R. D., & Schellinger, K. (2011). Enhancing students’ social and emotional learning promotes success in school: A meta-analysis. *Child Development, 82*, 405–432. doi:10.1111/j.1467-8624.2010.01564.x
- Evans, K. R., Lester, J. N., & Anfara, Jr., V. A. (2013). Restorative justice in education: What we know so far. *Middle School Journal, 44*(5), 57–63. doi:10.1080/00940771.2013.11461873
- Flora, S. R. (2000). Praise’s magic reinforcement ratio: Five to one gets the job done. *The Behavior Analyst Today, 1*(4), 64. doi:10.1037/h0099898
- Forman, S. G., Olin, S. S., Hoagwood, K. E., Crowe, M., & Saka, N. (2009). Evidence-based interventions in schools: Developers’ views of implementation barriers and facilitators. *School Mental Health, 1*, 26–36. doi:10.1007/s12310-008-9002-5
- Fowler, L. T. S., Banks, T. I., Anhalt, K., Der, H. H., & Kalis, T. (2008). The association between externalizing behavior problems, teacher–student relationship quality, and academic performance in young urban learners. *Behavioral Disorders, 33*, 167–183. doi:10.1177/019874290803300304
- Furrer, C., & Skinner, E. (2003). Sense of relatedness as a factor in children’s academic engagement and performance. *Journal of Educational Psychology, 95*, 148–162. doi:10.1037/0022-0663.95.1.148

- Gehlbach, H., Brinkworth, M. E., & Harris, A. D. (2012). Changes in teacher–student relationships. *British Journal of Educational Psychology, 82*(4), 690–704. doi:10.1111/j.2044-8279.2011.02058.x
- Goodenow, C. (1992). Strengthening the links between educational psychology and the study of social contexts. *Educational Psychologist, 27*(2), 177–196. doi:10.1207/s15326985ep2702\_4
- Goodenow, C. (1993). Classroom belonging among early adolescent students: Relationships to motivation and achievement. *Journal of Early Adolescence, 13*(1), 21–43. doi:10.1177/0272431693013001002
- Gottman, J. M., & Levenson, R. W. (2000). The timing of divorce: Predicting when a couple will divorce over a 14-year period. *Journal of Marriage and Family, 62*(3), 737–745. doi:10.1111/j.1741-3737.2000.00737.x
- Gregory, A., Clawson, K., Davis, A., & Gerewitz, J. (2014). The promise of restorative practices to transform teacher–student relationships and achieve equity in school discipline. *Journal of Educational and Psychological Consultation, 26*(4), 325–353. doi:10.1080/10474412.2014.929950
- Hamre, B. K., & Pianta, R. C. (2001). Early teacher–child relationships and the trajectory of children’s school outcomes through eighth grade. *Child Development, 72*, 625–638. doi:10.1111/1467-8624.00301
- Hamre, B. K., & Pianta, R. C. (2005). Can instructional and emotional support in the first-grade classroom make a difference for children at risk of school failure? *Child Development, 76*, 949–967. doi:10.1111/j.1467-8624.2005.00889.x
- Hamre, B. K., Pianta, R. C., Downer, J. T., & Mashburn, A. J. (2007). Teachers’ perceptions of conflict with young students: Looking beyond problem behaviors. *Social Development, 17*(1), 115–136. doi:10.1111/j.1467-9507.2007.00418.x
- Hargreaves, A. (2000). Mixed emotions: Teachers’ perceptions of their interactions with students. *Teaching and Teacher Education, 16*(8), 811–826. doi:10.1016/s0742-051x(00)00028-7
- Henry, K. L., & Huizinga, D. H. (2007). School-related risk and protective factors associated with truancy among urban youth placed at risk. *Journal of Primary Prevention, 28*(6), 505–519. doi:10.1007/s10935-007-0115-7
- Hinde, R. A. (1987). *Individuals, relationships and culture: Links between ethology and the social sciences*. New York, NY: Cambridge University Press.
