School Psychology Review,
2017, Volume 46, No. 1, pp. 3–20

The Therapeutic Mechanisms of Check, Connect, and Expect

Scott A. Stage and Sally B. Galanti
North Carolina State University

Abstract. Given the high prevalence of Tier 2 behavioral intervention use and calls to examine mediation and moderation effects on treatment for children, this study tested the mediation effect of the daily progress report and moderation effects of coach–student, teacher–student, and student–teacher relationships and their interactions for 95 elementary school students who received the Check, Connect, and Expect intervention. The only significant finding was the moderating effect of the student–teacher and teacher–student relationships. A significant interaction between the moderating effects showed that a positive student–teacher relationship showed overall reductions in total problem behavior across an academic year. This result is interpreted as students' perception of a positive relationship with their teacher as critical to the therapeutic mechanism of Tier 2 behavioral interventions.

A review of school-wide positive behavior support (SWPBS) research indicates that it grew from a need to replace reactive punitive practices such as suspensions and expulsions by increasing students' social competency (McIntosh, Filter, Bennett, Ryan, & Sugai, 2010). According to the Positive Behavioral Interventions & Supports (PBIS) website (PBIS, Office of Special Education Programs, n.d., "Tier 1 FAQs" Web page), 3-tiered SWPBS was developed based on research-based interventions and it is estimated that over 7,000 schools currently implement SWPBS. Tier 1 is designed to help staff teach school-wide social behavior expectations (Crone, Horner, & Hawken, 2004). Tier 2 is designed for students who are unresponsive to Tier 1 intervention (Crone et al., 2004; Walker et al., 1996), and finally, Tier 3 is designed for students exhibiting chronic behavior problems (Sugai & Horner, 2006; Walker et al., 1996). This study focuses on the therapeutic mechanisms of a Tier 2 SWPBS program, Check, Connect, and Expect (CCE), by testing mediating and moderating variable effects on student problem behavior outcomes. This research is needed to promote our understanding of how CCE works, which in turn can influence our future implementation efforts (Kazdin & Nock, 2003).

The rationale for evaluating the therapeutic mechanism of a Tier 2 SWPBS program is that, because of the need for increased

Preparation of this article was supported in part by grant H324P040012 from the U.S. Department of Education, Institute of Education Sciences, National Center for Special Education Research. The authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest or nonfinancial interest in the subject matter or materials discussed in this article.

Correspondence concerning this article should be address to Scott A. Stage, Department of Psychology, North Carolina State University, Raleigh, NC 27695; e-mail: sastage@ncsu.edu

intervention efforts across a larger number of students, these programs require more resources to efficiently identify children who need help, train teachers and staff, and communicate with stakeholders (e.g., 15%–20%; Crone et al., 2004). There are several programs that can fit within an SWPBS approach; the Office of Special Education Programs PBIS Technical Assistance Center (PBIS, Office of Special Education Programs, n.d., "Tier 2 supports" Web page) lists the following Tier 2 interventions for consideration based on research: Check & Connect (C&C; Sinclair, Christenson, Evelo, & Hurley, 1998), Check-In and Check-Out (CICO; Todd, Campbell, Meyer, & Horner, 2008), the CCE program (Cheney et al., 2009), social skills instruction, and First Steps to Success (Walker, Severson, Feil, Stiller, & Golly, 1998).

Most of these Tier 2 interventions commonly use a teacher and/or a coach or mentor to give daily behavioral feedback to the at-risk students. This feedback can be critical because increasing student–teacher positive interactions and reducing the number of negative interactions may act as mediating mechanisms to improve student social competence (McIntosh et al., 2010). In support of the adult–student therapeutic effect, a meta-analysis of positive child–therapist relationships on behavioral symptom outcomes found an overall effect size of 0.32 (Shirk, Karver, & Brown, 2011). In another study, in a clinical sample of 90 children receiving treatment for aggressive, oppositional, and antisocial behavior, Kazdin and Durbin (2012) found that, as the quality of the child–therapist therapeutic relationship increased, so did the positive behavioral outcomes.

However, there are some slight differences in the emphasis of purported therapeutic mechanisms for each Tier 2 intervention reviewed below. C&C is predicated on a positive interpersonal relationship between the coach and the student (Sinclair et al., 1998). In contrast, the mechanism for behavior change with CICO is predicated on more specific feedback derived from an adult mentor and the teachers' evaluation of students' behavior on a behavior expectation report card (Todd et al., 2008). The therapeutic mechanisms for the CCE program include positive interpersonal relationships between the coach and the student and between the teacher and the student, as well as explicit behavioral feedback on school-wide behavior expectations (Cheney et al., 2009). Even though for each of these interventions, there is a stated therapeutic mechanism for changing student behavior, to our knowledge, none has been statistically tested.

A BRIEF OVERVIEW OF THE PROCEDURES AND OUTCOMES OF C&C, CICO, AND CCE

In this section, a short description of the selected Tier 2 interventions is provided in addition to some research evidence to support their use. The initial C&C intervention program was designed to increase school engagement for middle and high school students with learning or emotional disabilities who were at risk for dropping out of school (Sinclair et al., 1998). The therapeutic mechanism for the C&C program is derived from Comer's (1984) postulate: "It is the attachment and identification with a meaningful adult that motivates or reinforces a child's desire to learn" (p. 327). In C&C, each student has a monitor who checks the student's attendance, tardiness, office referrals, and school suspensions and checks for failing class grades. The connection with the student is implemented at two different levels. At the basic level, the mentor meets with the student and provides feedback about the student's school engagement as well as the importance of staying in school. They engage in problem solving (Braswell & Bloomquist, 1991) for any at-risk behaviors needing attention. The C&C student receives the intensive intervention if the mentor finds that the student's risk has increased based on the behavioral data described above. The intensive intervention includes more detailed problem solving for negotiating alternatives to suspensions, the use of behavioral and/or academic contracts and family mediation for truancy, social skills instruction, and teacher–student consultation. Results showed that the treatment group had better attendance, academic

assignment completion, number of school credits earned, and enrollment but mixed results regarding general educators' and special educators' evaluation of the students' problem behavior and academic competence (Sinclair et al., 1998).

Anderson, Christenson, Sinclair, and Lehr (2004) explicitly tested the quality of the perceived mentor–student relationship and the student–mentor relationship on the students' academic performance (e.g., completes work at 80% or above) and appropriate social behavior (e.g., compliance and follows school rules) for 80 elementary and middle school students who were enrolled in the C&C intervention. Four regression analyses were conducted. The first analysis predicted academic performance after entering baseline levels of student absences, tardies, and demographic risk factors and then the mentor–student relationship variable, which positively predicted students' academic performance. The second regression entered the aforementioned baseline variables and then the student–mentor relationship variable, which approached significance. The third and fourth regression analyses followed the same format described above, although the dependent variable was the students' appropriate social behavior. The results of both the third and fourth analyses found that the relationship variables did not predict appropriate student behavior. These results indicated that positive interpersonal relationships predict positive academic performance but not socially appropriate school behaviors.

CICO is an intervention for students at risk for emotional and behavior difficulties that uses adult mentor feedback with a morning check-in and an afternoon checkout; it also includes a formalized daily progress report (DPR) card completed by the teacher with verbal feedback that is sent home every day and includes the student's performance on school-wide behavior expectations (e.g., be respectful, be responsible, and be safe). The DPR includes a description of daily behavior expectations and goals and whether or not those expectations are met. When students meet their daily goal, they receive a reward to reinforce their appropriate behavior (Fairbanks, Sugai, Guardino, & Lathrop, 2007).

