

A Randomized Trial Examining the Effects of Conjoint  
Behavioral Consultation in Rural Schools: Student Outcomes and the Mediating Role of the  
Teacher-Parent Relationship

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## Abstract

The results of a large-scale randomized controlled trial of Conjoint Behavioral Consultation (CBC) on student outcomes and teacher-parent relationships in rural schools are presented. CBC is an indirect service delivery model that addresses concerns shared by teachers and parents about students. In the present study, the intervention was aimed at promoting positive school-related social-behavioral skills and strengthening teacher-parent relationships in rural schools. Participants were 267 students in grades K-3, their parents, and 152 teachers in 45 Midwest rural schools. Results revealed that, on average, improvement among students whose parents and teachers experienced CBC significantly outpaced that of control students in their teacher-reported school problems and observational measures of their inappropriate (off-task and motor activity) and appropriate (on-task and social interactions) classroom behavior. In addition, teacher responses indicated significantly different rates of improvement in their relationship with parents in favor of the CBC group. Finally, the teacher-parent relationship was found to partially mediate effects of CBC on several student outcomes. Unique contributions of this study, implications of findings for rural students, study limitations and suggestions for future research are discussed.

## A Randomized Trial Examining the Effects of Conjoint Behavioral Consultation in Rural Schools: Student Outcomes and the Mediating Role of the Teacher-Parent Relationship

Symptoms associated with behavioral and social-emotional challenges in our nation's youth are among the most commonly identified reasons for mental health referrals (Stephan & Connors, 2013). Left untreated, disorders associated with behavioral and social-emotional difficulties can profoundly influence academic achievement, social relationships, and outcomes later in life (Bradshaw, Schaeffer, Petras & Ialongo, 2010). The presence of social-emotional and behavioral challenges, especially excesses in negative behavioral patterns, are related to poor academic performance (Lane, Barton-Arwood, Nelson, & Wehby, 2008; Reid, Gonzalez, Nordness, Trout, & Epstein, 2004), and predictive of later school drop-out, failure to attend college, and socioeconomic disparities during adulthood (McLeod & Kaiser, 2004). Taken together, the pervasive negative effects of behavior problems on children's academic achievement appear to persist from early childhood through adolescence and beyond (Masten et al., 2005; Reinke, Herman, Petras, & Ialongo, 2008).

Conversely, behavioral and social-emotional competence in the early school years – reflected in sustained attention, self-regulatory skills, and prosocial responses – is predictive of academic success. These foundational skills enable young students to adaptively engage in academic environments and appropriately respond to teacher instruction; thus, they are widely considered precursors to achievement (DiPerna & Elliott, 2002; Kwon, Kim & Sheridan, 2012). Based on laboratory tasks (McClelland et al., 2007) and teacher reports (McClelland & Morrison, 2003), learning behaviors contribute to a range of children's academic skills, including literacy and math, at the beginning of kindergarten (McClelland & Morrison, 2003).

## **The Importance of Context**

Children's behavioral, social-emotional, and academic skills are strongly influenced by *context*. Academic and social-emotional skills are the cumulative product of experiences within multiple overlapping ecologies, including communities (Miller & Votruba-Drzal, 2013), schools (Connor et al., 2014; Ponitz, Rimm-Kaufman, Grimm, & Curby, 2009), homes (Baker, Mackler, Sonnenschein, & Serpell, 2001; Dearing, McCartney, Weiss, Kreider & Simpkins, 2004), and interactions among them (Barbarin, Downer, Odom, & Head, 2010; Crosnoe, Leventhal, Wirth, Pierce, & Pianta, 2010). Whereas the direct effects of school and home environments on learning and behavior are often recognized, less empirical attention has been afforded to the role of geographic and community contexts on student outcomes. However, community context clearly contributes to differential student experiences and social-behavioral outcomes. In a recent study of a large, nationally representative sample, Sheridan, Koziol, Clarke, Rispoli, and Coutts (2014) found that rural children experienced greater difficulties with externalizing behaviors than children in cities and towns. Findings such as these are increasingly urgent given that one-third of U.S. schools are located in rural communities and 20% of our nation's children – nearly 10 million – are educated in rural schools (Johnson, Showalter, Klein, & Lester, 2014).

By definition, rural communities are small and geographically isolated, have small population bases, and experience limited revenue, which limits availability of and access to specialized services and ongoing support (Fortney, Owen, & Clothier, 1999; Monk, 2007). Lack of anonymity and trust (Hartley, Korsen, Bird et al., 1998; Owens, Richerson, Murphy, Jagelewski, & Rossi, 2007) along with fear of disclosure and stigmatization (Susman, Crabtree, & Essink, 1995) have been identified as psychological barriers within rural communities, leading

to under-identification of problems and failure to seek help (Girio-Herrera, Owens, & Langberg, 2013).

Given that child and youth services suffer in low-density areas (Hodgkinson, 2003), rural communities often depend on schools to serve many functions beyond their primary mission of education (NEA, 2008). Rural schools have a below-average share of highly trained teachers to serve students with emotional and/or behavior disorders, and they struggle to provide specialized services (Monk, 2007). Although rural schools generally have small class sizes, this potential benefit is attenuated by teachers with fewer credentials and resources, lower salaries, and limited opportunities for professional development, all of which contribute to challenges in teacher recruitment and retention (Monk, 2007; Roscigno & Crowley, 2001). Most rural teachers indicate that supporting children's behavioral and mental health are part of their role but feel unprepared to meet the educational needs of students with behavioral problems (Roeser & Midgley, 1997). Perhaps due to the perception that students in rural communities are better protected from mental health problems than their peers in urban communities, services to address problems are often poorly developed, ineffective, or fragmented (Moore, 2001). Whereas some studies have found positive benefits of behavioral interventions based on family-school partnerships (e.g., daily report card intervention, biweekly consultation meetings, and behavioral parenting sessions; Owens, Murphy, Richerson, Girio, & Himawan, 2008) on disruptive student behavior (e.g., hyperactivity, impulsivity, and conduct disorder symptoms) in rural schools, there remains a need for rigorous intervention research that identifies evidence-based social-behavioral interventions for students through partnerships in the rural context.

### **Relationships and Partnerships between Families and Schools**

Positive, constructive relationships between teachers and parents represent a potential opportunity to augment support services for rural students and families, and are increasingly recognized as a unique context supporting learning and development. This concomitant focus on relationships between families and schools embedded within the broader community context (i.e., exosystem) as the foundation for healthy development is grounded in ecological-systems theory (Bronfenbrenner, 1979, 1992). Accordingly, children develop within both immediate (i.e., microsystems) and distal (i.e., exosystem) contexts, and development is optimal when effective relationships and continuities (i.e., mesosystems) are strengthened. Empirical evidence supports that teacher-parent relationships, defined as each person's perception of the affective quality of the home-school connection (Vickers & Minke, 1995), are critical to children's academic achievement and social-behavioral functioning. The quality of relationships between teachers and parents has been found to explain both the association between children's background characteristics (e.g., gender, race/ethnicity) and both their engagement in the classroom (Hughes & Kwok, 2007), and the benefits of parents' motivational beliefs (e.g., parental self-efficacy and role construction) on children's adaptive functioning and externalizing problems (Kim, Sheridan, Kwon, & Koziol, 2013). Importantly, addressing student problems without high quality teacher-parent relationships reduces the capacity to intervene in ways that fully promote children's social and behavioral competence (Garbacz, Sheridan, Koziol, Kwon, & Holmes, 2015).

The quality of the teacher-parent relationship appears to be particularly salient for interventions aimed at building partnerships between families and schools (Sheridan, Bovaird, Glover, Garbacz, Witte, & Kwon, 2012). Family-school partnerships extend beyond individual relationships to emphasize the bidirectional interactions between families and schools intended to enrich student outcomes through coordinated and consistent cross-system supports (Albright

& Weissberg, 2010; Downer & Myers, 2010; Lines, Miller, & Arthur-Stanley, 2010).

Converging theoretical accounts and empirical evidence strongly suggest that family-school partnerships are important for optimizing students' outcomes and may be particularly beneficial for rural students at risk of developing behavioral problems. Strategies to engage families and schools to work together in support of children's development and learning have been associated with positive academic (e.g., improvements in standardized test scores and homework completion) and behavioral (e.g., reductions in disruptive behaviors and fewer school-related disciplinary actions) outcomes (for review see Fan & Chen, 2001). Family-school partnership models have been found to augment students' social and adaptive skills at school (Sheridan et al., 2012) and home (Sheridan, Ryoo, Garbacz, Kunz, & Chumney, 2013); enhance math and reading achievement (Galindo & Sheldon, 2012); improve standardized test scores (Sheldon, 2003); minimize grade retentions (Miedel & Reynolds, 1999); decrease disciplinary problems, detentions, and in-school suspensions (Epstein & Sheldon, 2002); and minimize school dropout (Barnard, 2004). Despite considerable support for the efficacy of family-school partnership models, the influence of the larger systems (i.e., exosystem) in which these models are embedded, such as geographic context, have not been sufficiently explored in previous research.

Family-school partnerships may be especially important in rural schools. A supportive relationship among schools, families and communities has been identified as among the most important factors for rural school success (Barley & Beesley, 2007). In a study of rural African American youth, for example, maternal involvement in education was linked to students' academic competence and mediated the relationship between low education or socioeconomic status and both students' self-regulatory and academic skills (Brody, Stoneman, & Flor, 1995). However, quality relationships between home and school in rural settings and meaningful

involvement of rural family members in educational decision-making are often difficult to realize. Rural parents have been found to talk with their children about school programs, attend school meetings, and interact with teachers less frequently relative to their counterparts in suburban and urban schools (Prater, Bermudez, & Owens, 1997). Based on the National Household Education Surveys Program of 2007 (NCES, 2007), only 54% of rural parents reported being satisfied with the way school staff interacted with them. Compared to their urban counterparts, teachers of students with behavioral problems in rural communities reported significantly less positive relationships with parents (Witte & Sheridan, 2016). Rural schools that fail to form relationships or effectively partner with parents miss an important opportunity to utilize a highly-valued segment of the community when providing meaningful programs for their children (Holmes, Witte & Sheridan, in press). Family-school (i.e., conjoint) consultation is capable of both addressing disparities in services for rural children with behavioral challenges and forging the essential link between homes and schools.

### **Conjoint Behavioral Consultation**

Conjoint Behavioral Consultation (CBC; Sheridan & Kratochwill, 2008; also known as Teachers and Parents as Partners; TAPP; Sheridan, 2014) is defined as “a strength-based, cross-system problem-solving and decision-making model wherein parents, teachers, and other caregivers or service providers work as partners and share responsibility for promoting positive and consistent outcomes related to a child’s academic, behavioral, and social-emotional development” (Sheridan & Kratochwill, 2008, p. 25). Based on its theory of change, CBC is expected to ameliorate problematic behaviors through a positive relationship between parents and teachers who work as partners in a structured, collaborative, data-based problem solving process. Through the process, evidence-based interventions are planned and implemented

consistently across home and school settings. In CBC, parents and teachers serve as joint consultees who mutually identify, define, analyze, and address student concerns with the support of a consultant (e.g., behavioral specialist, school psychologist).