- Horner, R. H., Sugai, G., Smolkowski, K., Eber, L., Nakasato, J., Todd, A. W., & Esperanza, J. (2009). A randomized, wait-list controlled effectiveness trial assessing school-wide positive behavior support in elementary schools. *Journal of Positive Behavior Interventions, 11*, 133–144. doi:10.1177/1098300709332067
- Hughes, J. N. (2011). Longitudinal effects of teacher and student perceptions of teacher–student relationship qualities on academic adjustment. *The Elementary School Journal, 112*(1), 38–60. doi:10.1086/660686
- Hughes, J. N., & Cavell, T. A. (1999). Influence of the teacher–student relationship in childhood conduct problems: A prospective study. *Journal of Clinical Child Psychology, 28*(2), 173. doi:10.1207/s15374424jccp2802\_5
- Hughes, J. N., Cavell, T. A., & Willson, V. (2001). Further support for the developmental significance of the quality of the teacher–student relationship. *Journal of School Psychology, 39*, 289–301. doi:10.1016/s0022-4405(01)00074-7
- Hughes, J. N., & Kwok, O. (2006). Classroom engagement mediates the effect of teacher–student support on elementary students’ peer acceptance: A prospective analysis. *Journal of School Psychology, 43*, 465–480. doi:10.1016/j.jsp.2005.10.001
- Irvine, J. J. (1986). Teacher–student interactions: Effects of student race, sex, and grade level. *Journal of Educational Psychology, 78*, 14–21. doi:10.1037/0022-0663.78.1.14
- Joyce, B., & Showers, B. (2002). *Student achievement through staff development*. White Plains, NY: Longman.
- Juvonen, J. J. (2006). Sense of belonging, social bonds, and school functioning. In P. A. Alexander & P. H. Winne (Eds.), *Handbook of educational psychology* (pp. 655–674). Mahwah, NJ: Erlbaum. doi:10.4324/9780203874790.ch28
- Kataoka, S., Stein, B., Jaycox, L., Wong, M., Escudero, P., Tu, W., Zaragoza, C., & Fink, A. (2003). A school-based mental health program for traumatized Latino immigrant children. *Journal of the American Academy of Child and Adolescent Psychiatry, 42*(3), 311–318. doi:10.1097/00004583-200303000-00011
- Klem, A. M., & Connell, J. P. (2004). Relationships matter: Linking teacher support to student engagement and achievement. *Journal of School Health, 74*, 262–273.
- Koomen, H. M., Verschueren, K., van Schooten, E., Jak, S., & Pianta, R. C. (2012). Validating the Student–Teacher Relationship Scale: Testing factor structure and measurement invariance across child gender and age in a Dutch sample. *Journal of School Psychology, 50*, 215–234. doi:10.1016/j.jsp.2011.09.001
- Lane, K. L., Kalberg, J. R., Bruhn, A. L., Driscoll, S. A., Wehby, J. H., & Elliott, S. N. (2009). Assessing social validity of school-wide positive behavior support plans: Evidence for the reliability and structure of the Primary Intervention Rating Scale. *School Psychology Review, 38*, 135–144.
- Lindquist, D. H. (2007). A necessary Holocaust pedagogy: Teaching the teachers. *Issues in Teacher Education, 16*(1), 21–36.
- Maag, J. W. (2001). Rewarded by punishment: Reflections on the disuse of positive reinforcement in schools. *Exceptional Children, 67*, 173–186. doi:10.1177/001440290106700203
- Martens, B. K., Witt, J. C., Elliott, S. N., & Darveaux, D. X. (1985). Teacher judgments concerning the acceptability of school-based interventions. *Professional Psychology: Research and Practice, 16*, 191–198. doi:10.1037/0735-7028.16.2.191
- Meehan, B. T., Hughes, J. N., & Cavell, T. A. (2003). Teacher–student relationships as compensatory resources for aggressive children. *Child Development, 74*, 1145–1157. doi:10.1111/1467-8624.00598
- Murray, C., & Murray, K. M. (2004). Child level correlates of teacher–student relationships: An examination of demographic characteristics, academic orientations, and behavioral orientations. *Psychology in the Schools, 7*, 751–762. doi:10.1002/pits.20015
- Nastasi, B. K., Varjas, K., Schensul, S. L., Silva, K. T., Schensul, J. J., & Ratnayake, P. (2000). The participatory intervention model: A framework for conceptualizing and promoting intervention acceptability. *School Psychology Quarterly, 15*, 207–232. doi:10.1037/h0088785
- O’Connor, E. E., Dearing, E., & Collins, B. A. (2011). Teacher–child relationship and behavior problem trajectories in elementary school. *American Educational Research Journal, 48*, 120–162. doi:10.3102/0002831210365008
- Osher, D., Bear, G. B., Sprague, J. R., & Doyle, W. (2010). How can we improve school discipline? *Educational Researcher, 39*(1), 48–58. doi:10.3102/0013189X09357618
- Osterman, K. F. (2000). Students’ need for belonging in the school community. *Review of Educational Research, 70*, 323–367.
- Papay, J. P. (2012). Refocusing the debate: Assessing the purposes and tools of teacher evaluation. *Harvard Educational Review, 82*(1), 123–141. doi:10.17763/haer.82.1.v40p0833345w6384
- Pianta, R. C. (1992). *Beyond the parent: The role of other adults in children’s lives*. San Francisco, CA: Jossey-Bass.