Filter et al. (2007) studied the effectiveness of the CICO program in reducing problem behaviors with 19 students in three different elementary schools who were unresponsive to Tier 1 class-wide interventions. The results showed a significant decrease in office discipline referrals for 13 of the 19 students. In another CICO study, with 36 elementary school students, that evaluated the functional relationship of the students' problem behavior (McIntosh, Campbell, Carter, & Dickey, 2009), the results showed that students whose problem behavior was motivated by escape-based consequences showed an increase in problem behavior and no improvement in prosocial behavior or decreased rate of office discipline referrals. However, students whose problem behavior was maintained by teacher attention showed a decrease in problem behavior, an improvement in social behavior, and a decrease in the rate of office discipline referrals.

Together, these studies show the effectiveness of CICO but also indicate that students who are motivated by teacher social approval were the most likely to respond, whereas students motivated to escape academic tasks were not likely to make improvements in problem behavior using this intervention. However, it is difficult to separate the active treatment ingredients in CICO because both reinforcement using the DPR and adult–student coaching are involved.

The CCE program (Cheney et al., 2009) integrated components from the C&C and CICO programs. Similar to C&C, the students enrolled in CCE began at a basic level where the students checked in and checked out with a coach every day. Similar to CICO, the students received teacher feedback about their DPR performance, which was taken home to parents to review. The DPR points earned by the students over 2-week periods dictated the level of intervention received and when the students graduated from the program.

A 2-year randomized treatment–control group study of CCE was conducted with 204 at-risk elementary students (Cheney et al., 2009). Sixty percent of the CCE students grad-

uated, and a linear growth curve analysis showed a significant decrease in the level and slope of externalizing and internalizing problem behavior compared to controls; moreover, the graduates showed a reduction from borderline or clinical levels to normal levels of problem behavior.

Tsai and Cheney (2012) examined the therapeutic effects of coach–student and teacher–student relationships on four different dependent measures (i.e., social skills, problem behaviors, academic competence, and engagement) using a hierarchical multiple regression model that used the screening instrument's level of maladaptive behavior, the number of tangible rewards received, and the coach–student and teacher–student relationship measures. Prior maladaptive behavior accounted for a significant amount of the variance in each outcome measure. The number of tangible rewards received for meeting behavior expectation goals was not predictive of any of the dependent variables, nor was the coach–student relationship variable. In the last step of the regression analysis, the teacher–student relationship measure was entered. It was significantly related to each dependent variable, accounting for 5% to 29% of the variance. Tsai and Cheney suggested that similar to C&C, the CCE intervention showed that an adult–student relationship accounted for the variance beyond what the other variables accounted for in the student outcomes. However, they also noted that one limitation was that the teachers rated their relationship with the student and rated the students' problem behavior, suggesting a potential mono-rater bias. In addition, the effect of student–teacher relationship was not tested.

PURPOSE OF THE CURRENT STUDY

Kazdin and Nock (2003) described the importance of testing mediating and moderating variables in psychological intervention research for children. A complete mediating variable is a third variable (e.g., the treatment ingredient) that explains the variance in the therapeutic change in behavior, although partial mediating variables explain some of the variance (Baron & Kenny, 1986).

Other researchers have shown that statistical analysis of mediating variables is best demonstrated with longitudinal data regarding the change in the outcome behavior across time and that cross-sectional research designs can distort the results, yielding an inaccurate interpretation (Kraemer, Yesavage, Taylor, & Kupfer, 2000). The CCE training manual reports that a DPR should be used by teachers to provide positive behavioral feedback and contingent social reinforcement to students if their daily percent is at or above 75% (Cheney et al., 2004). In addition, the manual states that behavioral specialists should use students' average DPR performance to make treatment intervention changes on a biweekly basis (Cheney et al., 2004). The current study therefore used students' average DPR percentage over the course of the academic year as a mediating variable for the CCE therapeutic mechanism.

A 1-year validity study of DPRs showed the construct validity between students' factor-analyzed change scores for externalizing problem behaviors and their average level of DPR was $r = .32$, $p < .05$ (Stage, Cheney, Lynass, Mielenz, & Flower, 2012). The students' average DPR percentage and final CCE treatment intervention placement were also assessed in relation to their level of problem behavior. The five CCE intervention levels were used to statistically discriminate the lowest to the highest treatment intensity levels by students' average DPR percentage and students' problem behavior. Results showed that the CCE graduate group's average DPR was 99% and its average problem behavior T score was 56, which is within the normal range. The CCE self-monitoring group's average DPR was 95% and its average T score was 61, which is at the lowest end of the borderline clinical range T score. The CCE basic group's average DPR was 87% and its T score was 62, which is in the borderline clinical range. The CCE basic-plus group's average DPR was 78% and its T score was 67, which is in the borderline to clinical range. Finally, the CCE intensive intervention group's average DPR

was 75% and its average problem behavior T score was 69, which is in the clinical range. Given the moderate correlation between the students' average DPR percentage and teachers' assessment of their problem behavior and the behavioral specialists' student assignment to intervention level based on their average DPR percentage, which was shown to significantly discriminate between level of severity on a standardized measure of problem behavior, the current study used DPR average as a proximal variable of mediation (Hoyle & Kenny, 1999) to assess the therapeutic mechanism of CCE.

The second purpose of the study was to investigate the moderating variables of therapeutic alliance regarding the students' attitude about their teachers, the teachers' relationship with the students, and the coaches' relationship with the students. *Moderation* means that the effect of a variable on an outcome is altered (i.e., moderated) by a covariate. Moderation is usually assessed by determining if there is an interaction between the initial variable and the covariate (Kenny, 2015). In the CCE program, the coaches were trained on the C&C model (Sinclair et al., 1998), which emphasized the interpersonal relationship of the coach with the student (Anderson et al., 2004). Even though Tsai and Cheney (2012) found that the coach–student relationship did not predict the students' behavior outcomes but that the teacher–student relationship did, this study aimed to confirm or disconfirm this result using a design and statistical analysis that would test them separately. What has not been tested in the Tier 2 behavioral intervention research, to our knowledge, is the interaction between student–teacher and teacher–student relationships on therapeutic outcomes, which seems like a logical extension given the notion of therapeutic alliance (i.e., therapeutic alliance is dictated by the interaction of both participants in the relationship).

In conclusion, our hypotheses were as follows: (a) CCE students' DPR average across the academic year would mediate their reduction in total problem behavior (Cheney et al., 2009; Stage et al., 2012). (b) Measures of the coach–student relationship would not moderate the level of change in total problem behavior over the year (Anderson et al., 2004; Tsai & Cheney, 2012). (c) The measure of teacher–student relationship would moderate the level of reduction in total problem behavior during the same period (Tsai & Cheney, 2012). (d) The measure of student–teacher relationship would moderate the level of reduction in total problem behavior over the academic year (Kazdin & Durbin, 2012). (e) The interaction between the measures of the student–teacher and teacher–student relationships would provide the most robust moderation of the teachers' rating of students' change in total problem behavior over the academic year.

METHOD

The method section includes a description of participants. It also includes a description of each of the measures used, the study procedure, and the analytic strategy used to test for the mediation and moderation effects.