Experimental studies have found CBC to be effective for addressing academic performance deficits (Murray, Rabiner, Schulte, & Newitt, 2008; Power et al., 2012; Weiner, Sheridan, & Jenson, 1998), behavioral challenges (Mautone et al., 2012; Wilkinson, 2005), and social skills (Colton & Sheridan, 1998; Sheridan, Kratochwill, & Elliott, 1990) with high levels of acceptability among parents, teachers, and service providers (Freer & Watson, 1999; Sheridan & Steck, 1995). More recently, a randomized controlled trial (RCT) in urban/suburban communities documented the efficacy of CBC in reducing students' behavioral problems at school (Sheridan et al., 2012) and home (Sheridan et al., 2013) with a sample of 207 students displaying disruptive behaviors. Sheridan et al. (2012) found that relative to a business as usual control condition, CBC produced significantly greater gains in students' teacher-reported adaptive behaviors ( $p = .02$ ,  $d = .39$ ), teacher-reported social skills ( $p = .01$ ,  $d = .47$ ), and parent-reported social skills ( $p = .04$ ,  $d = .42$ ). Furthermore, significantly greater gains in the teacher-parent relationship were found for those who participated in CBC ( $p < .01$ ,  $d = .47$ ) and these gains partially mediated the effect of CBC on child behavior change (Sheridan et al., 2012). Similar gains were found at home, wherein children whose parents and teachers participated in CBC showed significantly greater decreases in arguing, defiance, noncompliance and tantrums than children who experienced business as usual (Sheridan et al., 2013).

Despite decades of research demonstrating positive effects of CBC on children's social-behavioral problems across school and home, to date no research has explored the effect of CBC within rural communities. Early behavioral challenges are more prominent among rural students

than their urban/suburban counterparts (Sheridan et al., 2014), yet few evidence-based interventions supporting families and schools in rural communities have been identified. However, rural communities present unique characteristics that may influence the adoption of family-school partnerships and problem-solving interventions that target social-behavioral problems. CBC builds the skills and capacities of caregivers and is thus capable of addressing resource limitations in rural schools. Moreover, the theory of change underlying the intervention emphasizes strengths of the mesosystem (i.e., relationships between homes/families and schools/educators) operationalized through collaborative processes structured to allow individualized planning that responds to unique student needs within rural settings. Whereas recent research (Owens et al., 2008) suggests promising results for treating disruptive behavior in rural schools using family-school consultation (Sheridan, Kratochwill & Bergan, 1996), quasi-experimental procedures coupled with limited attention to fidelity and cross-setting effects precludes strong statements of efficacy or causality.

### **Purpose of Study and Research Questions**

The purpose of this study was to replicate Sheridan et al. (2012) by extending its empirical base to explore the impact of CBC in rural settings. Specifically, we aimed to determine how well CBC reduces school problems and promotes social-behavioral skills for students in rural elementary schools. We were also interested in determining the effect of CBC on the teacher-parent relationship and whether this relationship mediates the effect of CBC on student outcomes in rural schools. Secondarily, we assessed the acceptability of CBC among participating teachers in the rural communities this study sampled. Specific research questions were:

1. What is the effect of CBC on school-related social-behavioral skills for rural students with disruptive behaviors? We hypothesize that CBC will produce positive social-behavioral outcomes for students at a rate that, on average, outpaces those in the control group.
2. What is the effect of CBC on rural teachers' perceptions of their relationship with parents of students who exhibit disruptive behaviors? We expect that teachers' reported relationship with parents will demonstrate positive change at a rate that exceeds that of control group teachers.
3. Does the teacher-parent relationship mediate the effect of CBC on student outcomes?  
Consistent with previous research in non-rural settings, we anticipate that teachers' reports of their relationship with parents will partially mediate the effect of CBC on student outcomes.

## Method

### Participants

Two hundred sixty seven students in Kindergarten through third grade (159 treatment, 108 control) along with their teachers and parents participated in this study. Table 1 provides student demographic information across treatment and control conditions. Students were identified as having disruptive behaviors by their teachers based on challenges demonstrated in the classroom. Seventy six percent of student participants were male and the average age of participating student was 6.88 ( $SD = 1.22$ ) years. Students were fairly evenly dispersed across Kindergarten (27%), first (21%), second (29%), and third (23%) grades. Eighty six percent of students were reported by parents to be White/non-Hispanic. Slightly more than half (56%) of student participants met criteria for free and reduced lunch and 21% had only one adult residing in their home. According to parents, 44% of student participants were formally diagnosed with a disability<sup>1</sup>. Twenty-four percent of students had an Individualized Education Plan (IEP) based on

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<sup>1</sup> Of students with a parent-reported disability, the majority (63%) were diagnosed with Attention-Deficit/Hyperactivity Disorder, 11% with Learning Disability, and 11% with Oppositional Defiant Disorder. Other

teacher report and 15% of students received special education services for an average of 75 minutes per school day. In addition, 22% of students received some additional services for behavioral, social, or emotional problems, such as outpatient family counseling for an average of 1.39 hours per week or parent training for an average of 1.13 hours per week.

**Recruitment.** A rolling enrollment procedure was implemented. Participants enrolled in the study at different times over five academic years from 2010 to 2015 for a total of five cohorts. Recruitment of students began with teacher nomination, wherein teachers were asked to identify up to five students in their classroom with disruptive behaviors that interfered with learning to create a pool of potential student participants. Teachers completed a user-friendly researcher-developed checklist assessing frequency and severity of disruptive behaviors (1 = low, 7 = high) and the need for additional intervention (1 = low, 9 = extreme)<sup>2</sup>. Students who met criteria for inclusion in the study were (a) nominated by their teachers through the process described above; (b) reported by teachers as having behavioral problems rated at a moderate to extreme severity level and a moderate to extreme frequency level; and (c) noted to have challenges that warranted moderate to significant need for additional services. Students diagnosed with a Developmental Delay or Autism Spectrum Disorder prior to nomination were excluded.

Up to three students in a classroom who met study inclusion criteria were randomly selected to participate in the study. The mean number of participating students per classroom was 1.76 ( $SD = .73$ ). Parents of students who met study inclusion criteria were contacted by the

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lower frequency diagnoses included conduct, anxiety, bipolar, obsessive compulsive, attachment, and speech/language disorders. Several students' parents reported more than one diagnosis.

<sup>2</sup> Although psychometric data on the reliability and validity of the screening instrument are not available, correlational analyses between the severity ratings and the BASC Externalizing and BASC Behavioral Symptoms Index yielded significant relationships ( $r$ 's = .31 and .36, respectively;  $p$ 's <.001). Significant correlations between the frequency ratings and these same BASC composites were also found ( $r$ 's = .31 and .33;  $p$ 's <.001).

students' teachers and invited to participate. With parents' permission, the CBC consultant then met with the parents, provided details of the study, and sought informed consent. Figure 1 provides details regarding participant recruitment, enrollment, and completion. In all, 462 students were nominated by teachers and assessed for eligibility. Forty-six did not meet inclusion criteria and 149 declined participation. The majority of these parents failed to return phone calls or attempts to provide information, rather than learning about the study and actively declining. Independent samples t-tests yielded no significant difference ( $p > .05$ ) between children whose parents consented and those who did not on screening ratings of severity of behavior problems, frequency of behavioral problems, or need for intervention.

Classrooms (teachers) were randomly assigned to an experimental condition following teacher consent to participate. The mean rating for severity of problem behaviors at Time 1 (one week prior to the start of CBC) was 6.57 ( $SD = 1.40$ ). The difference in problem severity between control ( $M = 6.40$ ,  $SD = 1.40$ ) and treatment ( $M = 6.69$ ,  $SD = 1.39$ ) conditions was not statistically significant [ $t(263) = 1.649$ ,  $p = .10$ ].

**Parents.** Two hundred sixty seven parents participated in the study. Ninety percent of parent participants (defined as parents who provided consent and information on child and family variables) were female ( $M = 34.19$  years old,  $SD = 7.55$ ) and 90% self-reported as White/non-Hispanic. Eleven percent of parents reported not graduating from high school, 73.5% reported less than a college degree, and 26.5% reported a college degree or higher. Although parent/family and child information was collected from one parent only, any parent, guardian, or support individuals were invited to attend CBC meetings. In the majority of cases, only one parent (typically the child's mother) was involved in the meetings.

**Teachers.** One hundred fifty two teachers participated in the study (84 treatment, 68

control). Most of the teachers (97%) were female and 100% self-reported as White/non-Hispanic. The average age of teachers was 41.22 ( $SD = 12.6$ ). Thirty-two percent of teachers had an advanced graduate degree, 42 percent had completed some graduate coursework, and 26 percent held a bachelor's as their highest educational attainment. The average years of teaching experience was 15.30 ( $SD = 11.31$ ).

**Consultants.** Consultants were 14 Master's level clinicians trained or enrolled in an educational administration, special education, school psychology or counseling psychology graduate program, having completed on average 2.64 ( $SD = .71$ ) years of graduate education. Thirteen were female and one was male, with all self-reporting as White/non-Hispanic. Consultants' average age was 29.63 ( $SD = 5.97$ ) years. Participating consultants completed a four-week, 64-hour, criterion-based training program wherein project leaders delivered didactic instruction on the theory and practice of CBC. Training strategies included assigned readings on CBC and evidence-based behavioral interventions, video demonstrations, role-playing with performance feedback, self-monitoring, and individualized supervision.

## Setting

The setting for the current study was 152 classrooms (84 treatment, 68 control) in 45 rural schools across three Midwestern states. The majority of schools (96%) were in one rural state wherein more than half (55%) of schools are considered rural (compared to 33% nationally) and 85% of school districts are considered small (compared to 50% nationally). In this study, 84% of schools were considered "rural" or "remote town", and 15% were in other "town" classifications based on the National Center for Education Statistics<sup>3</sup> (NCES) classification

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<sup>3</sup> 29% of schools were considered remote rural; 20% distant rural; 4% fringe rural; 31% remote town; 13% distant town; and 2% fringe town. For a description and definitions of the NCES school locale codes, see <https://nces.ed.gov/surveys/ruraled/definitions.asp>

scheme. The average class size was 18 students ( $SD = 4.52$ ). Of the 62% of school administrators who responded to a school survey, 61% indicated they had a schoolwide program for promoting positive and addressing negative behaviors, the majority being office referrals, think time (i.e., removal), and suspensions. Thirty six percent stated their teachers received training in that area within the past year. Fifty percent reported they have a schoolwide process for promoting home-school partnerships (e.g., school-family conferences) and 18% indicated training was provided for their teachers on this topic within the past year.

### **Study Variables**

The independent variable was exposure to either CBC or business as usual. The dependent variables were school-related student behaviors as observed in classrooms and reported by teachers as well as teacher self-report of their relationship with participating parents.

**School-related student behaviors.** Student outcomes at school were assessed via both direct observation of classroom behavior and standardized measures completed by teachers. First, direct observations of positive and negative classroom behavior occurred repeatedly during both a baseline and an intervention phase. Four positive (i.e., compliance, appropriate social behavior, ignoring a negative stimulus, engaged time) and six negative (i.e., noncompliance, off-task behavior, non-physical aggression, physical aggression, interference, motor movement) student behaviors were assessed. Behavioral codes and operational definitions were based on a number of existing observational systems (e.g., Abikoff & Gittelman, 1985; Gadow, Sprafkin, & Nolan, 1996; Saudargas, 1997)<sup>4</sup>.

Two standardized measures were administered to collect information from teachers about their participating students' typical behavior in school. First, the Behavior Assessment System

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<sup>4</sup> Details of the observational procedures and operational definitions of behaviors are available from the first author.

for Children, Second Edition (BASC-2; Reynolds & Kamphaus, 2004) child (ages 6 to 11) and preschool (ages 2 to 5) forms were completed by teachers. The BASC-2 teacher is comprised of four composite scale scores: Adaptive Skills, Externalizing Problems, Internalizing Problems and School Problems. BASC-2 scores are reported as T-scores, with an average of 50 and standard deviation of 10. High scores on the BASC-2 composites indicate higher frequencies of behaviors. Internal consistency coefficients across the four composites for our sample ranged from .75 to .93 for Time 1, and from .71 to .95 for Time 2. Evidence of scale validity has been reported (Reynolds & Kamphaus, 2004).