- Pianta, R. C. (1999). *Enhancing relationships between children and teachers*. Washington, DC: American Psychological Association. doi:10.1037/10314-000
- Pianta, R. C. (2001). *STRS: Student–Teacher Relationship Scale: Professional manual*. Lutz, FL: Psychological Assessment Resources.
- Pianta, R. C., & Hamre, B. K. (2001). *STARS students, teachers, and relationship support: Consultant’s manual*. Lutz, FL: Psychological Assessment Resources.
- Pianta, R. C., Hamre, B., & Stuhlman, M. (2003). Relationships between teachers and children. In W. M. Reynolds & G. E. Miller, (Eds.), *Comprehensive handbook of psychology* (Vol. 7, pp. 199–234). New York, NY: Wiley.
- Pianta, R. C., La Paro, K. M., & Payne, C. (2002). The relation of kindergarten classroom environment to teacher, family, and school characteristics and child outcomes. *Elementary School Journal, 102*(3), 225–238. doi:10.1086/499701
- Pianta, R. C., Mashburn, A. J., Downer, J. T., Hamre, B. K., & Justice, L. M. (2008). Effects of web-mediated professional development resources on teacher–child interactions in pre-kindergarten classrooms.



- Early Childhood Research Quarterly*, 23, 431–451. doi:10.1016/j.ecresq.2008.02.001
- Pianta, R. C., & Steinberg, M. S. (1992). Teacher–child relationships and the process of adjusting to school. In R. C. Pianta (Ed.), *Beyond the parent: The role of other adults in children's lives* (pp. 56–84). San Francisco, CA: Jossey-Bass. doi:10.1002/cd.23219925706
- Pianta, R. C., & Steinberg, M. (1992). Teacher–child relationships and the process of adjusting to school. *New Directions for Child and Adolescent Development*, 57, 61–80. doi:10.1002/cd.23219925706
- Pianta, R. C., & Stuhlman, M. W. (2004). Teacher–child relationships and children's success in the first years of school. *School Psychology Review*, 33, 444–458.
- Quin, D. (2017). Longitudinal and contextual associations between teacher–student relationships and student engagement. *Review of Educational Research*, 87(2), 345–387.
- Roeser, R. W., & Eccles, J. S. (1998). Adolescents' perceptions of middle school: Relation to longitudinal changes in academic and psychological adjustment. *Journal of Research on Adolescence*, 8, 123–158. doi:10.1207/s15327795jra0801\_6
- Rones, M., & Hoagwood, K. (2000). School-based mental health services: A research review. *Clinical Child and Family Psychology Review*, 3, 223–241. doi:10.1023/A:1026425104386
- Roorda, D. L., Komen, H. M. Y., Split, J. L., & Oort, F. J. (2011). The influence of affective teacher–student relationships on students' school engagement and achievement: A meta-analytic approach. *Review of Educational Research*, 81, 493–529. doi:10.3102/0034654311421793
- Rudasill, K. M., Reio, Jr., T. G., Stipanovic, N., & Taylor, J. E. (2010). A longitudinal study of student–teacher relationship quality, difficult temperament, and risky behavior from childhood to early adolescence. *Journal of School Psychology*, 48, 389–412. doi:10.1016/j.jsp.2010.05.001
- Rueda, M. R., Posner, M. I., & Rothbart, M. K. (2005). The development of executive attention: Contributions to the emergence of self-regulation. *Developmental Neuropsychology*, 28(2), 573–94. doi:10.1207/s15326942dn2802\_2
- Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology*, 25, 54–67.
- Sabol, T. J., & Pianta, R. C. (2012). Recent trends in research on teacher–child relationships. *Attachment & Human Development*, 14(3), 213–231. doi:10.1080/14616734.2012.672262
- Saft, E. W., & Pianta, R. C. (2001). Teachers' perceptions of their relationships with students: Effects of child age, gender, and ethnicity of teachers and children. *School Psychology Quarterly*, 16, 125–141. doi:10.1521/scpq.16.2.125.18698
- Sameroff, A. J. (1995). General systems theories and developmental psychopathology. In D. Cicchetti & D. J. Cohen (Eds.), *Wiley series on personality processes. Developmental psychopathology, Vol. 1: Theory and methods* (pp. 659–695). Oxford, United Kingdom: John Wiley & Sons.
- Shapiro, E. S. (2010). *Academic skills problems fourth edition workbook*. New York, NY: Guilford Press.
- Shinn, M. R., & Walker, H. M. (2010). *Interventions for achievement and behavior problems in a three-tier model including RTI*. Bethesda, MD: National Association of School Psychologists.