Participants

The sample for the current study was 95 elementary school students, which included 55 students who had served as control participants but were now receiving the CCE intervention (who had been enrolled as part of a federally funded grant, which was in its last year when this study was conducted) and 40 students who had already been enrolled in the CCE intervention the previous 2 years. The students' average age at the start of the intervention for the current study was 9.2 years (minimum = 8 years, maximum = 11 years). Sixty-five percent of the students were male. Of the total sample, 7% were Asian or Pacific Islander, 8% were African American, 10% were Hispanic, and 54% were White. Thirty-three already had special education eligibility (10 with learning disabilities; 8 with attention deficit hyperactivity disorder; 7 with other health impairment; 3 with speech and language impairment; 2 with emotional disturbance; and 1 each with autism, hearing impairment, and mental retardation). All were being served in the general education setting. Forty-three percent were eligible for free or reduced-

price lunch. Independent-samples t tests for interval variables and χ^2 tests for frequency variables were conducted on the two samples because of the potential differences in the demographic and outcome variables within the study. None of these tests yielded a significant difference ($p > .05$). There were 15 schools hosting the intervention, each with its own coach, with 6.33 students per school on average ($SD = 3.45$, $Mdn = 5$, minimum = 1, maximum = 12). There were 73 teachers; 5 had 3 students, 12 had 2 students, and the rest had only 1 student ($M = 1.3$, $Mdn = 1$, $SD = 0.59$).

Measures

Systematic Screening for Behavior Disorders

Systematic Screening for Behavior Disorders (SSBD; Walker & Severson, 1992) was used to screen all students prior to entry into the study. The teacher rated the top three nominated students on each list for externalizing and internalizing problem behavior on three indexes: Critical Events Index, Adaptive Behavior Index, and Maladaptive Behavior Index. The Critical Events Index is composed of 33 items (e.g., steals, sets fires) that the teacher reports as occurring or not occurring. The SSBD Adaptive Behavior Index consists of 12 items that assess peer-related and teacher-related adaptive behavior on a 5-point scale. The Maladaptive Behavior Index is made up of 11 items, which the teacher rates on a 5-point scale, assessing peer- and teacher-related problem behavior. The behavioral observations in Stage 3 were not used in this study as other research has shown that this is not necessary (McKinney, Montague, & Hocutt, 1998).

The SSBD classification has a reported 81% accuracy for students with externalizing problem behaviors, 68% for students with internalizing problem behaviors, and 95% for students correctly not ranked by their teacher (Walker et al., 1990). Test–retest reliability over a 1-month period for the Critical Events Index, Adaptive Behavior Rating scale, and Maladaptive Behavior Rating scale was .81, .90, and .87, respectively (Walker et al., 1990). From this study's sample, a repeated-measures multivariate analysis of variance was conducted with the SSBD designation of the students as internalizing disordered or externalizing disordered as the independent variable and the students' first assessment on the Teacher's Report Form (TRF) internalizing problem behavior scale and TRF externalizing problem behavior scale as repeated dependent measures. The purpose of this analysis was to show that the SSBD classification category matched the elevation of the appropriate TRF scale. Results showed a significant interaction between SSBD student designation and elevation on the repeated measures of internalizing and externalizing problem behavior. The SSBD internalizing disordered students' TRF internalizing problem behavior T score was 62.5, and their TRF externalizing problem behavior T score was 57.6. The SSBD externalizing disordered students' TRF internalizing problem behavior T score was 58.7, and their TRF externalizing problem behavior T score was 66.3 ($\eta^2 = .23$).

Child Behavior Checklist Teacher's Report Form

The Child Behavior Checklist Teacher's Report Form (CBCL-TRF; Achenbach & Rescorla, 2001) was normed for students between the ages of 5 and 18 years. The Total Problem Behavior scale was developed with 118 items rated using a 3-point rating scale: *not true*, *somewhat or sometimes true*, and *very true or often true*. Using Cronbach's α with this sample, the internal consistency of the Total Problem Behavior scale was .84. Again with this study's sample, students' TRF Total Problem Behavior scores were correlated with the Problem Behavior scale of the Social Skills Rating System (Gresham & Elliott, 1990) at $r = .79$ and with the Interpersonal subscale of the Behavioral and Emotional Rating Scale (BERS; Epstein, 2002) at $r = -.62$. The BERS is a strength-based assessment, so the negative correlation with problem behavior shows the anticipated inverse relationship. These correlations suggested concurrent validity with problem be-

havior and strength-based interpersonal skills.

Daily Progress Report

The DPR (Crone et al., 2004) included three to five behavioral expectations that were evaluated by the teacher three times a day. The DPR rating scale was developed using a 4-point scale that ranged from *low/try again* to *excellent*. Construct validity was tested with factor-analyzed change scores on standardized behavior rating scales with students' average DPR scores at the end of the year (Stage et al., 2012). The mean factor loading externalizing problem behavior change score was .850. The mean factor loading internalizing problem behavior change score was .704. The mean factor loading social skills change score was .649, and finally, the mean factor loading change score for academic skills was .764. Only one of the factor-analyzed change score domains predicted students' average DPR percentage at the end of the school year, externalizing problem behavior ($r = .32$, $p < .05$; Stage et al., 2012), suggesting a moderate degree of construct validity between average DPR percentage and externalizing problem behavior. In addition, Stage et al. (2012) found a significant difference in students' average DPR percentage and their externalizing problem behavior T scores in relation to the CCE treatment intervention levels. The CCE graduate group's average DPR was 99%, and their average problem behavior T score was 56. The CCE self-monitoring group's average DPR was 95%, and their average T score was 61. The CCE basic group's average DPR was 87%, and their average T score was 62. The CCE basic-plus group's average DPR was 78%, and their average T score 67. Finally, the CCE intensive intervention group's average DPR was 75%, and their average problem behavior T score was 69. These findings further support the construct validity of the DPR with the match of the level of average DPR percentage and the level of problem behavior on a standardized behavior rating scale.

Behavior Assessment System for Children, Second Edition

The Behavior Assessment System for Children, Second Edition (BASC-2; Reynolds & Kamphaus, 2004) was developed to evaluate the behavior of children and young adults between the ages of 2 and 25 years. The BASC-2 has a 4-point scale (i.e., *never*, *sometimes*, *often*, and *almost always*) and was designed to assess a variety of emotional and behavior disorders.

For the purposes of the current study, an adapted version of the Attitude to Teachers scale was used to assess the students' attitudes about their teacher. Examples of items include *My teacher understands me* and *My teacher cares about me*. The internal consistency of the Attitude to Teachers scale was reported to be .72. The internal consistency of the nine-item scale used in this study was .70 (R. Altmann, personal communication, December 2, 2013). The Attitude to Teachers scale correlated with the School Problems scale at $r = .84$.

Coach–Student and Teacher–Student Relationship Scales

The Coach–Student Relationship and Teacher–Student Relationship scales were adapted from the Teacher and Student Monitor Form (Anderson et al., 2004). Both the Coach–Student Relationship and Teacher–Student Relationship scales (Cheney et al., 2009) are composed of 15 items used to assess the coach's and teacher's relationship with the student. The coaches and teachers rated the items on a 5-point Likert scale (i.e., *definitely does not apply*, *not really*, *neutral*, *applies sometimes*, and *definitely applies*). Some examples of the questions the teachers rated were *The child and I always seem to be struggling with each other* and *This child values his/her relationship with me*. Cronbach's α for the Coach–Student Relationship and Teacher–Student Relationship scales was .81 and .83, respectively.

Teacher Adherence and Quality Form

Regarding the Teacher Adherence and Quality Form (Cheney et al., 2009), there are

six adherence items that were used to determine if the teachers followed treatment integrity for providing student feedback. Examples included *The teacher linked student behavior to posted behavior expectations* and *The teacher prompted the student to improve when needed.* There are four quality statements that included *The teacher uses a supportive tone of voice* and *The teacher reminded students of their strengths*. After observing teacher feedback, research staff rated the adherence statements as either occurring or not, and the quality statements were rated on a 5-point Likert scale, ranging from *did not occur* to *all the time*. The Kuder–Richardson coefficient for the adherence items was .63, and Cronbach's α for the quality items was .84.