Second, the Social Skills Improvement System-Teacher Report (SSiS; Gresham & Elliott, 2008) measured the frequency of social skills on a four-point Likert-type scale (0 = *never*, 1 = *seldom*, 2 = *often*; 3 = *always*) across subdomains of communication, cooperation, assertion, responsibility, empathy, engagement, and self-control. A total Social Skills standard score is derived ( $M = 100$ ;  $SD = 15$ ). Internal consistency coefficients for our sample were .94 for Time 1 and .95 for Time 2.

**Parent-teacher relationship.** The effect of CBC on teachers' perception of their relationship with participating parents was assessed using the Parent-Teacher Relationship Scale-II (PTRS-II; Vickers & Minke, 1995). High scores on the PTRS-II indicate that teachers feel (a) positively about their relationship with the parent, and that (b) communication between them is effective. High internal consistency was found for the current sample ( $\alpha = .94$ ).

**Acceptability of CBC.** Teacher acceptability of CBC was assessed with a revised version of the Acceptability factor of the Behavior Intervention Rating Scale (BIRS; Elliott & Von Brock Treuting, 1991), comprised of 15 items rated on a 6-point Likert scale. Minor modifications to the original BIRS for use in consultation research were made previously

(Sheridan et al., 2001), but its psychometric properties were maintained (Freer & Watson, 1999; Sheridan & Steck, 1995). Internal consistency for the current sample was high ( $\alpha = .96$ ).

## **Procedure**

**Classroom observation of student behaviors.** Classroom observations were conducted using a researcher-developed tablet-based software system. Each student was observed in his or her classroom at a time identified by the teacher as one wherein problem behaviors were likely to occur. A partial interval recording system (i.e., observe for 20-second intervals over a 30-minute duration) was adopted in which behaviors were marked by occurrence within the interval, regardless of frequency or duration. This system yielded a metric that indicated the proportion of occasions across observational intervals that each behavior was recorded as occurring.

Classroom observations were conducted repeatedly over an average of eight occasions per participant (i.e., three during baseline phase and five during the intervention phase for students in the CBC condition; eight over eight weeks for students in the control condition). Both live and video-recorded methods were used to collect behavioral observation data across the five cohorts. For the first three cohorts, trained observers entered classrooms to observe the participating student in real time. For the last two cohorts, behavioral observations were based on video recordings to reduce the financial burden associated with data collection in geographically distant rural communities. For these cohorts, teachers were provided video cameras and asked to manually turn video cameras on and off during predetermined target times. Video cameras were placed in an area of the classroom that was not disruptive, focused on the participating students, and close enough to capture audio of students and their interactions with teachers using an internal microphone. After each observation, teachers mailed memory cards containing the recordings to the research team with a pre-paid, pre-addressed envelope. Video files were saved

onto a secure, project-specific drive and randomly assigned to be coded by trained observers. The trained observers used the same tablet-based software system to record student behavior as that used for live observations. Overall, video-recorded observations were conducted for 27% of observations in this study.

*Observer training and inter-rater agreement.* Training of observers occurred over the entire course of the five-year study. In total, 15 observers were trained to mastery and conducted the classroom observations. Training followed a systematic process involving (a) readings and discussions of behavioral codes, best practices for conducting behavior observations, and observation procedures for the present study and (b) video-based practice and feedback on behavioral coding using the study's operational definitions and observational procedures. Prior to beginning data collection, observers successfully completed a competency-based assessment of observation procedures and behavioral codes, along with two 30-minute observations in which they achieved at least .85 inter-rater reliability for each behavior with a master coder.

Thirty two percent of all classroom observations were coded for reliability between two observers. Inter-rater agreement of classroom observations was calculated with Cohen's Kappa, a robust measure for categorical data since it accounts for agreement occurring by chance. For the present study, average Kappa values across behavioral codes ranged from .84 to .98.

**Business as usual.** Business as usual was defined as traditional school support provided by school personnel (office referrals, removal from the classroom, pull-out placements in special education classrooms) or support services solicited by parents outside of school. There were no significant differences between treatment and control conditions on the proportion of students who received special education services, [ $\chi^2(1) = .015, p > .05$ ], amount of time special education services were received daily [ $t(30) = -.165, p > .05$ ] or receipt of additional services

for behavioral, social, or emotional problems [ $\chi^2(1) = .615, p > .05$ ].

**Conjoint behavioral consultation.** The structure for CBC casework was based on Sheridan and Kratochwill (2008). Specifically, CBC implementation occurred in a series of stages comprised of meetings coupled with between-session assessment and intervention supports. Eighty-one percent ( $n = 128$ ) of consultation cases used a small-group format wherein consultants met with one teacher and parent(s) of two to three students from the same classroom. Doing so allowed for more than one student per classroom to participate without unduly stressing teachers' time commitment to the study. Given small class size in many rural classrooms, 19% of participating classrooms ( $n = 31$ ) had only one student who met inclusion criteria. In these cases, the consultant met with one parent and teacher to address concerns for a single participating student. Consultants met with teachers and parents for approximately four conjoint consultation sessions over approximately eight weeks. All meetings occurred in teachers' classrooms or another room at the school for 45 to 90 minutes (see interview objectives in Table 2).

The first in a series of structured interviews (based on Sheridan & Kratochwill, 2008) was the Needs Identification/Analysis ("Building on Strengths") Interview. The primary foci of this interview were to identify the specific disruptive behaviors that interfered with students' learning and specify alternative prosocial goals for students. Given the sensitive nature of this interview involving discussion of students' challenges, it was conducted for each participating student separately. Across student participants, 45% of school-based target concerns were off-task behavior, 34% were compliance, 19% were interference, and 3% were aggression.

The emphasis of the Plan Development and Implementation ("Planning for Success") Interview was the co-construction of intervention plans to address target concerns (see below) along with the support of parents' and teachers' implementation of these plans with fidelity. The

Plan Evaluation (“Checking and Reconnecting”) Interview focused on evaluating the intervention plan(s), discussing progress made toward goals, determining needs for plan modification or discontinuation and determining need for additional meetings. When more than one student per classroom participated, their last two interviews were conducted in small groups (one consultant, one teacher, and parents of two to three students within classrooms).

To maximize fidelity of CBC and quality of service delivery, consultant supervision was provided by CBC experts with a Master’s or doctorate degree. On average, consultants received one hour of individualized supervision per week and two hours of group supervision per month led by a licensed psychologist. The purpose of supervision was to address specific case issues such as identifying and defining target behaviors, assess behavioral function, review plan components, and support plan implementation fidelity.

**Behavioral intervention plans.** Behavioral plans were collaboratively developed by consultants, teachers and parents in a student-specific manner based on the function of the behavior and teacher-parent preferences. All interventions across student participants were derived from four classes of intervention strategies documented empirically to reduce disruptive and promote prosocial behaviors: (a) positive reinforcement/consequences (e.g., attention, rewards; Moore, Waguespack, Wickstrom, Witt, & Gaydos, 1994); (b) environmental structuring and antecedent control (e.g., structured prompts and checklists, precision requests, rules; Musser, Bray, Kehle, & Jenson, 2001); (c) skills training (e.g., social skills training, behavioral rehearsal; Pfiffner & McBurnett, 1997); and (d) reductive techniques (e.g., removing privileges or rewards, response cost; McMahon & Forehand, 2003). All interventions also promoted home-school communication through home-notes and other consistent means (McCain & Kelley, 1994). Plan tactics were developed that preserved the fundamental functional elements of the interventions

but allowed for individuation in scheduling, delivery, and other structural features.

The CBC Behavioral Strategies Toolkit (Sheridan et al., 2013), consisting of 80 different intervention strategies, was used to standardize plan tactics in CBC casework. Strategies aligned with the four classes of research-based interventions were derived from The Tough Kid Tool Box (Jenson, Rhode, & Reavis, 2009), The Tough Kid Social Skills Book (Sheridan, 2010), and The Tough Kid Parent Book (Jenson, Rhode, & Neville, 2010). Treatment protocols and brief manuals were developed to translate the intervention strategies into formats conducive for consultation. Individualized plan summary forms, developed collaboratively by consultants and teachers, were used to tailor intervention strategies and outline implementation details as they pertained to each student (e.g., specific reinforcers, schedules of reinforcement, format for delivery). Across all interventions, 100% of cases used positive consequences and some form of home-school communication system (most typically, home-school notes). Antecedent control strategies, skill building, and reductive techniques occurred in 89%, 25%, and 11% of school-based intervention packages, respectively. The average number of behavioral strategies comprising intervention packages was 3.26 ( $SD = 0.62$ ). The average number of plan steps per student was 8.67 (range = 5 – 14;  $SD = 2.28$ )

Consultants used several strategies to support teachers as they implemented behavioral intervention plans, including manuals and scripted intervention plans, classroom observations with feedback, modeling, and recurrent phone/email contacts for trouble-shooting and support (Swanger-Gagné, Garbacz, & Sheridan, 2009). Consultants also provided additional training related to behavior plan implementation during the treatment plan implementation stage.

### **Fidelity Assessment**

The independent variable in this study was comprised of two integrated components:

consultant-led CBC and teacher-delivered behavioral plans embedded within the CBC process. Thus, fidelity assessments targeting each aspect of the intervention were conducted.

**Fidelity of CBC.** Fidelity (i.e., adherence, quality) of CBC was assessed in the context of the problem solving interviews (see CBC procedures section), which were audio-recorded and subsequently coded by independent trained observers. Coders listened to approximately 25% ( $n = 82$ ) of all interviews conducted and recorded, selected randomly to represent each stage of CBC. Thirty percent of these interviews were coded by two observers to determine inter-rater agreement, which reached 91.90% across interviews (94.20% for Needs Identification/Analysis, 89.73% for Plan Development and Implementation, 91.73% for Plan Evaluation).

Core problem-solving objectives for each CBC interview were identified and defined, and CBC Fidelity Matrices<sup>5</sup> (Holmes et al., 2013; Kunz, Bieber, Witte, Chapla, & Sheridan, 2011) were developed to determine the degree of adherence to each objective across interviews and the quality with which consultants completed them. Trained coders rated consultants' basic adherence to CBC interview objectives dichotomously (0 = objective not met, 1 = objective met). An *overall adherence percentage* was derived for each CBC interview by dividing the number of specific objectives the consultant met by the total possible objectives per interview.

Coders also rated the effectiveness (i.e., quality) with which consultants implemented each interview objective on a three-point Likert scale (0 = *not effective*, 1 = *moderately effective*, 2 = *highly effective*). Quality ratings (i.e., 0, 1, and 2) for each interview objective were defined to ensure coders' accurate and consistent ratings of the quality with which consultants implemented the problem-solving objectives. Generally, high quality scores were provided when consultants met adherence objectives using a clear partnership orientation. An *overall quality*

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<sup>5</sup> Copies of the CBC Fidelity Matrices are available by request from the first author.

*score* was derived for each CBC interview by dividing the total score (i.e., sum of 1 and 2 ratings) by the total possible quality rating score for each interview.

