Bridging the research-to-practice gap in school-based consultation: An example using case studies

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Bridging the Research-to-Practice Gap in School-Based Consultation: An Example Using Case Studies

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Scientific practices were applied through case studies to evaluate the utility of conjoint behavioral consultation (CBC) as a method of providing support for 2 students with behavioral challenges in general education classrooms. A single-case design with a follow-up phase was employed to assess the effectiveness of an evidence-based intervention (self-management) delivered in the context of the CBC model. Results indicated a significant increase in teacher ratings of behavioral control (on-task and compliant behavior) for both students. Positive treatment effects were maintained at a 4-week follow-up. Norm referenced measures produced statistically reliable and clinically meaningful changes in teachers’ perceptions of behavior following treatment. Parents and teachers indicated satisfaction with consultation services and viewed CBC as an acceptable and effective model of home–school collaboration and shared problem solving. Limitations, future research, and implications for evidence-based practice in school psychology are discussed.

Challenging behavior in the classroom requires inordinate amounts of educators’ time and effort, reduces time available for instruction, and may result in a more restrictive educational placement. Well-established patterns of disruptive behavior are predictive of poor academic engagement, lower grades, conduct problems, peer rejection, and high rates of school dropout (Algozzine, Serna, & Patton, 2001). Most general education teachers have received limited training in behavior management procedures and report a
lack of preparedness in working with children with behavior problems (Heflin & Bullock, 1999; Scruggs & Mastropieri, 1996). Although school psychologists are increasingly called on to recommend behavior intervention strategies to parents and teachers, the implementation and evaluation of these strategies in the typical classroom remains a formidable task. Effective service delivery methods are needed to provide parents and educators with significant consultative support, ongoing collaborative efforts, and interventions with documented acceptability and efficacy (Mooney, Epstein, Reid, & Nelson, 2003; Shapiro, Miller, Sawka, Gardill, & Handler, 1999). The case studies presented here illustrate how practitioners can utilize conjoint behavioral consultation (CBC) to establish home–school partnerships and deliver evidence-based interventions (EBIs) to facilitate the integration and maintenance of students with behavioral challenges in general education environments.

BACKGROUND FOR THE CASE STUDIES

Purpose of the Study

An important direction in contemporary school psychology reform is a shift from traditional models of service to a problem-solving paradigm and an emphasis on evidence-based practice. In school psychology, the scientist-practitioner roles are reciprocal. We are both consumers of research and investigators. Yet, the literature indicates that the scientist role is largely ignored in school psychology practice and that few consultants measure the effects of their interventions or engage in research activities (Bramlett, Murphy, Johnson, Wallingsford, & Hall, 2002; Reschly, 2000; Sheridan & Gutkin, 2000). There is a need to strengthen the relation between research and practice by incorporating an outcomes approach in school psychology practice. Viewed from a scientist-practitioner perspective, the major role of the school psychologist should be the design, implementation, and evaluation of effective interventions when confronted with practice problems in real world contexts (Rosenfield, 2000; Sheridan & Gutkin, 2000; Stoner & Green, 1992).

The primary purpose of this case-based study was to demonstrate how school psychologists can integrate scientific methods into professional practice and deliver high-quality consultation and intervention services to students, teachers, and parents. Application of the CBC model was informed by the strong empirical foundation for parent involvement and applied research indicating the importance of the family–school mesosystem
when intervening with children’s behavior problems. An EBI consisting of self-management, goal setting, and contingency reinforcement was implemented in the context of CBC to enhance the on-task and compliant behavior of two students referred by their teachers for consultation. Ratings of classroom behavior and empirically based measures of externalizing problem behavior served as primary outcome measures. Assessment of social validity included participants’ subjective evaluations of CBC’s acceptability and effectiveness.

CBC

The importance of enhancing the relation between school psychology practice and families has been recognized in the literature (Shepard & Carlson, 2003). Two decades of research clearly indicate that students benefit when families are involved in collaborative relationships with educators and that active parent involvement is related to positive outcomes for students, parents, and teachers (Christenson, 2004; Christenson & Sheridan, 2001; Clark & Fiedler, 2003). Students demonstrate greater gains in academic, social, and behavioral performance when interventions are implemented within a home–school systems framework (Christenson, 2004). School psychologists have an ethical responsibility to make the family–school partnership a priority in their practice and must learn to think “systemically” to enhance the learning and behavioral outcomes for children and youth (Christenson, 2004; Sheridan & Gutkin, 2000). Moreover, collaborating with families to improve learning outcomes is essential to meet the accountability standards of the No Child Left Behind Act (2001) and the reforms under the Individuals with Disabilities Education Improvement Act (IDEA, 2004) mandating intervention-oriented practices and meaningful parent participation in their children’s education.