Procedures

All students started at the CCE basic level at the beginning of the school year. At this level, the coach checked in with the student at the beginning of the day and checked out with the student at the end of the day. The check-in morning routine included giving reminders to the student about daily expectations, checking to see if the student's parent or parents signed the DPR from the previous day, and redirecting inappropriate behavior. The checkout routine prior to school dismissal included giving verbal feedback for appropriate and/or inappropriate behavior described on the DPR.

If the student was not successful (i.e., the student earned $<$ 75% of the possible points on 8 of 10 days) after 8 weeks of receiving the basic-level intervention, then he or she received the basic-plus intervention. Basic plus included social skills training (Knoff, 2001) for behaviors noted by the student's DPR performance and a lowered daily criterion (70%) until the student could meet that goal successfully for 5 consecutive days. If the student was not successful at the basic-plus level after 12 weeks, he or she was eligible to receive the intensive intervention, which included a functional behavior assessment (Stage et al., 2006) accompanied by a function-based intervention.

If the student was successful in the basic intervention (i.e., the student earned 75% or more of the possible points on at least 80% of days) for 8 weeks, then the student entered the self-monitoring phase. During the self-monitoring phase, the student rated his or her own behavior on the DPR and then compared the ratings to the teacher's ratings. Once the student and teacher reached partial agreement (i.e., within one point of each behavioral expectation) for 10 of 15 consecutive days, the student rated his or her own behavior on the DPR. After being successful in the self-monitoring phase for 4 weeks, the student graduated. At the end of the academic year, 87% of the students graduated, 9% were in the self-monitoring phase, 2% were receiving the basic intervention (i.e., restarted basic after moving from basic plus), and 1% were receiving the intensive intervention.

The measures were administered by project staff (i.e., graduate students in school psychology or special education). As noted above, the SSBD was administered 2 years prior to the current study. The CBCL-TRF (Achenbach & Rescorla, 2001) was administered in the spring of the previous academic year and at the conclusion of the current study in the spring. The DPR (Crone et al., 2004) was used in the check-in and checkout procedures with the teacher and the coach each day. The teacher used it to evaluate the student's behavior, as well as to provide feedback to the student. The coach reviewed it with the student each day for checkout. The student took it home each day for a parent to sign. The coach provided a new DPR to the student at check-in each day. Each week, the coach entered data on the CCE website and used the DPR as a progress-monitoring tool as described in the previous paragraph to determine what intervention level the student should receive. The teacher adherence and quality measures were collected randomly throughout the spring semester of the study. The relationship measures were collected the last month of the academic year.

Analytic Strategy

Prior to testing for the mediation and moderation effects, a pre–post paired *t* test was conducted with the 95 CCE student participants to test for the change in problem behavior over an academic year, from the prior spring to the current spring. The results showed that at Time 1, the average problem behavior score was 62.3 ($SD = 8.7$), and at Time 2, the average was 58.9 ($SD = 8.5$), which was statistically significant ($t = -3.39$, $p < .001$), indicating that on average the CCE students' total problem behavior had decreased. Therefore, the proposed mediating variable, average DPR percentage, was further assessed, and the proposed moderating variables, the coach–student, student–teacher, and teacher–student relationship variables, were further examined.

The proposed mediating effect of DPR on change in students' total problem behavior over the academic year and the potential moderating effects of coach–student, teacher–student, and student–teacher relationships on change in students' problem behavior over the academic year were analyzed using Cohen and Cohen's (1983) traditional hierarchical regression method. There were three separate steps in the analytic plan prior to testing for mediation and moderation: (a) assess the measures for potential violations of normality to determine whether measures needed to be transformed, (b) conduct bivariate correlations to determine whether mediating and moderating variables showed the hypothesized relationships, and (c) assess the intraclass correlation (ICC) between total problem behavior within the nested effect of schools to determine the level of explained variance by school assignment.

Regarding the assessment of normality in the distribution of scores, Farrington and Loeber (2000) reported that psychiatric and delinquent populations often yield skewed distributions on measured variables of interest and this would violate the normality assumption associated with parametric analyses (Tabachnick & Fidell, 2007). Farrington and Loeber therefore recommend dichotomizing the variables of interest (e.g., scores in the highest quartile of the distribution would be recoded as 1 and the remainder assigned 0), which allows for the use of classic multiple regression methods to test for mediation and moderation effects (Baron & Kenny, 1986).

The second step involved determining the pattern of relations among the variables (Baron & Kenny, 1986). Specifically, the mediating and moderating variables should be significantly associated with the total problem behavior measures to a significant degree in order to confirm an association exists prior to testing multiple relationships with hierarchical multiple regression.

The third step involved the assessment of the nested effect of schools on students' total problem behavior. Data in educational settings are often arranged in ways in which there are existing statistical dependencies based on the nesting of units of analysis within structural units inherent within the educational setting (O'Dwyer & Parker, 2014). Within the current study structure, each student was placed within a school and each school had its own unique coach, indicating a nested student-with-school structure, requiring further analysis of the variance association with this structural effect. We used a multilevel modeling technique to determine the ICC of the school with total problem behavior (Kreft & de Leeuw, 2002).

Finally, hierarchical multiple regression was used to test for mediation and moderation (Baron & Kenny, 1986) using Cohen and Cohen's (1983) recommendations. In this study, total problem behavior at Time 2 was predicted by the first block of predictor variables, which included the main effects of total problem behavior at Time 1 and the mediating or moderating variable. The second block entered included the interaction of Time 1 total problem behavior and the mediating or moderating variable. Significant statistical results for the second block would indicate the mediation effect or moderation effect occurred. When the mediation variable, average DPR percentage, is tested, a change from a statistically significant main effect of the Time 1 variable to becoming not significant in the

second block would indicate complete mediation. However, we also tested partial mediation, which would be indicated with the mediating variable significantly explaining some of the variance between total problem behavior at Time 1 and that at Time 2 but not all of the variance (Baron & Kenny, 1986; Kenny, 2015).

The model for the statistical tests was similar for the first block in the regression analyses, which included the main effects of problem behavior at Time 1 and the relationship variable. The second block used the same main effects plus the interaction term of relationship and problem behavior at Time 1 after the variables were centered (Aiken & West, 1991). Centering the continuous variables prior to creating the interaction term reduces the occurrence of multicollinearity as the centering deflects the scores by the average score in the initial continuous variable distribution, creating a different metric for the distribution of interaction scores without distorting the distribution of scores itself. In addition, we tested the three-way interaction of both moderating variables with total problem behavior at Time 1. In order to test this interaction effect, a variation of Dawson and Richter's (2006) test of slope differences in three-way interactions was used to statistically test the group differences in the change in total problem behavior from Time 1 to Time 2.

RESULTS

The results section includes preliminary descriptive statistical results and bivariate correlations. After reporting preliminary results, the moderation models with adequate statistical support were tested.

Descriptive Statistics

Table 1 shows the descriptive statistics of the dependent variables (i.e., total problem behavior at Time 1 and total problem behavior at Time 2), the potential mediating variable (i.e., average percentage of daily behavior report points earned across the year, DPR-Avg), and the potential moderating variables (i.e., teacher–student relationship, student–teacher relationship, and coach–student relationship), as well as a measure of the treatment adherence and quality of the teacher–student feedback about the students' performance on the DPR.