**Fidelity of plan implementation.** Fidelity (i.e., adherence, quality) of teachers' behavioral plan implementation was assessed by direct classroom observation during intervention target times on four occasions (once per week) throughout active intervention periods. Observations were conducted by consultants who generated a fidelity checklist corresponding to the plan summary form developed in the "planning for success" stage. (For detailed procedures related to plan summary forms and corresponding observation checklists, see Sheridan, Swanger-Gagné, Welch, Kwon, & Garbacz, 2009). During classroom observations conducted at intervention target times, consultants recorded teachers' adherence to plan steps (i.e., whether they observed teachers implementing plan steps). An *overall adherence percentage* was derived by dividing the number of specific plan steps observed by the total number of possible plan steps per observation.

For each observed plan step, consultants also rated the quality with which teachers completed it on a three-point Likert scale (0 = *not effective*, 1 = *moderately effective*, 2 = *highly effective*). Consultants typically did not observe plan steps that occurred outside the target setting (e.g., check the home-school note) and thus those steps were not included in fidelity score calculations. An *overall quality score* was derived for each observation by dividing the total score (i.e., sum of 1 and 2 ratings) by the total possible quality score.

## **Experimental Design**

A five-cohort cluster-randomized experimental design was employed, with teachers randomly assigned to receive CBC or business as usual and students following their teacher's condition assignment. Participants were assessed approximately one week prior to the start of

CBC (Time 1; pre-intervention) and approximately twelve weeks later (Time 2; post-intervention). Some variability occurred due to normal deviations in school schedules, such as absences, school holidays, and weather-related disruptions.

### **Analytic Approach**

**Intent-to-treat approach.** This study adopted an intent-to-treat (ITT) approach to help ensure that results reflected the real-world application of CBC. An ITT approach permits the comparison of participants in the condition to which they were randomly assigned regardless of whether they received full fidelity of implementation or withdrew from the study. As such, all participants randomly assigned to an experimental condition for whom data were available at the time of analysis were included in the statistical models of immediate and mediated CBC efficacy, including those with incomplete intervention exposure. The estimated treatment effect based on this approach is likely conservative and less biased as a result, providing enhanced Type I error control and reflecting a realistic clinical situation (Lachin, 2000).

**Missing data.** Missing data were accounted for statistically using full information maximum likelihood estimation (FIML; Enders, 2001), which is consistent with the ITT strategy. FIML assumes that missing data are ignorable (versus non-ignorable) and missing at random (MAR), preferably missing completely at random (MCAR). FIML was preferable to other approaches for accounting for missing data because of its ability to make use of all available data and its ease of implementation through the general linear mixed model framework. FIML retains in the analysis all participants who begin the study (i.e., were assessed on at least the first occasion) in contrast to procedures such as listwise deletion, in which any participant with a missing observation would be analytically lost. Individuals with missing data provide

information for the estimation of overall effects by borrowing information from participants with complete data (Snijders & Bosker, 1999).

**Survey-based outcomes.** For survey-based outcomes (i.e., BASC, SSiS, PTRS), we adopted the analytic approach of Sheridan et al. (2012)<sup>6</sup>. To test immediate (i.e., Time 2) intervention efficacy on teacher-reported student behaviors and the teacher-parent relationship, a three-level multilevel model (MLM; Raudenbush & Bryk, 2002; Snijders & Bosker, 1999) was implemented for each outcome separately as mixed linear models in SAS PROC MIXED (Singer, 1998). Repeated outcome measures (i.e., pre-intervention phase, Time 1; post-intervention phase, Time 2) were treated as Level 1 of the hierarchical data nested within student and parent participants as Level 2. Students were cluster-randomized within their classroom to either the treatment condition receiving CBC or a business as usual control condition, with classroom teachers as Level 3.

The statistical paradigm testing CBC efficacy specified two main and one interaction effect, the parameters for which were ultimately fixed (see Sheridan et al., 2012). The main effect of Condition reflects the dummy coded difference between control (i.e., business as usual, coded as 0) and treatment (i.e., CBC, coded as 1) conditions on the student behavior or parent-teacher relationship reported at Time 1. The main effect of Time reflects the change in these outcomes from pre- to post-intervention phase, averaging across conditions. Rather than representing the difference between waves of data collection, Time was operationalized as the difference in days between pre- and post-intervention phase measurement occasions<sup>7</sup>. The cross-

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<sup>6</sup> See Sheridan et al. (2012) for additional technical details of model building and specification.

<sup>7</sup> Time 1 and Time 2 survey administrations were designed to occur exactly 12 weeks apart; variation in the length of time between survey responses is captured in the statistical model to account for concomitant change in outcome variables. For example, one teacher may have completed her Time 1 and Time 2 surveys exactly 12 weeks apart while another may have done so 15 weeks apart. This additional three weeks between survey responses may alter the severity of student behaviors or strength of teacher-parent relationship. Thus, Time in days rather than waves of data collection was treated as the participant-specific difference between pre- and post-intervention phase survey

level Time by Condition interaction effect directly tests CBC efficacy, indicating differential change in the outcome variable from pre- to post-intervention phase between conditions. A significant Time (pre-intervention, post-intervention) by Condition (treatment, control) interaction favoring students who received CBC indicates its effectiveness for the outcome tested, such that improvement among treatment condition participants significantly outpaced control condition participants on average.

**Classroom observation outcomes.** We extended the analytic approach adopted for survey-based outcomes to those observed among students in the classroom with one primary difference. Unlike the single teacher survey administered immediately before (i.e., Time 1) then after (i.e., Time 2) the intervention phase, several classroom observations occurred during baseline (pre-intervention) and intervention phases of the study. As a result, the three baseline phase observations were aggregated as Time 1 and the five intervention phase observations were aggregated as Time 2 to produce a consistent statistical paradigm across types of measures (i.e., survey vs. observational). The average proportion of behavioral occurrence during baseline or intervention phase observations was computed in two steps. First, the proportion of times each student behavior was recorded as present during a single observation period was calculated based on the number of occurrences divided by the number of intervals possible (excluding, for example, intervals when the student left the classroom and thus could not exhibit an observable behavior). Second, these proportion scores were averaged across the three baseline or five intervention phase observation periods to produce Time 1 and Time 2, respectively.

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responses. To avoid exceedingly small coefficients for Time (where every one-unit increase in Time would reflect a single day rather than pre- to post-intervention wave), the number of days between survey responses was divided by 84 (i.e., 12 weeks) to produce a participant specific “wave.”

**Covariates.** The sample cohort in which participants were recruited and randomized served as the sole covariate across statistical models.

**Controlling for multiple tests.** Across the multitude of outcomes reported, several domains or “families” of student behaviors can be created for which multiple statistical tests within them should be controlled. Addressing this false discovery rate (FDR) avoids capitalizing on chance and consequently inflating Type I error within our study. As a result, the Benjamini-Hochberg method (Benjamini & Hochberg, 1995) was implemented in SAS PROC MULTTEST (Westfall, Tobias, Rom, Wolfinger, & Hochberg, 1999) to produce FDR-adjusted  $p$ -values for Time x Condition interaction effects. For survey-based outcomes,  $p$ -values were adjusted across the primary student behaviors reported by teachers at school (i.e., BASC composite measures of Adaptive Skills, Externalizing Problems, Internalizing Problems, School Problems; SSiS measure of social skills). CBC efficacy was also tested among BASC subscales for composite measures where a significant Time by Condition interaction was found. Given the exploratory nature of these follow-up tests, their  $p$ -values were not adjusted (see Schochet, 2009). For classroom observation outcomes,  $p$ -values were adjusted for behaviors of primary interest given their alignment with the highest frequency target behaviors (i.e., engaged time, off-task, interference, compliance, noncompliance).

**Mediators of survey-based outcomes.** Consistent with Sheridan et al. (2012), multilevel structural equation modeling (MSEM; Preacher, Zyphur, & Zhang, 2010) tested whether the teacher-parent relationship theorized as a central component of CBC mediates its effect on student behaviors. Two rather than three hierarchical levels were included in this statistical paradigm, with the teacher report of the teacher-parent relationship (mediator) and student behaviors (outcome) at Time 2 modeled as Level 1. Condition assignment (treatment, control)

was modeled as the predictor at Level 2. The relationship between teachers and parents reported at Time 1 was included as a covariate for their relationship at Time 2, while student behaviors at Time 1 were included as their covariate at Time 2.

This model specification formally tests whether the post-intervention relationship between teachers and parents significantly (even if only partially) explains the effect of condition assignment on student behaviors. To do so, student outcomes for which a significant Time by Condition interaction effect was found in the MLM models testing immediate CBC efficacy were then included in the MSEM models testing teacher-parent relationship as an empirical mechanism<sup>8</sup>. The direct effect of CBC was first re-established without teacher-parent relationship included in the model (as a mediator or covariate) to confirm that the significant finding is robust across statistical approaches (i.e., MLM and MSEM). Teacher-parent relationship was then added to the MSEM model, ideally demonstrating a significant indirect effect and reduced direct effect of CBC on survey-based student behaviors.

## **Results**

We first provide information regarding fidelity of CBC procedures and behavioral intervention implementation. Second, we report the immediate effect of CBC on student behaviors and parent-teacher relationships. Third, we report results of the mediation analyses. Finally, we report teachers' acceptability of CBC.

### **Fidelity of CBC and Behavioral Plan Implementation**

Table 3 provides adherence and quality information for both CBC and behavioral plan implementation. Average adherence by consultants to the CBC intervention ranged from 93% to

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<sup>8</sup> Given the need for temporal precedence, only student behaviors as reported by teachers at Time 2 were included in the mediation analyses. Direct observations were collected over several time points, all which preceded the Time 2 teacher-parent relationship ratings.

96% of the objectives across the interviews. Average quality ratings ranged from 1.64 to 1.81 ( $SD = 0.15$ ) across CBC interviews (maximum score of 2.0).

Consultant observations of teachers' behavioral plan implementation revealed that on average across all teachers, 82% of observable intervention steps were delivered. Sixty seven percent of intervention plan steps were delivered at levels deemed highly effective. Average overall implementation quality was 1.56 ( $SD = 0.38$ ) with a maximum of 2.0 indicating that the plan steps were implemented by teachers with high quality.

### **Overview of Inferential Results**

Descriptive statistics for Time 1 and Time 2 study variables are in Table 4. Inferential results for survey-based and classroom observation outcomes are in Tables 5 and 6, respectively.

**Survey-based student outcomes.** Among the primary survey-based outcomes reported by teachers (i.e., SSiS, BASC composites), significant intervention efficacy only emerged for students' School Problems (see Table 5). A significant Time x Condition interaction [ $\gamma = -2.09$ ,  $t(176) = -2.71$ ,  $p = .05$ ,  $d = -.45$ ] favoring the CBC group indicates that improvement in academic difficulties (e.g., attention problems, learning problems) among students assigned to receive CBC significantly outpaced that of students experiencing business as usual on average (see Figure 2). Interpreting effect sizes as a standardized metric under the normal curve, the average participant in the CBC condition achieved greater pre-post gains in the desired direction than approximately 67.35% of control group participants.

Given the statistically significant improvement in School Problems for students assigned to receive CBC, follow-up exploratory analyses to pinpoint specific academic difficulties driving that effect were warranted. Both of the subscales comprising the BASC School Problems factor produced significant Time X Condition interaction effects again favoring students in the

treatment condition: Learning Problems [ $\gamma = 2.02$ ,  $t(-175) = 2.32$ ,  $p = .02$ ,  $d = -.39$ ] and Attention Problems [ $\gamma = -1.93$ ,  $t(201) = -2.47$ ,  $p = .01$ ,  $d = -.38$ ], suggesting the average CBC participant performed better from pre- to post-test than 65% of control participants.