- Siegel, D. J. (2015). *The developing mind: How relationships and the brain interact to shape who we are*. New York, NY: Guilford Press.
- Simonsen, B., Fairbanks, S., Briesch, A., Myers, D., & Sugai, G. (2008). A review of evidence-based practices in classroom management: Considerations for research to practice. *Education and Treatment of Children*, 31, 351–380. doi:10.1353/etc.0.0007
- Split, J. L., Koomen, H. M. Y., & Thijs, J. T. (2011). Teacher wellbeing: The importance of teacher–student relationships. *Educational Psychology Review*, 23(4), 457–477. doi:10.1007/s10648-011-9170-y
- Split, J. L., Koomen, H. M., Thijs, J. T., & van der Leij, A. (2012). Supporting teachers' relationships with disruptive children: The potential of relationship-focused reflection. *Attachment & Human Development*, 14(3), 305–318. doi:10.1080/14616734.2012.672286
- Steinberg, L., & Morris, A. S. (2001). Adolescent development. *Annual Review of Psychology*, 52, 83–110. doi:10.1146/annurev.psych.52.1.83
- Strein, W., Hoagwood, K., & Cohn, A. (2003). School psychology: A public health perspective: I. Prevention, populations, and systems change. *Journal of School Psychology*, 41, 23–38. doi:10.1016/s0022-4405(02)00142-5
- Twenge, J. M., Baumeister, R. F., DeWall, C. N., Ciarocco, N. J., & Bartels, J. M. (2007). Social exclusion decreases prosocial behavior. *Journal of Personality and Social Psychology*, 92(1), 56–66.
- Van Prooijen, J. W., Van Den Bos, K., & Wilke, H. (2004). Group belongingness and procedural justice: Social inclusion and exclusion by peers affects the psychology of voice. *Journal of Personality and Social Psychology*, 87(1), 66–79.
- Verschuere, K., & Koomen, H. M. Y. (2012). Teacher–child relationships from an attachment perspective. *Attachment & Human Development*, 14(3), 205–211. doi:10.1080/14616734.2012.672260
- Walker, H. M. (1996). Integrated approaches to preventing antisocial behavior patterns among school-age children and youth. *Journal of Emotional and Behavioral Disorders*, 4(3), 194–209. doi:10.1177/106342669600400401
- Walton, G. M., & Cohen, G. L. (2007). A question of belonging: Race, social fit, and achievement. *Journal of Personality and Social Psychology*, 92, 82–96.
- Walton, G. M., & Cohen, G. L. (2011). A brief social-belonging intervention improves academic and health outcomes of minority students. *Science*, 331(6023), 1447–1451. doi:10.1126/science.1198364
- Wang, M.-T., Brinkworth, M., & Eccles, J. (2013). Moderating effects of teacher–student relationship in adolescent trajectories of emotional and behavioral adjustment. *Developmental Psychology*, 49, 690–705. doi:10.1037/a0027916
- Williford, A. P., LoCasale-Crouch, J., Whittaker, J. V., DeCoster, J., Hartz, K. A., Carter, L. M., . . . Hatfield, B. E. (2017). Changing teacher–child dyadic interactions to improve preschool children's externalizing behaviors. *Child Development*, 88, 1544–1553. doi:10.1111/cdev.12703
- Wu, J. Y., & Hughes, J. N. (2015). Teacher Network of Relationships Inventory: Measurement invariance of academically at-risk students across ages 6 to 15. *School Psychology Quarterly*, 30(1), 23–36.
- Wu, J.-Y., Hughes, J. N., & Kwok, O.-M. (2010). Teacher–student relationship quality type in elementary grades: Effects on trajectories for achievement and engagement. *Journal of School Psychology*, 48, 357–387. doi:10.1016/j.jsp.2010.06.004
- Yeager, D. S., Purdie-Vaughns, V., Garcia, J., Apfel, N., Brzustoski, P., Master, A., . . . Cohen, G. L. (2014). Breaking the cycle of mistrust: Wise interventions to provide critical feedback across the racial divide. *Journal of Experimental Psychology: General*, 143(2), 804–824. doi:10.1037/a0033906
- Yeager, D. S., & Walton, G. M. (2011). Social-psychological interventions in education: They're not magic. *Review of Educational Research*, 81, 267–301. doi:10.3102/0034654311405999
- Yoon, J. S. (2002). Teacher characteristics as predictors of teacher–student relationships: Stress, negative affect, and self-efficacy. *Social Behavior & Personality: An International Journal*, 30(5), 485–493. doi:10.2224/sbp.2002.30.5.485

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