Table 1 shows the total mean and standard deviation for each outcome, as well as by the first, second, third, and fourth quartile in order to show the spread of scores in the distributions. The last column of Table 1 shows a *z*-score test of skewness for each measure. The first three measures, total problem behavior at Time 1, total problem behavior at Time 2, and teacher–student relationship, were relatively normally distributed. The last five measures were significantly negatively skewed, showing the tail of the distributions with lower scores had a larger spread of scores than would be acceptable for parametric statistical analysis.

On the coach–student relationship measure, the first-quartile average description corresponded to a response between *not sure* and *applies sometimes* for an item such as *I share a warm, affectionate relationship with this child*. The other average quartile responses were rated as *applies sometimes* and moved toward *definitely applies* in the third and fourth quartiles. This was interpreted as the coaches evaluating their relationship with the students as being uncertain in the skewed end of the distribution.

On the student–teacher relationship measure, the first-quartile average description corresponded to between *sometimes* and *often* on an item such as *My teacher cares about me*. The average was endorsed qualitatively as *often* for the second quartile, as between *often* and *always* for the third quartile, and as *always* for the fourth quartile, suggesting that the students in the first quartile evaluated their relationship with their teachers as less than consistently caring.

The students' scores on the DPR average percentage (DPR-Avg) across the academic year were also negatively skewed. For the first quartile, the average score was 78.6%, which corresponds to students at the basic-plus level or intensive intervention level of the CCE program (Stage et al., 2012). The second

Table 1. Descriptive Statistics by Quartile

Measure	Total, *M* (*SD*)	First Quartile		Second Quartile		Third Quartile		Fourth Quartile		*z* Score (Skewness)
		M (*SD*)	Min-Max	*M* (*SD*)	Min-Max	*M* (*SD*)	Min-Max	*M* (*SD*)	Min-Max	
PB-T1	62.6 (8.4)	51.9 (4.5)	40–57	60.0 (1.5)	58–62	64.7 (1.3)	63–66	72.5 (5.5)	67–84	0.92
PB-T2	58.9 (8.6)	47.7 (3.4)	41–52	56.3 (1.5)	53–58	61.8 (1.6)	59–64	69.7 (4.1)	65–79	0.23
TSR	3.7 (0.5)	3.0 (0.2)	2.7–3.3	3.5 (0.1)	3.4–3.7	3.9 (0.1)	3.7–4.0	4.5 (0.2)	4.1–4.9	0.71
CSR	4.1 (0.4)	3.5 (0.3)	3–3.8	4.0 (0.1)	3.9–4	4.3 (0.1)	4.1–4.4	4.6 (0.1)	4.5–4.8	–2.71**
STR	3.4 (0.5)	2.6 (0.5)	1–3.1	3.3 (0.1)	3.2–3.7	3.6 (0.1)	3.5–3.7	3.9 (0.09)	3.8–4	–6.68***
DPR-Avg	92.7 (7.6)	78.6 (3.9)	68–84	91.2 (1.7)	87–93	95.8 (1.1)	94–97	99.7 (0.8)	98–100	–3.9***
Teacher adherence[a]	89.0 (11.1)	71.7 (9.5)	54–81	87.3 (2.7)	83–97	92.1 (1.0)	90–94	99.0 (1.5)	95–100	–9.32***
Teacher quality[a]	85.4 (13.3)	63.4 (9.3)	53–81	86.0 (2.2)	83–88	90.1 (1.1)	89–92	97.4 (2.5)	94–100	–3.37**

Note. $N = 95$. Total problem behavior is taken from the Child Behavior Checklist Teacher's Report Form (Achenbach & Rescorla, 2001), and the scores are reported as T scores. The Teacher–Student Relationship (TSR) and Coach–Student Relationship (CSR) scales are reported as the average on a 5-point Likert scale, and the Student–Teacher Relationship (STR) scale is reported as the average on a 4-point Likert scale. Daily performance report average (DPR-Avg) is the average percentage of daily performance report (DPR) points earned across the school year. Teacher adherence and quality are reported as the total percentage of the possible points scored during one random observation of the teacher checking out the student using the student's DPR. Max = maximum; Min = minimum; PB-T1 = total problem behavior at Time 1; PB-T2 = total problem behavior at Time 2.

[a] $n = 41$.

**$p < .001$. ***$p < .0001$.

Table 2. Bivariate Correlations

	PB-T2	PB-T1	TSR	CSR-DI	STR-DI	DPR-DI
PB-T2	1.0					
PB-T1	.51***	1.0				
TSR	–.41***	–.35**	1.0			
CSR-DI	.02	.01	–.23*	1.0		
STR-DI	.35***	.11	–.28**	.10	1.0	
DPR-DI	.16	.17	–.11	–.03	.00	1.0

Note. $N = 95$. Correlations are shown among total problem behavior at Time 2 (PB-T2), total problem behavior at Time 1 (PB-T1), teacher–student relationship (TSR), and the recoded dichotomous variables: coach–student relationship (CSR-DI), student–teacher relationship (STR-DI), and daily performance report average (DPR-DI).
*$p < .05$. **$p < .01$. ***$p < .001$.

quartile of the DPR-Avg scores was 91.2%, which corresponds to the self-monitoring level of the CCE intervention (Stage et al., 2012). The students' average scores in the third and fourth quartiles were 95.8% and 99.7%, respectively, which correspond to the graduate level of the CCE intervention (Stage et al., 2012). Therefore, the students in the skewed-tail portion of the distribution received DPR-Avg scores suggesting they were relatively unsuccessful and would be expected to receive high scores on the standardized problem behavior measure as rated by their teachers.

Finally, the measures of teacher adherence and quality of feedback also showed negatively skewed distributions. An exemplar item for adherence was *linked student behavior to posted expectations.* The first-quartile average was 71.7% for adherence. An example of quality would be *supportive tone of voice.* The first-quartile average was 63.7% for quality. Both first-quartile levels of adherence and quality would be described as unacceptable treatment integrity.

Bivariate Correlations

Table 2 shows the bivariate correlations. Within the correlation matrix, three of the variables were transformed to dichotomous variables, with the first quartile of the distribution being coded as 1 and the remaining scores as 0. The transformed variables were the coach–student relationship dichotomous variable, which showed the only significant correlation with teacher–student relationship. The student–teacher relationship dichotomous variable was positively correlated with total problem behavior at Time 2 and negatively correlated with teacher–student relationship. Finally, the DPR average dichotomous variable (DPR-DI) was not significantly associated with any of the variables.

Thus, DPR-DI, which was used as a proxy measure of mediation, was dropped from further analysis because of the insignificant association with prior problem behavior and the final measure of problem behavior. However, the teacher–student and student–teacher relationship variables were retained as moderating variables for further hierarchical multiple regression analyses. Specifically, teacher–student relationship was associated with both the Time 1 and Time 2 problem behavior measures, and although the student–teacher relationship dichotomous variable was only associated with problem behavior at Time 2 and not Time 1, it was associated with the teacher–student relationship, so it was retained for further analysis as a potential moderating variable.

To further assess for a potential third variable effect on the relation between DPR performance and teacher assessment of problem behavior, we evaluated the association between teachers' quality of feedback and students' evaluations of their relationship with

their teacher. The association between the student–teacher relationship and DPR performance was evaluated with the teachers' adherence and quality of feedback to the students. First, a ϕ correlation coefficient of .86 ($p < .0001$) established a high degree of association between the teachers' adherence and quality for those who scored in the lowest quartile of the DPR. Then, a point biserial correlation of –.26 ($p = .051$) showed that low student–teacher relationship and teacher quality of feedback were not significantly correlated. Finally, Cramér's V was used to test the relationship of teacher quality of DPR feedback measured in quartiles by student assignment to intervention level (i.e., graduation, self-monitoring, basic, or intensive). The results showed no statistically significant association (Cramér's $V = .325$, $p = .165$). Together, these tests of student–teacher relationship and teacher quality of feedback using the DPR, as well as assignment to CCE intervention level, did not show a consistent pattern relating them together.