**Classroom observation outcomes.** CBC had a significant impact on several student behaviors observed in the classroom, namely on-task, off-task, and appropriate social behaviors as well as motor movements (see Table 6 and Figure 3). As shown in Figure 3 (quadrants A and B), positive outcomes of on-task and appropriate social behaviors significantly increased for students who experienced CBC at a rate that significantly outpaced students who instead experienced business as usual. As shown in Figure 3 (quadrants C and D), negative outcomes of off-task behavior and motor movements significantly declined for students who experienced CBC at a significantly steeper rate than for students who instead experienced business as usual. Effect sizes ranging from .28 to .46 (Table 6) suggest that the average participant in the CBC condition achieved greater pre-post gains in the expected direction than between approximately 61.02 and 67.7% of control group participants.

**Teacher-parent relationship.** A significant Time x Condition interaction [ $\gamma = 0.18$ ,  $t(229) = 3.03$ ,  $p < .01$ ,  $d = .46$ ] was noted, indicating greater increases in the treatment relative to control condition for teacher-reported relationship with parents. As shown in Figure 4, teacher-reported relationships with parents increased significantly for participants in the CBC condition, outpacing those in the business as usual condition whose relationship with parents did not change. In sum, the average participant in the CBC condition achieved greater pre-post gains than approximately 67.7% of control group participants.

**Teacher-parent relationship as mediator of CBC efficacy.** The relationship teachers reported having with participating parents was tested as a mediator of CBC efficacy on student

behaviors for which a significant Time x Condition interaction was present in the MLM paradigm. Three mediation models were fitted, each with teacher-rated student school problems, learning problems and attention problems as outcome variables, respectively. The standardized solutions for these models were presented in Figure 5 as model structure was identical. The effect of CBC on School Problems was significantly mediated by the relationship teachers reported having with their participating student's parent. The mediation model for School Problems demonstrated an excellent fit to the data [ $\chi^2(18) = 10.19, p = .93$  *Comparative Fix Index (CFI) > .96, Root Mean Square Error of Approximation (RMSEA) < .05*; see Figure 5]. The indirect effect of CBC on School Problems through the teacher-parent relationship was significant [ $B = -.49 (\beta = -.05), z = -2.68, p < .05$ ], while the direct effect of CBC remained significant with inclusion of the mediator [ $B = -.1.70 (\beta = -.17), z = -2.23, p < .05$ ]; see Table 7. This finding suggests that the teacher-parent relationship may at least partially mediate the effect of CBC on students' academic difficulties reported by teachers. The effect of CBC on Learning Problems [indirect  $B = -.43 (\beta = -.03), t = 2.42, p < .05$ ] and Attention Problems [indirect  $B = -.48 (\beta = -.07), z = 2.60, p < .05$ ], subtests within the School Problems domain, was also mediated by the relationship teachers reported having with their participating student's parent; see Table 7 and Figure 5.

### **Acceptability of CBC**

Acceptability of CBC was assessed with the BIRS to determine rural teachers' perceptions of the conjoint consultation process. On a scale of 1 (*low*) to 6 (*high*), teachers reported CBC to be highly acceptable. Specifically, mean item ratings on the BIRS Acceptability factor was 5.09 ( $SD = .68$ ) across items and respondents.

## **Discussion**

The benefits of families and schools working together are becoming abundantly clear, particularly to address concerns about student behaviors and performance. Across three decades of increasingly rigorous research, family-school partnerships have been found to effectively promote students' social skills and academic outcomes. Among the partnership models that have gained empirical traction, CBC has received growing attention from both researchers and practitioners while producing meaningful improvements across social, behavioral, and academic domains (Murray et al., 2008; Power et al., 2012; Sheridan et al., 2012; Weiner et al., 1998). However, research has yet to explore the efficacy of CBC in rural communities where school and community factors could influence all aspects of the intervention (e.g., family-school interactions, student behaviors, resource availability and allocation). The present study thus represents the first of its kind, rigorously testing CBC outcomes for students in rural settings where considerable behavioral challenges may be present (Sheridan et al., 2015) and limited specialized services available (DeLeon, Wakefield, & Hagglund, 2003).

Findings from this study revealed the immediate efficacy of CBC on rural students' academic and classroom behaviors. In general, these outcomes corroborate findings from previous experimental studies conducted in urban/suburban settings (Sheridan et al., 2012) with some exceptions. For example, results from teacher reports of student prosocial and adaptive skills did not reveal a significant effect of CBC in this study. This differs from a previous randomized trial examining CBC efficacy in non-rural communities (Sheridan et al., 2012), which found significant Time by Condition interactions for teacher reports of social skills. A number of other studies using single case experimental designs (e.g., Colton & Sheridan, 1998; Illsley & Sladeczek, 2001; Wilkinson, 2005) and quasi-experimental designs (e.g., Owens et al., 2008) similarly found positive behavioral outcomes as a function of CBC and related

interventions. Unlike the previous CBC randomized trial, the present study included classroom observations to assess outcomes directly, which revealed a significant CBC effect for appropriate social behaviors, as well as others. Therefore, it is possible that the survey measures in this study are less sensitive to subtle aspects of student behaviors targeted by the intervention. It is also noteworthy that Sheridan et al. (2012) used the Social Skills Rating System (SSRS; Gresham & Elliott, 1990) whereas its revised and re-normed version (Social Skills Improvement System; SSiS; Gresham & Elliott, 2008) was administered in the present study. It is also possible that differences in how social skills were rated by teachers in this study reflects differences in the sample and setting, given the rural context of this study. Detecting the source of differences (e.g., measurement, sample, setting) represents an important area for further inquiry.

Findings from this rural replication study also support the efficacy of CBC at improving both the relationship teachers report having with parents and its mediational role. Results add to the growing body of evidence supporting CBC as an effective intervention for improving student behaviors and parent-teacher relationships across different contextual and community characteristics. Consistent evidence pointing to the remarkably strong effect of CBC on teacher-parent relationships is of considerable importance. The significant effect of CBC on teacher-parent relationships in rural communities replicates findings from a previous RCT (Sheridan et al., 2012) and other CBC-based interventions (e.g., Family-School Success; FSS) conducted in nonrural settings that yielded effect sizes of  $d = .47$  (Sheridan et al., 2012),  $d = .29$  (Power et al., 2012) and  $d = .26$  (Mautone et al., 2012). The present study produced an effect size of  $d = .46$  for teacher-parent relationships, which is consistent with Sheridan et al. as well as notably larger than Power et al. and Mautone et al. who used a related but different relationship measure (Kohl, Lengua, McMahon, & Conduct Problems Prevention Research Group, 2000).

## **Importance of Learning-Related Behavioral Outcomes**

The significant and immediate effect of CBC on learning-related behaviors in this current study are striking, especially in light of their convergence across two types of measures (i.e., classroom observations and standardized scales). Direct observations demonstrated that CBC improves a number of learning-related behaviors as recorded in the classroom, then retrospectively corroborated by teacher reports of improvements in school problems. These learning-related outcomes reflect some of the most frequent and disruptive student behaviors, likely translating into a more optimal environment for the classmates of students receiving CBC as well as those targeted in the intervention.

This study also corroborates recent research extending CBC efficacy to homework performance (Mautone et al., 2012; Power et al., 2012) and academic skills and performance (Murray et al., 2008). In studies on FSS, Power et al. reported significant effects for homework performance ( $ES = .34$ ). Likewise, Murray et al. found large effects for a CBC-based intervention on academic skills ( $d = .67$ ) and academic productivity ( $d = .72$ ). In the present study, nearly half of the target behaviors focused on off-task issues, so it is neither surprising nor trivial that the most robust and consistent effects across both teacher reports and direct observations were outcomes associated within that domain. According to teachers, learning-related behaviors such as listening to instructions and following through on commands are among the most important skills for early success in school (Foulks & Morrow, 1989). Students who are interested and involved in learning activities, as well as those who are able to focus and pay attention, perform better academically. Conversely, inattentive and overactive behaviors are among the most common correlates of academic failure among students in kindergarten and the early elementary grades (Hinshaw, 1992). The robust and expanding benefits of CBC in these

critical academic domains provides further empirical justification for integrating the intervention into school-based programs for students at risk.

### **Validating the CBC Theory of Change**

Consistent with our theory of change and previous research (Sheridan et al., 2012), the mesosystem (i.e., school-home interface and teacher-parent relationship) was found once again to partially explain the positive effects of CBC, adding further support that the family-school interface is pivotal for student outcomes. That is, demonstrating the causal role of teacher-parent relationships in promoting important outcomes for students at risk further validates the role of the mesosystem in enhancing students' lives across diverse exosystems, including community/geographic contexts.

Whereas the role of the mesosystem is reinforced by the present study, the specific manner in which exosystemic factors influence CBC effects is less clear. For example, geographic locale could moderate the effects of CBC, a possibility that warrants further investigation. Indeed, access to services and resources is limited for parents, students, and teachers in rural communities, including those that are designed to address student behavioral concerns (DeLeon, Wakefield, & Hagglund, 2003). Parents and teachers in rural communities have reported constraints on family-school communication, due in part to the physical distances between home and school (Kushman & Barnhardt, 2001; McBride, Bae, & Wright, 2002). These distances can limit opportunities for impromptu meetings between parents and teachers that urban/suburban families are afforded, thus impacting the potential for developing positive relationships. In addition, teachers often report a lack of knowledge about how to effectively communicate with and engage families in their students' education (Agbo, 2007; Dornbusch & Glasgow, 1996; Witte & Sheridan, 2011).

CBC is particularly equipped to meet challenges associated with family-school communication often experienced in rural communities for many reasons. First, through the CBC process, meetings between parents and teachers are planned to accommodate the time and location needs of parents and teachers. Second, the structured nature of CBC provides a purposeful and efficient agenda for each meeting. Parents, teachers and CBC consultants come to meetings prepared with data and other information that facilitated forward movement toward student goal attainment. Third, it is expected that parents receiving CBC learn skills to communicate with their students' teachers, thus becoming equipped to do so throughout their child's education (Sheridan, Witte, Angell, Bhatia, & White, 2016).

Especially in rural communities, parents and their partnership with teachers can serve as a valuable resource to support students. Through CBC, parents develop skills involving data-based decision making, structured problem-solving, partnering, and intervening to address student needs (Sheridan et al., 2016). Teachers who engage in CBC also learn skills that may generalize to other students experiencing similar behavioral concerns and to other families with whom they can partner in similar situations over subsequent years (Sheridan et al., 2016). Teachers' high overall acceptability of CBC further supports it as a viable intervention option in rural schools. The collaborative nature of CBC between home and school is particularly germane in rural settings where there is typically a strong emphasis on community connections.

### **Advances over Previous CBC Research**

The current study provides several contributions to the CBC literature. Among the contributions of this study is the empirical gap it fills in testing and demonstrating CBC efficacy in rural communities. CBC is a unique intervention that builds capacity within resource-strapped environments. As a result, it has particular relevance in the rural communities by focusing on

parent-teacher relationships and their untapped potential for sustainable impact. Discerning the precise effects of CBC on teacher and parent skill development, as well as the generalizability of these potential benefits, thus represent a promising avenue for future research. Second, this is the first large-scale RCT to adopt a multi-source, multi-method approach to measuring intervention efficacy. Although small-n experimental studies have demonstrated CBC efficacy on direct measures of behavior (e.g., Colton & Sheridan, 1998), previous trials (e.g., Mautone et al., 2012; Murray et al., 2008; Power et al., 2012; Sheridan et al., 2012) relied on parent and teacher report exclusively. In the current study, direct observations were also implemented to determine CBC efficacy on student behaviors. Objectively capturing behavior as it occurs in natural contexts is important to discern changes in classroom performance that survey responses may miss. In the current study, both direct observation and survey data converged on the immediate benefits of CBC for learning-related behaviors.