Research suggests that school psychologists can use consultation to forge meaningful relationships with parents and teachers and facilitate problem solving when partnering to address the individual needs of students (Sheridan, Eagle, Cowan, & Mickelson, 2001). CBC is a relatively new model of consultation that provides a solution-oriented focus in which parents and educators are linked in a collaborative problem-solving process to enhance students’ learning and behavioral functioning (Sheridan, 1997). It is defined as an indirect, structured model of consultation service delivery wherein parents, teachers, and school personnel join together to address the academic, social, or behavioral needs of a student for whom all parties assume some responsibility (Sheridan & Kratochwill,
CBC incorporates the problem-solving stages and objectives of the traditional behavioral consultation approach: problem identification, problem analysis, treatment implementation, and treatment evaluation (Kratochwill & Bergan, 1990). Parents and teachers work cooperatively to target a specific problem, collect data, develop a treatment plan, and conjointly evaluate the success of the plan. During the problem identification stage, parents and teachers work as a consultation team to operationally define the problematic behavior, explore shared concerns, and select a method of collecting behavioral data. During problem analysis, the consultation team analyzes baseline data and develops an intervention plan to ameliorate the problem behavior. The intervention plan is then implemented. Finally, the consultation team evaluates the effectiveness of the intervention and determines goal attainment during the treatment evaluation stage. A detailed description of CBC theory, procedures, and objectives can be found in Sheridan et al. (1996).

The research on CBC is promising and suggests that the model can be an effective strategy for delivering evidenced-based interventions (EBIs) for students with diverse problems such as social skills deficits, attention-deficit/hyperactivity disorder (ADHD), academic underachievement, and challenging classroom behavior (Colton & Sheridan, 1998; Galloway & Sheridan, 1994; Sheridan et al., 2001; Sheridan, Kratochwill, & Elliott, 1990; Weiner, Sheridan, & Jenson, 1998; Wilkinson, 2005). Researchers also found that empirically supported treatments delivered via the CBC model resulted in greater behavior change than interventions implemented by teachers or parents alone (e.g., Galloway & Sheridan, 1994; Sheridan et al., 1990). Likewise, survey research indicates that CBC is more acceptable to parents, teachers, and school psychologists than parent-only or teacher-only consultation for implementing interventions for students with academic, behavior, and social/emotional problems (Freer & Watson, 1999; Sheridan & Steck, 1995). Although support for CBC has been accumulating, investigation of the model is a work in progress. Additional research is needed to expand its empirical base and document CBC’s acceptability and effectiveness as a service delivery model for children, parents, and teachers in typical school practice situations (Colton & Sheridan, 1998; Freer & Watson, 1999; Sheridan, 1997).

Self-Management

There is a growing emphasis on the integration of EBIs in school psychology practice (e.g., Kratochwill & Shernoff, 2004). A number of EBIs have
been identified in the clinical child and school psychology literature. For example, self-management interventions have strong empirical support for improving a wide range of academic and behavioral outcomes for students (Hoff & DuPaul, 1998; Shapiro & Cole, 1994; Stage & Quiroz, 1997). They have been implemented successfully for children with ADHD (Barry & Messer, 2003; Hoff & DuPaul, 1998), learning disabilities (Shimabukuro, Prater, Jenkins, & Edelen-Smith, 1999; Todd, Horner, & Sugai, 1999), disruptive behavior disorders (Cancio, West, & Young, 2004; Crum, 2004; DuPaul, McGoey, & Yugar, 1997; Lam, Cole, Shapiro, & Bambara, 1994; Shapiro et al., 1999; Smith & Sugai, 2000), and autism spectrum disorders (Callahan & Rademacher, 1999; Koegel, Harrower, & Koegel, 1998; Wilkinson, 2005). Despite their documented efficacy as an alternative to traditional contingency procedures, self-management is an underutilized behavior management strategy in general education classrooms. There is a need to evaluate the effectiveness of self-management as an EBI under actual practice conditions for students in mainstream rather than special education settings (Hoff & DuPaul, 1998; McDougall, 1998). An important objective of this study was to extend the evidence-based research by documenting the treatment effects of CBC and a self-management intervention on the challenging behaviors of students who were fully included in general education classrooms.