Another potential third variable effect might have been that the students' negative perception of their relationship with their teacher was due to their continued low performance on their DPR and not directly due to their perception of their teacher. To investigate this relationship, we correlated low DPR performance with students' low relationship with teachers and found no statistically significant relationship ($\phi = .008$, $p = .94$), so this did not appear to confound the results.

ICCs Between Total Problem Behavior and Schools

Because of the nested structure of the data, the ICC of total problem behavior at Time 2 within the 15 different schools was analyzed with hierarchical linear modeling (Raudenbush, Bryk, Cheong, & Congdon, 2004), using the methods described by Kreft and de Leeuw (2002). The ICC was not statistically significant (ICC = .039, $p > .05$). However, it was further assessed using Barcikowski's (1981) calculation for the increase in the probability of making a Type I error. Accordingly, it was estimated to be at $\alpha = .06$. Given that this study's α was set at the traditional level of $p \leq .05$, we proceeded with the one-level hierarchical multiple regression given that the two-level modeling would use an additional 15 degrees of freedom, which would decrease the statistical power to detect a possible small moderating effect.

Hierarchical Multiple Regression With Moderating Variables

Table 3 shows the results of three sets of hierarchical regression analyses that test the student–teacher relationship and the teacher–student relationship, as well as their interaction, as moderating variables of the relationship in the change in problem behavior over an academic year. The results of the tests of the moderating influence of the student–teacher relationship shown in the left-hand columns of Table 3 indicate that it did not significantly moderate the relationship in the change in problem behavior over the year. Likewise, the middle columns show that the teacher–student relationship did not moderate the change in problem behavior over the year. However, the right-hand columns show that the interaction between the student–teacher and teacher–student relationships did moderate the change in problem behavior over the academic year.

In order to determine the relationship differences in the interaction term, the student–teacher relationship continuous variable was divided into two groups: The low relationship group of students was defined as the group from the first quartile, and the high group was composed of the rest of the scores (i.e., *My teacher cares about me,* scoring on average as *often* to *always*).

The teacher–student relationship scores were also divided into two groups: The low relationship group was composed of the first quartile with average scores anchored at *not sure* on the exemplar item, *I share a warm, affectionate relationship with this child.* The high group was composed of the remaining scores, which ranged from halfway to *applies sometimes* to *definitely applies*. Using the Dawson and Richter (2006) method, four groups were constructed: high teacher–student and high student–

Table 3. Tests of Moderating Influence

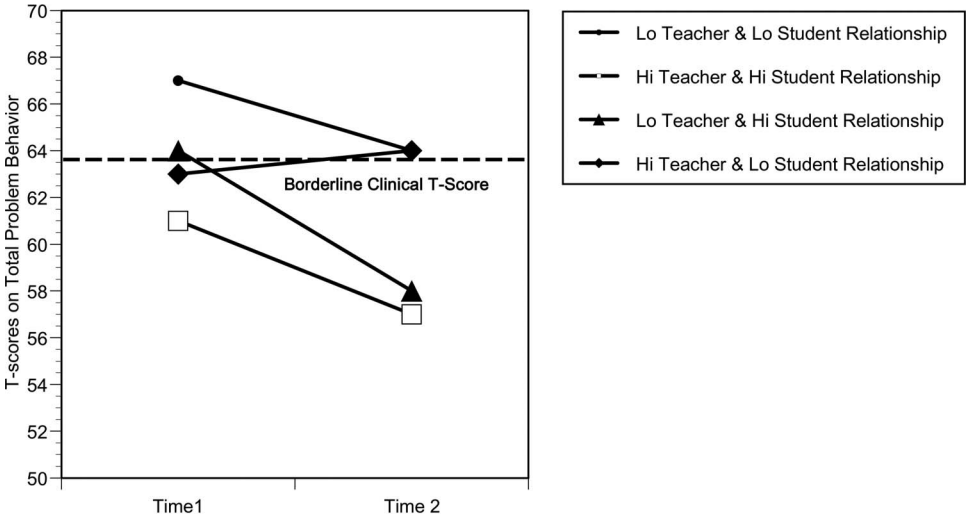
	Student–Teacher Relationship			Teacher–Student Relationship			Teacher–Student Relationship × Student–Teacher Relationship		
	Variable	β	R^2	Variable	β	R^2	Variable	β	R^2
Block 1	PB-T1	.479***	.35	PB-T1	.456***	.34	PB-T1	.446***	.38
	STR-DI	.296***		TSR	–.257**		TSR	–.195***	
							STR-DI	.237**	
Block 2	PB-T1	.488***	.00	PB-T1	.470***	.00	PB-T1	.493***	.04
	STR-DI	.300**		TSR	–.243**		TSR	–.216*	
	STR-DI × PB-T1	–.021		TSR × PB-T1	.096		STR-DI	.299**	
							TSR × STR-DI × PB-T1	.190*	

Note. $N = 95$. The table presents tests of the moderating influence of the student–teacher relationship (STR-DI) and the teacher–student relationship (TSR), as well as their interaction (TSR × STR), with problem behavior at Time 1 (PB-T1) on problem behavior at time 2. R^2 is the amount of variance attributed to the block of variables. The STR-DI variable was a dichotomous variable using the lowest quartile, and TSR was centered prior to entering it in the regression analyses (Aiken & West, 1991).
*$p < .05$. **$p < .01$. ***$p < .001$.

teacher relationships, high teacher–student and low student–teacher relationships, low teacher–student and high student–teacher relationships, and finally, both groups evaluating their relationship as low (see Figure 1).

A depiction of these groups and their respective scores from Time 1 to Time 2 on the total problem behavior measure is shown in Figure 1. The test of slope differences showed that the group with low teacher–student and high

Figure 1. T Scores for Total Problem Behavior



Note. The T scores from Time 1 to Time 2 on the total problem behavior measure are shown. Using the Dawson and Richter (2006) method, four groups were constructed: high teacher–student and high student–teacher relationships (Hi Teacher & Hi Student), high teacher–student and low student–teacher relationships (i.e., Hi Teacher & Lo Student), low teacher–student and high student–teacher relationships (i.e., Lo Teacher & Hi Student), and finally, both groups evaluating their relationship as low (i.e., Lo Teacher & Lo Student).

student–teacher relationships showed a significant decrease from Time 1 to Time 2 ($t = 2.448$, $p < .05$) and that the group with high teacher–student and high student–teacher relationships also showed a significant decrease from Time 1 to Time 2 ($t = 3.376$, $p < .01$).

DISCUSSION

The most important finding of this study was that student–teacher relationships moderated the treatment outcomes. Specifically, Figure 1 shows the interaction by the low teacher and high student relationship pair with the high teacher and low student relationship pair in which the low teacher and high student relationship pair showed a significant reduction in problem behavior. Similarly, there was a reduction for the high teacher and high student relationship group, indicating that the student's endorsement of items such as *My teacher cares about me* moderated treatment outcomes with a reduction in problem behavior regardless of the teacher's rating of the relationship.