A second methodological advancement of this study concerns the depth of fidelity measurement. The fidelity assessment included a dual focus on both collaborative problem-solving and behavioral intervention plans (Sheridan, Rispoli, & Holmes, 2014) that tapped both adherence and quality (Dane & Schneider, 1998). The CBC Fidelity Matrix (Kunz et al., 2011) examined both adherence to CBC objectives and the quality with which CBC was delivered by consultants, with both found to be high. We also used direct observation to assess the fidelity with which teachers implemented the individualized student plans as designed and the quality with which the plan steps were delivered, compared to previous CBC research that has relied on permanent products and self-reports (e.g., Sheridan et al., 2012). More research with the fidelity matrix is required to uncover its psychometric properties, including its ability to differentiate between groups. More information on dosage is also needed, as is research that clearly defines

and measures business as usual. An investigation of the role of dose, adherence, and quality as potential mediators or moderators of CBC efficacy on teacher-parent relationships and student outcomes would also enhance our understanding of mechanisms and operative conditions undergirding the intervention. This research, designed to determine the effect of fidelity on CBC outcomes, could help enhance our understanding of CBC implementation and adoption.

### **Study Limitations**

Although findings from this study empirically support CBC as an effective intervention for students in rural communities, they should be interpreted in light of certain limitations. First, results are restricted to student behavioral and teacher-parent relational outcomes assessed immediately following the intervention. Second, although the positive change observed for students in the CBC condition outpaced the control condition on average and teachers reported high satisfaction with CBC, it is not clear whether the effects were sufficient to reduce the behavioral gap for students who entered the study with significantly elevated problems. Specifically, significant gains occurred for CBC compared to control participants with similar concerns. By the end of the intervention period, however, teacher reports of learning behaviors and social skills remained close to a standard deviation different from the normative sample. It is thus possible that CBC is the first line effort at producing important positive changes, but that a greater dosage (i.e., intensity or duration) of intervention is necessary to close the behavioral gap for rural students with significantly elevated problems. Future research on the effects of CBC under differential levels of dosage would thus be fruitful.

Third, participants in this study were limited to one geographic region and primarily one Midwest state. Considerable heterogeneity exists between rural regions, communities, and schools where differences are predicated on unique features such as economic base, population

composition and stability, migration patterns, size, distance relative to an urban area and a host of other geospatial, human, and community factors. To determine the generalizability of CBC as an effective intervention for rural families and schools, future studies that enroll participants from various rural regions and settings are necessary to yield a more representative rural sample. Only with replications in a variety of geographical contexts will CBC efficacy be fully revealed.

Fourth, limited psychometric data are available for the researcher-developed screener that assessed frequency and severity of disruptive behavior and need for additional intervention. The scale used to determine eligibility for the study following teacher nomination is a brief, three item measure. Preliminary analyses with the measure demonstrated significant relationships between the single item assessing severity of behavioral problems and both the BASC Externalizing and Behavioral Symptoms scales. Similarly, significant relationships were found between the single item assessment of frequency and these same BASC composites. Future research is necessary to systematically test the psychometric properties of this measure and determine its sensitivity and accuracy at identifying students at risk.

A fifth limitation concerns the source of teacher fidelity data. Specifically, teacher fidelity implementing the individualized student behavior plans was observed and recorded by CBC consultants who were not blind to condition. CBC consultants worked closely with teachers in CBC, so their objectivity in ratings could be questioned. Because reliability for these observations was not obtained, it is not possible to draw definitive conclusions about teachers' implementation fidelity.

Sixth, little information was available on practices within the business as usual control condition. Although attempts were made to assess teacher-parent interactions and discern when and how problem-solving and decision-making occurred for students assigned to the control

condition, the lack of formal and reliable records made it difficult to do so. Information was also not available on teacher practices and strategies in the control condition, such as plans to address student behavioral concerns.

Finally, teacher-parent relationships were assessed via self-report and not corroborated by direct observation. Although teacher and parent perceptions of their relationship are important in themselves, objective measures (e.g., communication frequency) would strengthen the validity of this important CBC outcome and mediator.

### **Future Research Directions**

Despite these limitations, the current study uniquely adds to the empirical foundation for future CBC research. To fully understand the value of CBC as an effective intervention in rural settings, the feasibility of scaling CBC with authentic school providers (e.g., school psychologists) should be examined (Forman et al., 2013). For example, implementation studies could uncover practice elements that are sufficiently structured and potent to replicate the effects of CBC in conditions much less controlled and much more authentic than a randomized trial. Studies that provide information on training, ongoing professional supports, administrative schedules and structures, and school resources are needed to understand how a school or school district can become proficient in implementing CBC with fidelity. It may be that variations of CBC are not only necessary but effective in school contexts uninfluenced by researcher involvement. Studies that address the extent to which adaptations are necessary and remain effective in authentic school environments are a valuable next step.

Related to the feasibility of scaling CBC to naturalistic school environments is the need to determine its core components (i.e., features that define an effective program; Blasé & Fixsen, 2013) or active ingredients (i.e., intervention components that both differentiate and predict

positive effects; Abry, Hulleman, & Rimm-Kaufman, 2015; Sheridan et al., 2014). The replicated mediational role of teacher-parent relationships is one step in this direction, yet there are likely other core and active components to uncover. Tracking, recording and analyzing components of both CBC and business as usual would provide insight about the value-added elements necessary for CBC efficacy. The relative importance of each active ingredient (e.g., whether it is essential, desirable, or sufficient) can clarify the intervention components required to maximize its potential for positive outcomes. Subsequent analyses of these components (e.g., dosage needed, quality of delivery) could help tailor CBC to specific parents, teachers, and students as well as the dynamics among them. Ultimately, this type of implementation data would yield important cost-benefit information and suggest potential adaptations to the intervention that may result in optimal effects at minimal cost in a manner that is responsive to students', teachers', and families' needs.

Studies testing CBC sustainability as an effective model of service delivery in rural communities would also be a valuable next step (Wiltsey Stirman et al., 2012). Despite decades of CBC evidence across several research settings, no information is available on the sustainability of student effects beyond the first year of participation in the intervention. Whereas some researchers have assessed short-term maintenance over two (Mautone et al., 2012), three (Power et al., 2012) and four (Murray et al., 2008) months, the lasting effects of CBC are currently unknown. It is possible that sustained effects of CBC would benefit from additional or as-needed exposure to its active ingredients (e.g., CBC “booster” sessions), particularly for students with pronounced behavioral challenges. These among many other research questions are relevant to understanding the full impact and potential of CBC as an effective intervention for students, their families and their teachers in rural communities.

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Table 1

*Demographic Characteristics of Student Participants*

	Total ( <i>N</i> = 267)	Experimental ( <i>N</i> = 159)	Control ( <i>N</i> = 108)
Mean ( <i>SD</i> ) Student Age <sup>a</sup>	6.88 (1.22)	6.85 (1.16)	6.92 (1.30)
Mean ( <i>SD</i> ) Student Grade <sup>a</sup>	1.48 (1.12)	1.50 (1.09)	1.45 (1.16)
Mean ( <i>SD</i> ) Behavior Severity (1-9) <sup>a,b</sup>	6.57 (1.40)	6.69 (1.39)	6.40 (1.40)
Mean ( <i>SD</i> ) Number of Risks <sup>a</sup>	0.91 (0.82)	0.93 (0.83)	0.88 (0.80)
Student Gender <sup>c</sup>			
Male	76%	72%	82%
Female	24%	28%	19%
Student Ethnicity <sup>c</sup>			
White, non-Hispanic	86%	86%	90%
African-American	3%	4%	2%
Other	11%	10%	8%
Risk Factors <sup>c</sup>			
Fewer than Two Adults in Home	21%	24%	16%
Maternal Education Less than High School	10%	9%	12%
Eligibility for Free/Reduced Lunch	56%	57%	56%
Parent Reported Disability <sup>c</sup>	44%	42%	47%
Teacher Reported IEP <sup>c,d</sup>	24%	23%	26%

<sup>a</sup> Independent samples t-tests yielded no significant difference ( $p > .05$ ) between treatment and control conditions.

<sup>b</sup> Pre-intervention rating of severity by teachers from 1 (low) to 9 (extreme).

<sup>c</sup> Chi-square test of independence yielded no significant difference ( $p > .05$ ) between treatment and control conditions.

<sup>d</sup> IEP = Individualized Education Plan

Table 2

*Objectives of Small Group Conjoint Behavioral Consultation Interviews*

Interview	Objectives
Needs Identification/Analysis Interview (“Building on Strengths”)	<ul style="list-style-type: none"> <li>▪ Jointly identify and define child’s needs and priorities in behavioral terms.</li> <li>▪ Determine a primary behavior to address (target behavior) for initial intervention.</li> <li>▪ Collaboratively develop appropriate goals for target behavior across home and school.</li> <li>▪ Discuss what is happening before and after the priority behavior, as well as specific patterns that occur, during the focused time/setting.</li> <li>▪ Jointly establish a procedure to collect baseline data across settings.</li> </ul>
Plan Development and Implementation Stage (“Planning for Success”)	<ul style="list-style-type: none"> <li>▪ Collaboratively develop a plan built upon strengths and competencies to address the priority behavior across home and school.</li> <li>▪ Train parents and teachers in plan implementation as necessary.</li> <li>▪ Implement agreed-upon intervention across home and school settings.</li> <li>▪ Make immediate modifications to plan as necessary.</li> <li>▪ Support implementation of behavioral plan at home and school through observing, providing feedback, modeling, and troubleshooting.</li> <li>▪ Assess immediate changes in student’s behavior.</li> </ul>
Plan Evaluation Stage (“Checking and Reconnecting”)	<ul style="list-style-type: none"> <li>▪ Determine if the goals for the priority behavior have been met.</li> <li>▪ Discuss effective elements of the intervention plan.</li> <li>▪ Discuss continuation/termination of plan.</li> <li>▪ Schedule additional interview if necessary, or terminate consultation.</li> </ul>

*Note:* Due to their sensitive nature, Needs Identification/Analysis Interviews were conducted with individual parents, their child’s teacher, and a consultant. All other interviews were conducted in small groups with one teacher, parents of 2-3 children in their classroom, and a consultant.

*Source:* Sheridan, S. M., Bovaird, J. A., Glover, T. A., Garbacz, S. A., Witte, A., & Kwon, K. (2012). A randomized trial examining the effects of conjoint behavioral consultation and the mediating role of the parent–teacher relationship. *School Psychology Review, 41*, 23–46.

Table 3

*Fidelity Adherence and Quality for CBC Interviews and Behavioral Intervention Plans*

	Percent Adherence (Range)	Percent Quality (Range)	Quality Score (SD)
<b>CBC Fidelity (Consultant)</b>			
Building on Strengths	96% (75-100%)	90% (69-100%)	1.81 (.15)
Planning for Success	96% (77-100%)	82% (68-97%)	1.64 (.18)
Checking and Reconnecting	93% (55-100%)	87% (55-100%)	1.81 (.28)
<b>Behavioral Plan Implementation Fidelity (Teacher)</b>			
	82% (10-100%)	67% (4-100%)	1.56 (.38)

*Note:* Percent adherence reflects the average percentage of (a) interview objectives demonstrated by consultants, and (b) plan steps implemented by teachers across all CBC cases. Percent quality reflects the average percentage of interview (consultant) and plan (teacher) objectives implemented with high quality. Quality score is based on a possible range of 0 to 2 and reflects the effectiveness with which (a) consultants delivered interview objectives, and (b) teachers implemented behavioral plan steps. Additionally, 90%, 82% and 87% of objectives implemented during Needs Identification/Analysis, Plan Development and Implementation, and Plan Evaluation interviews were considered highly effective.