METHOD

Participants and Setting

Participants were two White male students identified with disruptive behavior disorders, their parents, and their teachers. The students were enrolled in grades four and five in a suburban intermediate school (grades three–five) in a large southeast Florida county school district. The school had a total enrollment of 944 students. Family socioeconomic status was considered middle to high, with approximately 16% of students’ parents meeting income eligibility for participation in the free and reduced lunch program. Students with special educational needs were fully included in either general education classes co-taught with a special education teacher, or in general education classes with a teacher who was dually certified in exceptional and general education. Students requiring a more restrictive setting were provided services at a separate school location within the same geographical area. The child participants in this study were fully included in their respective general education classrooms with a single teacher and
an average of 27 classmates. Neither received direct special educational services outside of their classroom settings. The students’ mothers and teachers served as consultees during all phases of the consultation and intervention process. The consultant was a credentialed school psychologist with experience in behavioral assessment and consultation practice. Participant selection was based on teacher referral concerns and perceptions of challenging behavior. For both students, the primary reasons for referral were off-task behavior and noncompliance with classroom rules and expectations for social conduct appropriate to their age group. As a result, they were at risk of being excluded from their general education classrooms. Selection criteria included (a) teacher referral, (b) disruptive behavior leading to classification or diagnosis through IDEA and/or the Diagnostic and Statistical Manual of Mental Disorders: Text Revision (4th ed. [DSM–IV–TR]; American Psychiatric Association, 2000), (c) general education placement, (d) informed written consent, and (e) clinically significant ratings on the broad-based Externalizing scale of the Teacher’s Report Form of the Child Behavior Checklist (CBCL–TRF; Achenbach & Rescorla, 2001). Both students received pharmacological treatment prior to consultation and maintained their medication regimen throughout all phases of the study.

The Cases

Carl. Carl was a 9-year-old fourth grade boy who met the diagnostic criteria for ADHD and oppositional defiant disorder (ODD). He demonstrated chronic attentional and behavioral control difficulties, including impulsivity, noncompliance, and poor peer relationships. Carl’s behavioral presentation was characterized by significant aggressive and disruptive behavior across home and school settings. Cognitive ability and academic skills were within the average range according to norm-referenced measures of intelligence and achievement. Carl’s TRF profile included significant endorsements such as Argues a lot; Doesn’t get along with other students; Can’t concentrate, pay attention; Disruptive in class; Defiant; and Impulsive, acts without thinking. Carl’s mother agreed to serve as consultee, together with his teacher, a certified general educator with 8 years of classroom experience.

Mark. Mark was an 11-year-old fifth grade boy identified with ADHD, ODD, and serious emotional disturbance. He was considered a highly impulsive student who was frequently off-task and noncompliant.
His parent and teacher reported high levels of attention problems, interpersonal conflict, and oppositional behavior that interfered with learning and adjustment. Mark’s cognitive and academic skills were considered to be within normal limits as measured by standardized tests. His TRF profile indicated significant endorsements for Argues a lot; Impulsive, acts without thinking; Not liked by other students; Can’t sit still, restless; Disturbs other students; and Fails to carry out assigned tasks. Mark’s mother and teacher served as consultees; the teacher was a dually certified educator with 17 years of classroom experience.

Consultation Process

The problem-solving process of the CBC model was initiated to enable consultees to work cooperatively, collect data, implement an intervention plan, and jointly evaluate the success of the treatment plan. In both cases, the consultant and consultees participated jointly in four structured interviews: Conjoint Problem Identification Interview (CPII), Conjoint Problem Analysis Interview (CPAI), Conjoint Treatment Monitoring Interview (CTMI), and Conjoint Treatment Evaluation Interview (CTEI). Although the traditional CBC model does not include a treatment monitoring stage, a CTMI was developed by the consultant and incorporated into the CBC process to monitor student performance and enhance treatment integrity. All interviews were conducted in the school’s conference room at mutually convenient times and ranged from 45 to 60 min in length. The consultation stages were implemented over a 6-week time period.