Although the current study did not explicitly test the functional relationship of all of the students' problem behaviors with their maintaining consequences, the results could be construed similarly to the study of McIntosh et al. (2009) in that students reinforced by teacher attention would probably be more likely to endorse items such as these. In addition, within the clinical child research literature, a positive child–therapist alliance, which is measured similarly, showed better therapeutic outcomes (Kazdin & Durbin, 2012; Shirk et al., 2011). The contrast of this result was that students who suggested that they had relationships we typified as inconsistent with their teachers remained above the borderline clinical level in total problem behavior. This suggests interventions such as CCE or CICO would not be effective for students who do not view their relationship with their teacher as particularly caring or socially rewarding (McIntosh et al., 2009).

The anticipated mediating effect of DPR yearly average on the reduction of total problem behavior did not occur. Recall that the DPR was conceptualized as the therapeutic mechanism in which the teacher gave explicit behavior expectation feedback and was also the progress-monitoring tool that identified when the student had graduated from the CCE intervention or when he or she needed more intensive intervention. In a treatment utility study of DPRs, Stage et al. (2012) found coaches' use of the DPR and assignment to the different CCE intervention levels corresponded to the T scores of externalizing problem behavior (i.e., graduate = 58, self-monitoring = 61, basic = 62, basic plus = 67, and intensive = 69). The current study showed a similar pattern of T scores for CCE graduates (87% of the total sample) and students in the self-monitoring phase (10%), although the basic-level and intensive intervention-level students showed elevations similar to graduates (i.e., graduate = 58, self-monitoring = 63, basic = 60, and intensive = 58), indicating that the differentiation of the students' problem behavior by their DPR performance did not accurately reflect their teacher's evaluation of their total problem behavior or the use of the DPR in the treatment manual (Cheney et al., 2004).

To further assess for a potential third variable effect on the relation between DPR performance and teacher assessment of problem behavior, we evaluated the association between teachers' quality of feedback with students' evaluations of their relationship with their teacher and the students' assignments to CCE intervention levels (see Kratochwill et al., 2012, for an explanation of this type of effect). Together, the results of student–teacher relationship and teacher quality of feedback using the DPR, as well as assignment to CCE intervention level, did not show a consistent pattern relating them together. In addition, we found that students whose average DPR percentage was in the lowest quartile were not significantly associated with low perceptions of their relationship with their teacher.

In conclusion, research about the therapeutic mechanisms of behavioral feedback interventions such as C&C and CCE show mixed associations between adults' (i.e., teachers' and coaches') relationships and students'

reduction in problem behavior (Anderson et al., 2004; Tsai & Cheney, 2012). The current study provides new insight by identifying a unique moderating effect of the interaction between students' and teachers' relationships, where students' positive perception of their teacher relationship resulted in a reduction in total problem behaviors. It is possible that this effect is best explained by operant behavioral principles (e.g., McIntosh et al., 2009), where students' view of their teachers is positively reinforcing.

Limitations and Future Directions

There are several limitations to this study. The sample was a combination of a previous treatment group and wait-list control group, so the group receiving prior intervention might have responded differently than the wait-list group, even though statistical tests found no significant differences between them at the start of the study. Another limitation of this study was that the relationship between CCE intervention level assignment and total problem behavior did not appear to be consistent with the manualized version (cf. Stage et al., 2012). It may be that external oversight is required to have the school staff follow the multiple treatment level decisions found in the CCE manualized treatment. Kazdin and Nock (2003) noted that establishing mediation effects in treatments requires specification of the mechanisms in relation to the manualized treatments. The results of this effectiveness study did not adhere to the manualized version of the CCE and, as such, might suggest that the average DPR percentage was a poor candidate as a mediating variable. Finally, even though the interpersonal interaction between the student and teacher moderated the overall change in problem behavior over an academic year, the proportion of variance was small, accounting for an additional 4% of the variance in the outcome measure beyond the main effects that accounted for 38% of the variance in total problem behavior. In addition, there was a slightly elevated level of making a Type I error as described in the section in which the ICC was tested for the nested effect of schools. Moreover, the three-way interaction of students by perceived relationship with their teacher and vice versa showed that the majority of students perceived they had a good relationship with their teacher and vice versa; thus, the sample size of students and teachers who perceived they had a limited interpersonal relationship was small and would suggest replication is needed before it is considered a generalizable effect.

Because the results of our study showed that students' perception of their relationship with their teacher significantly contributed to their reduction in total problem behavior while in the CCE intervention, future directions would include the use of functional behavior assessment after a shorter period for the students who were not making progress to determine the maintaining function of their problem behavior. Students who are not motivated by teacher attention or do not perceive that they have a caring relationship with their teacher are unlikely to benefit. Together, this study and that of McIntosh et al. (2009) show that one size does not fit all when it comes to using a Tier 2 behavioral intervention reliant on teacher social reinforcement.

REFERENCES

Achenbach, T. M., & Rescorla, L. A. (2001). *Manual for the ASEBA school-age forms & profiles.* Burlington, VT: University of Vermont, Research Center for Children, Youth, & Families.

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions.* Newbury Park, CA: Sage.

Anderson, A. R., Christenson, S. L., Sinclair, M. F., & Lehr, C. A. (2004). Check and connect: The importance of relationships for promoting engagement with school. *Journal of School Psychology, 42*, 95–113. doi:10.1016/j.jsp.2004.01.002

Barcikowski, R. S. (1981). Statistical power with group mean as the unit of analysis. *Journal of Educational Statistics, 6*, 267–285. doi:10.2307/1164877

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*(6), 1173–1182. doi:10.1037/0022-3514.51.6.1173

Braswell, L., & Bloomquist, M. L. (1991). *Cognitive behavioral therapy with ADHD children: Child, family, and school interventions.* New York, NY: Guilford Press.

Cheney, D., Flower, A., Templeton, T., Waugh, M., Jackson, H., & Stage, S. A. (2004). *The behavior specialist training manual for the Check, Connect & Expect*

treatment program. Unpublished treatment manual, University of Washington, Seattle, WA.

Cheney, D., Stage, S., Hawken, L., Lynass, L., Mielenz, C., & Waugh, M. (2009). A 2-year outcome study of the check, connect, and expect intervention for students at risk of severe behavior problems. *Journal of Emotional and Behavioral Disorders, 17*, 226–243. doi:10.1177/1063426609339186

Cohen, J., & Cohen, P. (1983). *Applied multiple regression/correlation analysis for the behavioral sciences.* Hillsdale, NJ: Erlbaum.

Comer, J. P. (1984). Home-school relationship as they affect the academic success of children. *Education and Urban Society, 16*, 323–337.

Crone, D. A., Horner, R. H., & Hawken, L. S. (2004). *Responding to problem behavior in the schools: The behavior education program.* New York, NY: Guilford.

Dawson, J. F., & Richter, A. W. (2006). Probing three-way interactions in moderated multiple regression: Development and application of the slope difference test. *Journal of Applied Psychology, 91*, 917–926. doi: 10.1037/0021-9010.91.4.917

Epstein, M. H. (2002). *Behavioral and emotional rating scale* (2nd ed.). Austin TX: PRO-ED.

Fairbanks, S., Sugai, G., Guardino, D., & Lathrop, M. (2007). Response to Intervention: Examining classroom behavior support in second grade. *Exceptional Children, 73*(3), 288–310. doi:10.1177/001440290707300302

Farrington, D. P., & Loeber, R. (2000). Some benefits of dichotomization in psychiatric and criminological research. *Criminal Behaviour and Mental Health, 10*, 100–122. doi:10.1002/cbm.349

Filter, K. J., McKenna, M. K., Benedict, E. A., Horner, R. H., Todd, A. W., & Watson, J. (2007). Check in/check out: A post-hoc evaluation of an efficient, secondary-level targeted intervention for reducing problem behaviors in school. *Education & Treatment of Children, 30*, 69–84. doi:10.1353/etc.2007.0000

Gresham, F. M., & Elliott, S. N. (1990). *Social skills rating system.* Circle Pines, MN: American Guidance Service.