Table 4  
*Means (Standard Deviations) of the Study Variables*

	Control		CBC	
	Time 1	Time 2	Time 1	Time 2
Adaptive Skills <sup>1</sup>	41.51 (6.37)	42.03 (6.95)	39.98 (6.43)	41.72 (6.87)
Externalizing Problems <sup>1</sup>	65.18 (9.62)	64.01 (10.32)	66.24 (10.61)	63.69 (11.30)
Internalizing <sup>1</sup>	57.87 (12.40)	57.01 (12.98)	56.02 (10.68)	55.26 (12.34)
School Problems <sup>1</sup>	59.57 (7.87)	60.04 (8.14)	61.03 (7.59)	58.39 (7.85)
Social Skills <sup>2</sup>	84.03 (10.81)	87.06 (12.91)	80.36 (11.97)	85.23 (11.49)
Teacher-Parent Relationship <sup>3</sup>	3.90 (0.63)	3.89 (0.74)	3.94 (0.64)	4.11 (0.65)

<sup>1</sup>Assessed with the Behavior Assessment Scale for Children (BASC-2); <sup>2</sup>Assessed with the Social Skills Improvement Scale (SSiS); <sup>3</sup>Assessed with the Parent-Teacher Relationship Scale (PTRS). All are teacher report.

Table 5

*Inferential Results for Teacher-Reported Primary Survey-Based Outcomes*

Outcome	Est.	SE	DF	<i>t</i>	<i>p</i>	<i>d</i> -index
<b>Adaptive Skills<sup>1</sup></b>						
Condition	0.89	0.56	197	1.59	0.35	
Time	0.89	0.56	197	1.59	0.11	
Time x Condition	0.53	0.70	197	0.75	0.58	0.18
<b>Externalizing Problems<sup>1</sup></b>						
Condition	0.75	1.61	152	0.46	0.64	
Time	-1.07	0.82	198	-1.31	0.19	
Time x Condition	-1.08	1.03	198	-1.05	0.58	-0.17
<b>Internalizing Problems<sup>1</sup></b>						
Condition	-1.95	1.83	143	-1.06	0.29	
Time	-0.67	0.95	198	-0.71	0.48	
Time x Condition	0.90	1.20	197	0.75	0.58	0.03
<b>School Problems<sup>1</sup></b>						
Condition	0.86	1.29	127	0.67	0.51	
Time	-0.07	0.61	176	-0.11	0.91	
Time x Condition	-2.09	0.77	176	-2.71	<b>0.05</b>	<b>-0.45</b>
<b>Social Skills<sup>2</sup></b>						
Condition	-3.36	1.76	147	-1.90	0.06	
Time	2.84	0.98	205	2.90	0.06	
Time x Condition	1.53	1.23	205	1.24	.21	0.14
<b>Parent-Teacher Relationship<sup>3</sup></b>						
Condition	0.05	0.10	143	0.50	0.62	
Time	-0.03	0.05	230	-0.58	0.56	
Time x Condition	0.18	0.06	229	3.03	<b>&lt;.01</b>	<b>0.46</b>

<sup>1</sup>Assessed with the Behavior Assessment Scale for Children (BASC); <sup>2</sup>Assessed with the Social Skills Improvement Scale (SSiS); <sup>3</sup>Assessed with the Parent-Teacher Relationship Scale (PTRS). All outcomes are reported by teachers. False discovery rate (FDR) within families of student behaviors was accounted for to address the possibility of an inflated Type I error rate. Cohort served as the covariate and was not significant.

Table 6

*Inferential Results for Classroom Observation Student Outcomes*

Outcome	Est.	SE	DF	<i>t</i>	<i>p</i>	<i>d</i> -index
<b>On-Task</b>						
Condition	-0.03	0.01	240	-2.85	0.00	
Time	-0.01	0.01	247	-1.42	0.16	
Time x Condition	0.04	0.01	248	3.40	<b>0.02</b>	<b>0.43</b>
<b>Appropriate Social Behavior</b>						
Condition	0.01	0.02	213	0.50	0.62	
Time	-0.02	0.01	248	-2.04	0.04	
Time x Condition	0.03	0.01	249	2.11	<b>0.04</b>	<b>0.28</b>
<b>Compliance</b>						
Condition	0.00	0.01	173	0.29	0.77	
Time	-0.01	0.00	245	-2.50	0.01	
Time x Condition	0.00	0.00	245	0.03	0.98	0.02
<b>Ignoring Negative Stimulus</b>						
Condition	-0.00	0.00	229	-0.89	0.37	
Time	-0.00	0.00	247	-0.37	0.71	
Time x Condition	0.00	0.00	247	0.57	0.57	0.05
<b>Off-task Behavior</b>						
Condition	0.05	0.02	230	3.09	0.00	
Time	0.01	0.01	248	1.20	0.23	
Time x Condition	-0.06	0.02	249	-3.65	<b>0.02</b>	<b>0.46</b>
<b>Noncompliance</b>						
Condition	0.01	0.00	275	1.63	0.10	
Time	0.00	0.00	250	0.06	0.96	
Time x Condition	-0.01	0.00	250	-1.25	0.26	-0.16
<b>Motor Movement</b>						
Condition	0.02	0.01	211	1.08	0.28	
Time	0.00	0.01	246	0.18	0.86	
Time x Condition	-0.05	0.02	247	-2.94	<b>&lt;.01</b>	<b>0.45</b>
<b>Interference</b>						
Condition	0.01	0.00	256	1.76	0.08	
Time	-0.00	0.00	249	-0.34	0.73	
Time x Condition	-0.01	0.00	249	-1.73	0.13	-0.23

Non-physical Aggression						
Condition	0.00	0.00	250	2.88	0.00	
Time	0.00	0.00	249	0.62	0.54	
Time x Condition	-0.00	0.00	250	-1.39	0.17	-0.17
Physical Aggression						
Condition	0.00	0.00	233	1.97	0.05	
Time	0.00	0.00	250	0.35	0.72	
Time x Condition	-0.00	0.00	251	-1.08	0.28	-0.14

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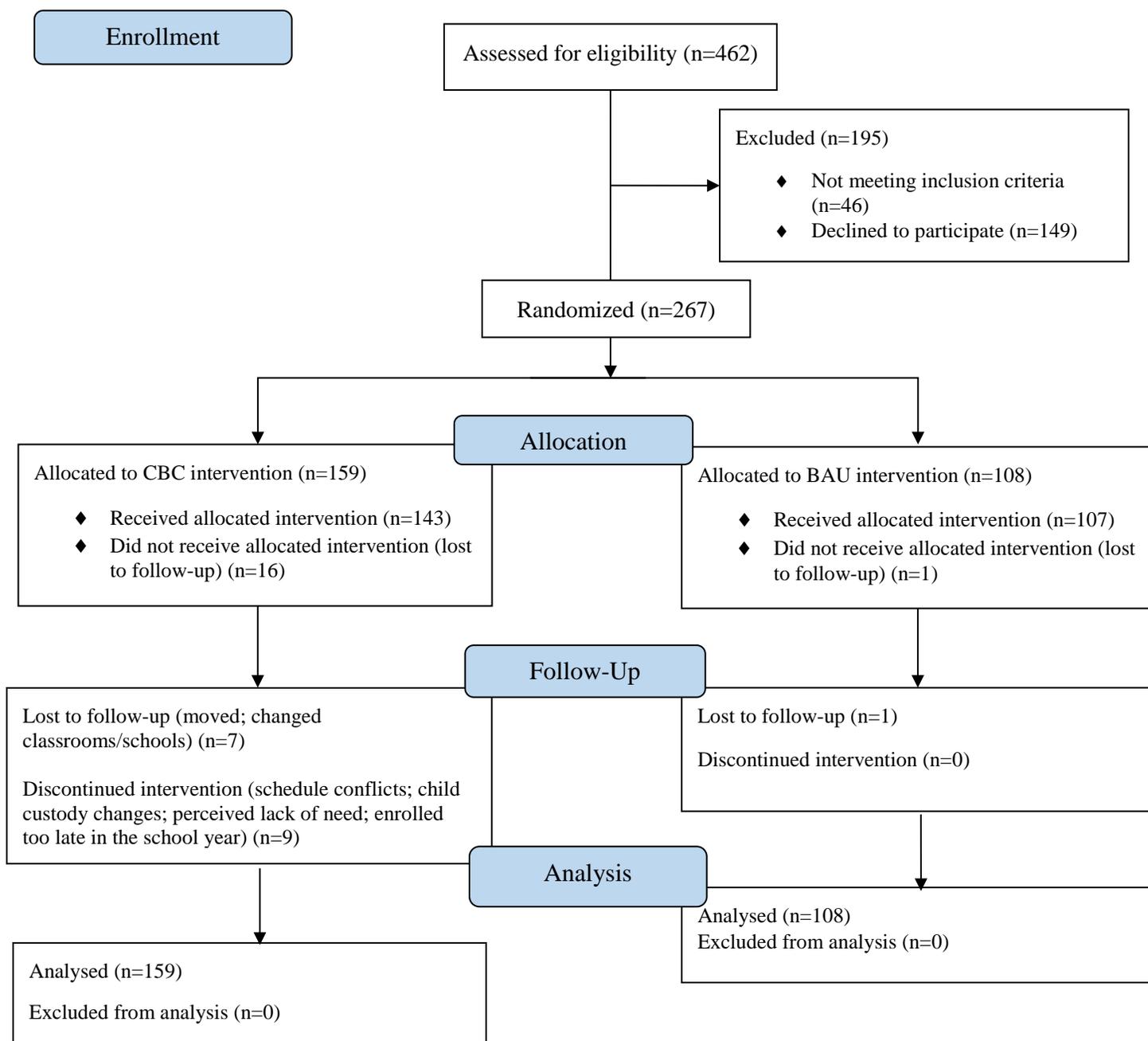
*Note.* To address the possibility that multiple statistical tests inflated Type I error rate beyond our a priori level of  $\alpha = .05$ , we accounted for false discovery rate (FDR) within families of student behaviors observed in the classroom. In particular,  $p$ -values were adjusted for the highest frequency target behaviors (i.e., Compliance, Noncompliance, Interference, On-Task Behavior, and Off-Task Behavior). Cohort served as the covariate and was not significant.

Table 7

*Unstandardized Coefficients*

Outcome	Effect	B	SE	<i>p</i>
	Direct Effect	-1.7	0.76	0.03
School Problems	Indirect Effect	-0.49	0.18	0.01
	Total Effect	-2.28	0.79	<.01
	Direct Effect	-1.69	0.84	0.04
Learning Problems	Indirect Effect	-0.43	0.18	0.02
	Total Effect	-2.21	0.87	0.01
	Direct Effect	-1.46	0.8	0.07
Attention Problems	Indirect Effect	-0.48	0.19	0.01
	Total Effect	-1.97	0.82	0.02

Figure 1

*Diagram of Participant Enrollment<sup>9</sup>*

<sup>9</sup> The analyzed sample included all participants who were randomly assigned to an experimental condition, even if their data at Time 2 were not available due to intervention discontinuation, etc.