**Problem Identification Interview** Conjoint Problem Identification Interviews (CPIIs) were conducted with consultees to (a) establish rapport and a climate of shared responsibility, (b) share information about the goals of CBC, (c) establish agreement about roles and responsibilities, (d) operationally define target behaviors, and (e) discuss data collection procedures. Consistent with CBC, the consultation team reviewed the referral information and reached a consensus regarding the nature of the problem and the desired consultation outcomes. The primary concern of the consultees was the students’ attention deficits, noncompliance, impulsivity, aggression, and social problems. The consultation team identified off-task behavior and noncompliance with teacher requests/classroom rules as the primary targets for classroom intervention. Off-task behavior was operationally defined as behaviors where the student, after initiating the appropriate
task-relevant behavior, attends to stimuli other than the assigned work. Noncompliance was defined as failure on the part of the student to initiate appropriate behavior in response to an adult request or classroom rule. These target behaviors were considered appropriate as they were rated as the most problematic across school and home settings. A ratings recording method of observational assessment was selected and agreed upon by teachers as the most convenient and efficient method of documenting the students’ challenging classroom behavior. Baseline data were collected over 5 observational rating sessions to help define the discrepancy between the students’ current levels of behavioral control and the desired level of behavior.

**Problem Analysis Interview.** CPAIs were conducted 10 days following the CPII. The consultation team analyzed the baseline data, explored alternative intervention strategies, agreed upon a goal for behavioral change, and discussed implementation of a behavior intervention plan. A review of the baseline rating data revealed a common pattern across students. Carl and Mark demonstrated consistently high ratings of target problem behavior (noncompliance and off-task behavior) during morning independent and small group classroom instruction. Consistent with the scientist-practitioner approach, the research literature was reviewed by the consultant to determine the effectiveness of potential interventions (Stoner & Green, 1992). The consultant also identified student and ecosystem resources that could be incorporated into the treatment plan.

Following a discussion of intervention strategies with empirically validated acceptability and efficacy, and a closeness of match with home and school ecosystems, the consultant recommended a self-management package consisting of self-monitoring, goal setting, and home–school contingency reinforcement as the CBC-based treatment plan. The mutually agreed upon goal of the intervention was to reduce the students’ challenging behavior by applying a self-management procedure in the classroom and contingent reinforcement across home and school settings. All parties were informed of the importance of home–school communication and consistency across settings in reinforcing appropriate classroom behavior. Rewards/incentives for on-task and compliant behavior were considered a major component of the self-management intervention. Parents and teachers were asked to involve students in the selection of incentives and to develop a reinforcement menu of tangible and activity rewards to ensure they received positive reinforcement in school and at home. Materials
such as observational rating scales, self-monitoring forms, and treatment plan checklists were placed in a folder for each consultee dyad.

Treatment (plan) implementation. The agreed-upon self-management intervention plan was delivered to Carl and Mark during the treatment implementation stage of CBC. Two primary components were involved in the procedure: (a) self-assessment and (b) self-recording. Self-assessment involved the covert questioning of behavior (e.g., Was I paying attention?) and self-recording the overt documentation of the response to the self-assessment question on a recording form. Students were told “self-management means accepting responsibility for managing and controlling your own behavior so that you can accomplish the things you want in school and at home.” They were also given a definition and example of the target behaviors to be self-monitored. On-task behavior was defined as (a) seated at one’s desk; (b) eyes on the teacher, board, or seatwork; (c) work materials on desk; and (d) reading or working on an assignment. Compliant behavior was defined as following classroom rules by (a) asking relevant questions of teacher and neighbor, (b) raising hand and waiting turn before responding, (c) interacting appropriately with other students, and (d) complying with teacher instructions/directives. Teachers modeled the on-task behaviors and described classroom scenarios indicative of appropriate behavior. The self-management procedure was also demonstrated for the students to ensure understanding of the self-assessment and self-recording components of the intervention.