Hoyle, R. H., & Kenny, D. A. (1999). Statistical power and tests of mediation. In R. H. Hoyle (Ed.), *Statistical strategies for small sample research.* Newbury Park, CA: Sage.

Kazdin, A. E., & Durbin, K. A. (2012). Predictors of child-therapist alliance in cognitive-behavioral treatment of children referred for oppositional and antisocial behavior. *Psychotherapy, 49*(2), 202–217. doi: 10.1037/a0027933

Kazdin, A. E., & Nock, M. K. (2003). Delineating mechanisms of change in child and adolescent therapy: Methodological issues and research recommendations, *Journal of Child Psychology and Psychiatry, 44*, 1116–1129. doi:10.1111/1469-7610.00195

Kenny, D. A. (2015, October 7). Mediation. Retrieved from http://davidakenny.net/cm/mediate.htm

Knoff, H. M. (2001). *The stop & think social skills program.* Longmont, CO: Sopris West.

Kraemer, H. C., Yesavage, J. A., Taylor, J. L., & Kupfer, D. (2000). How can we learn about developmental processes from cross-sectional studies, or can we? *American Journal of Psychiatry, 157*, 163–171. doi: 10.1176/appi.ajp.157.2.163

Kratochwill, T. R., Hoagwood, K. E., Kazak, A. E., Weisz, J. R., Hood, K., Vargas, L. A., & Banez, G. A. (2012). Practice-based evidence for children and adolescents: Advancing the research agenda in schools. *School Psychology Review, 41*, 215–235.

Kreft, I., & de Leeuw, J. (2002). *Introducing multilevel modeling.* Thousand Oaks: CA, Sage. doi:10.4135/9781849209366

McIntosh, K., Campbell, A. L., Carter, D. R., & Dickey, C. R. (2009). Differential effects of a tier two behavior intervention based on function of problem behavior. *Journal of Positive Behavior Intervention, 11*, 82–93. doi:10.1177/1098300708319127

McIntosh, K., Filter, K .J., Bennett, J. L., Ryan, C., & Sugai, G. (2010). Principles of sustainable prevention: Designing scale-up schoolwide positive behavior support to promote durable systems. *Psychology in the Schools, 47*, 5–21. doi:10.1002/pits.20448

McKinney, J., Montague, M., & Hocutt, A. (1998). A two year follow up study of children at-risk for developing SED: Initial results from a prevention project. In C. Liberton, K. Kutash, & R. Friedman (Eds.), *A system of care for children's mental health: Expanding the research base, tenth annual proceedings* (pp. 271–277). Tampa, FL: University of South Florida, Research and Training Center for Children's Mental Health.

O'Dwyer, L. M., & Parker, C. E. (2014). *A primer for analyzing nested data: Multilevel modeling in SPSS using an example from a REL study* (REL 2015–046). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Northeast & Islands. Retrieved from http://ies.ed.gov/ncee/edlabs

Positive Behavioral Interventions & Supports, Office of Special Education Programs. (n.d.). Tier 1 FAQs. Retrieved March 3, 2015, from http://www.pbis.org/school/primary-level/faqs

Positive Behavioral Interventions & Supports, Office of Special Education Programs. (n.d.). Tier 2 supports. Retrieved March 3, 2016, from http://www.pbis.org/research/secondary

Raudenbush, S., Bryk, A., Cheong, Y. F., & Congdon, R. (2004). *Hierarchical linear and nonlinear modeling.* Lincolnwood, IL: Scientific Software International, Inc.

Reynolds, C. R., & Kamphaus, R. W. (2004). *Behavior assessment system for children, second edition (BASC-2).* Circle Pines, MN: AGS.

Shirk, S. R., Karver, M. S., & Brown, R. (2011). The alliance in child and adolescent psychotherapy. *Psychotherapy, 48*, 17–24. doi:10.1037/a0022181

Sinclair, M. F., Christenson, S. L., Evelo, D. L., & Hurley, C. M. (1998). Dropout prevention for high-risk youth with disabilities: Efficacy of a sustained school engagement procedure. *Exceptional Children, 65*, 7–21.

Stage, S. A., Cheney, D., Lynass, L., Mielenz, C., & Flower, A. (2012). Three validity studies of the daily progress report in relationship to the check, connect, and expect intervention. *Journal of Positive Behavior Interventions, 14*(3), 181–191. doi:10.1177/1098300712438942

Stage, S. A., Jackson, H. G., Moscovitz, K., Erickson, M. J., Thurman, S. O., Jessee, W., & Olson, E. M. (2006). Using multimethod-multisource functional be-

havioral assessment for students with behavioral disabilities. *School Psychology Review, 35*, 451–471.

Sugai, G., & Horner, R. H. (2006). A promising approach for expanding and sustaining school-wide positive behavior support. *School Psychology Review, 35*, 245–259.

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). New York, NY: Allyn and Bacon.

Todd, A., Campbell, A., Meyer, G., & Horner, R. H. (2008). Evaluation of a targeted group intervention in elementary students: The check-in/check-out program. *Journal of Positive Behavior Interventions, 10*, 46–55. doi:10.1177/1098300707311369

Tsai, S., & Cheney, D. (2012). The impact of the adult-child relationship on school adjustment for children at risk of serious behavior problems. *Journal of Emotional and Behavioral Disorders, 20*(2), 105–114. doi: 10.1177/1063426611418974

Walker, H. M., Horner, R. H., Sugai, G., Bullis, M., Sprague, J. R., Bricker, D., & Kaufman, M. J. (1996). Integrated approaches to preventing antisocial behavior patterns among school-age children and youth. *Journal of Emotional and Behavioral Disorders, 4*, 194–209. doi:10.1177/106342669600400401

Walker, H. M., & Severson, H. H. (1992). *Systematic screening for behavior disorders (SSBD): User's guide and administration manual.* Longmont, CO: Sopris West.

Walker, H. M., Severson, H. H., Feil, E. G., Stiller, B., & Golly, A. (1998). First steps to success: Intervening at the point of school entry to prevent antisocial behavior patterns. *Psychology in the Schools, 35*, 259–269. doi:10.1002/(SICI)1520-6807(199807)35:3<259::AID-PITS6>3.0.CO;2-I

Walker, H. M., Severson, H. H., Todis, B. J., Block-Pedego, A. E., Williams, G. J., Haring, N. G., & Barckley, M. (1990). Systematic screening for behavior disorders (SSBD): Further validation, replication, and normative data. *RASE: Remedial & Special Education, 11*(2), 32–46. doi:10.1177/074193259001100206

Date Received: July 9, 2014
Date Accepted: May 30, 2016
Associate Editor: John Hitchcock ■

Scott A. Stage is the director of the School Psychology Program at North Carolina State University. His research interests include intervention and assessment for students with or at risk for emotional disabilities. His current research focuses on progress-monitoring tools for multitiered systems of support (MTSS).

Sally B. Galanti is a doctoral candidate in the School Psychology Program at North Carolina State University. She is currently completing an American Psychological Association–accredited internship with Virginia Beach City Public Schools. Her research interests include interventions for students with emotional and behavioral difficulties and program evaluation for behavioral interventions implemented within an MTSS framework.