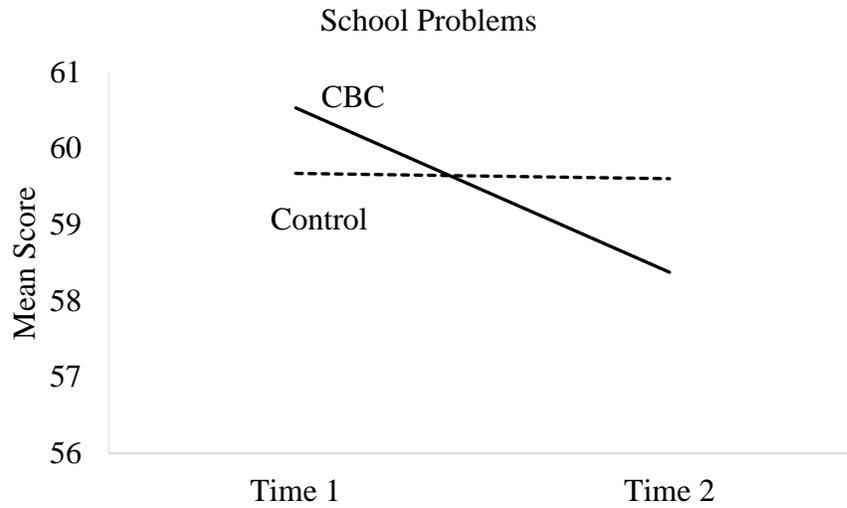


Figure 2. Significant Time x Condition interaction effect for teacher-reported BASC School Problems composite.

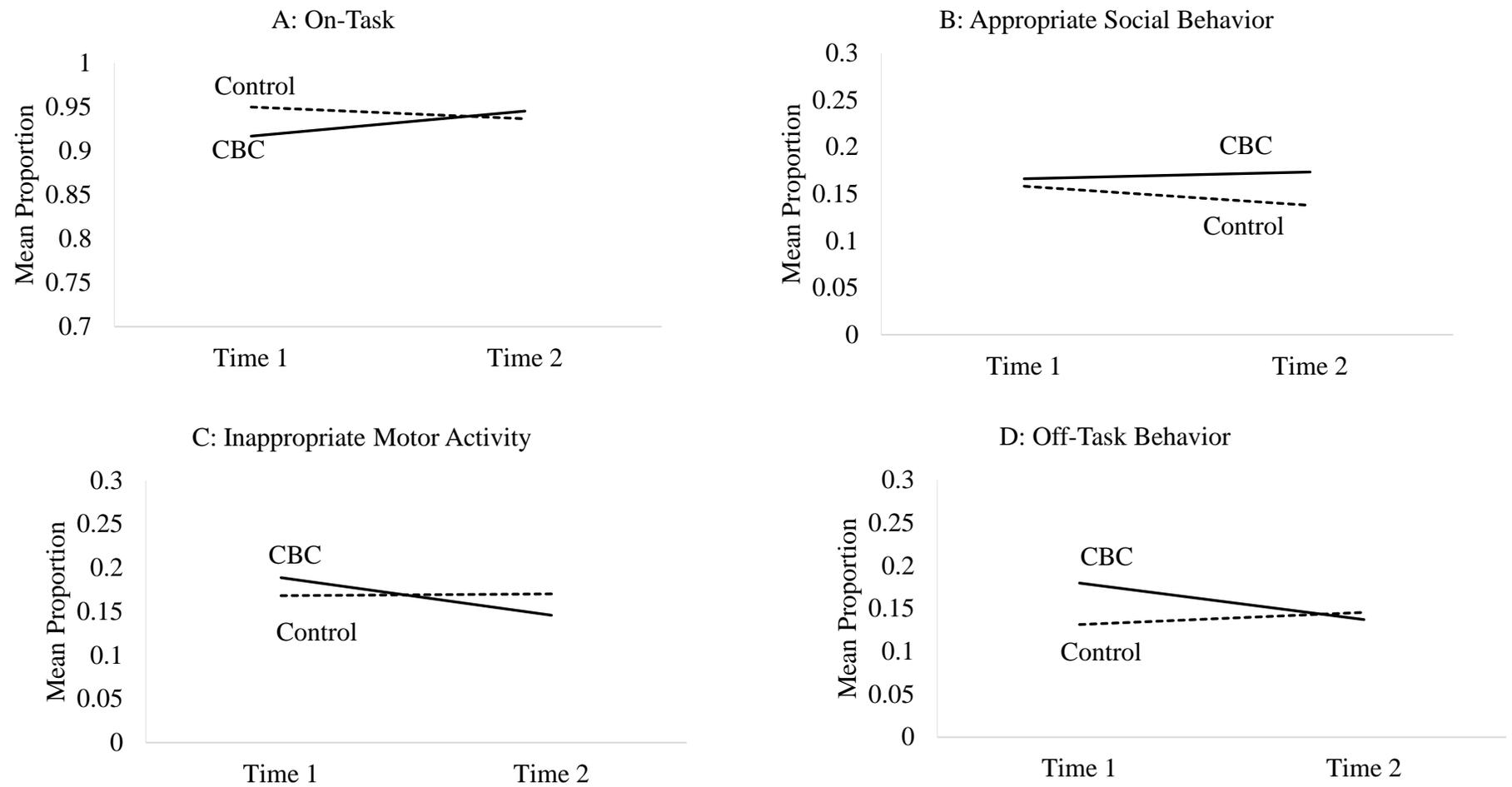


Figure 3. Significant Time x Condition interaction effect for primary classroom behavior outcomes.

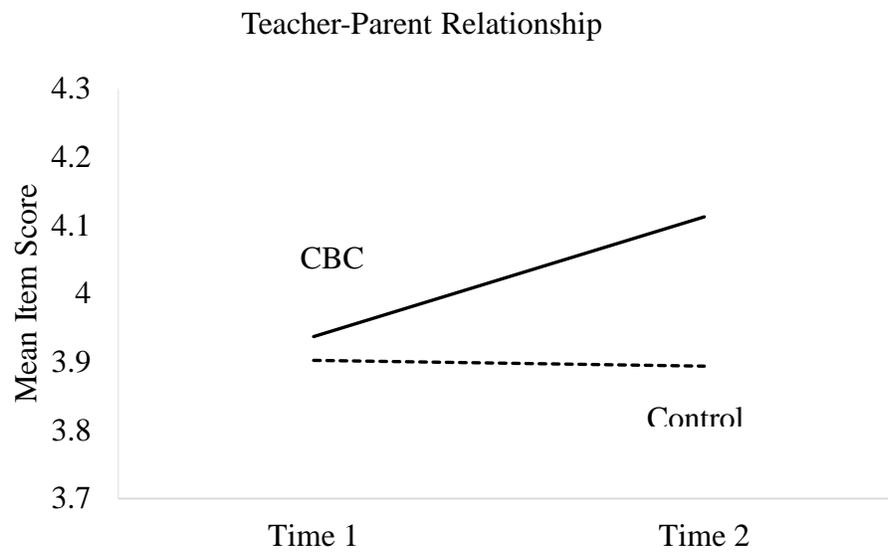


Figure 4. Significant Time x Condition interaction effect for teacher-parent relationship.

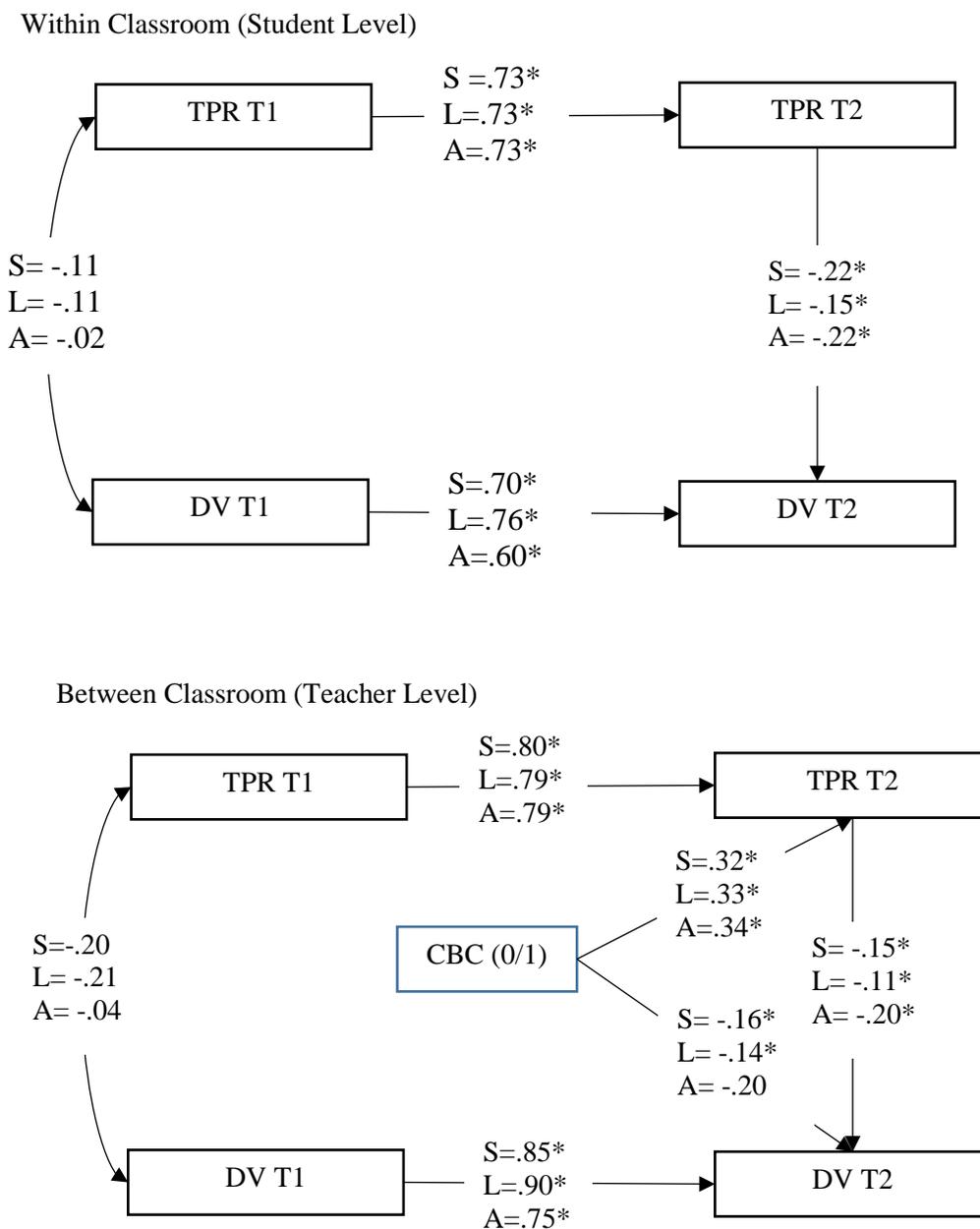


Figure 5. Multilevel path diagram and standardized solution of the indirect effect of assignment to CBC on teacher-rated DV as mediated through the teacher-rated teacher-parent relationship (TPR).

*Key:*

CBC = conjoint behavioral consultation; S = School Problems; L= Learning Problems; A = Attention Problems; TPR = teacher-parent relationship; DV = dependent variable (child outcomes); T1 = Time 1; T2 = Time 2.

*Notes:* The asterisk indicates statistical significance at the  $p < .05$  level. Learning Problems and Attention Problems are subtests within the broader School Problems scale.