Following 2 days of practice, the students self-monitored their behavior on a daily basis for a 3-week period. This timeframe was considered sufficient to observe a change in students’ behavioral functioning. A self-recording form was taped to the upper right hand corner of each student’s desk. Because they were the only students who were self-monitoring in their classrooms and other students might be disturbed by an auditory cue, the teachers physically cued the students to self-monitor by tapping the corner of their desks, on average, every 10 min during approximately 50 min of independent and small-group classroom instruction (Cole, Marder, & McCann, 2000; Shapiro, Durnan, Post, & Skibitsky Levinson, 2002). When cued, the students asked themselves “Was I on task?” and “Was I following directions/classroom rules?” Students then marked the self-recording sheet with a “plus” or “minus,” indicating their response to the self-assessment questions. Daily goals were set at equal to or greater than 80% positive responses for on-task and compliant behavior.
Teachers held a brief meeting with students each afternoon to compare ratings, determine whether behavioral goals were met, and sign the self-recording form. When their daily goals were met, the students could make a selection from a group of incentives such as additional computer time, access to a preferred game or activity, extra recess time, and so forth. The self-recording form was sent home each day for parent signature so they could review their child’s behavior and provide rewards contingent on meeting behavioral goals. It was then returned to the classroom teacher to ensure ongoing home–school communication. The self-management intervention continued for a minimum of 15 school days after which the procedure was faded by increasing the intervals between self-monitoring cues. The goal was to have the students self-monitor their behavior independently whenever they thought about it.

*Treatment Monitoring Interview.* The consultant conducted a CTMI with parents and teachers to (a) identify barriers and obstacles to plan implementation; (b) analyze consultee self-reports to determine the extent to which steps were accurately completed; and (c) inspect permanent products such as students’ self-monitoring forms, home–school notes, and teachers’ records of student behavior. A performance review was then completed and encouragement was offered for accurate implementation of the intervention plan. The primary objective was to provide direct support and performance feedback to enhance treatment integrity, thereby increasing the strength of the intervention plan (Codding, Feinberg, Dunn, & Pace, 2005; Jones, Wickstrom & Friman, 1997; Noell, Duhon, Gatti, & Connell, 2002; Truscott, Richardson, Cohen, Frank, & Palmeri, 2003).

*Treatment Evaluation Interview.* CTEIs were conducted, on average, 22 days following initiation of the treatment implementation phase. The purpose of the CTEI was to discuss progress toward consultation goals and modifications to the treatment plan, and to determine whether the intervention plan was effective. A judgment of the congruence between consultation objectives and performance was based on the comparison of the data collected during baseline and treatment phases of CBC. Parents and teachers were asked whether consultation services should be kept in place, modified, or terminated. Because consultees were generally satisfied with the improvement in the students’ behavior, the self-monitoring intervention plan was faded. Parents and teachers agreed to continue their home–school communication via a daily report of student behavior. Each teacher com-
completed four behavior rating sessions approximately 1 month later to determine maintenance of treatment effects.

**Outcome Measures**

*Observational ratings.* A ratings recording method of observational assessment was used to provide a repeated measure of disruptive classroom behavior. The highly complex, time-consuming, and intensive nature of traditional direct observational methods such as interval recording made their use impractical in this study. Ratings provide a solution to the dilemma of balancing the need for an accurate measure of behavior with the demands of time, resources, and expertise available to the classroom teacher. This method has been shown to be an accurate, reliable, and efficient strategy for assessing the more global aspects of problem behavior in authentic classroom settings (Abidin & Robinson, 2002; Sattler, 2002; Steege, Davin, & Hathaway, 2001).

The teachers rated their overall impression of Carl’s and Mark’s classroom behaviors two or three times weekly following 50-min observation sessions that included both independent and small-group instructional activities. These procedures reduced the time demands on the teacher but still provided a reasonable sample of student behavior with which to evaluate the self-management intervention. The target behaviors of off-task behavior and noncompliant behavior were aggregated under the global category of “disruptive off-task behavior” (Hoff & DuPaul, 1998; Wilkinson, 1997). Ratings were made on a 9-point Likert-type scale with 1 indicating a high rate of problem behavior occurrence and 9 indicating a low rate of problem behavior occurrence (1 to 3 = Poor; 4 to 6 = Needs improvement; 7 to 9 = Good).

Prior to data collection, teachers were trained didactically by the consultant to (a) observe the student and identify target behaviors, (b) review the Likert scale, and (c) practice observing and recording the corresponding numerical rating. During the practice sessions, the consultant served as a secondary observer/rater and independently rated the students’ behavior during the training sessions until interrater agreement reached 80%. Behavioral ratings data were collected throughout all phases of consultation (baseline, treatment implementation, and follow-up) and were used as time-series data to document the effectiveness of the intervention plan.

*CBCL.* Empirically based measures have increasingly been recommended for use in assessing children’s emotional and behavior problems in
the classroom. The CBCL–TRF (Achenbach & Rescorla, 2001) is among the most frequently used instruments for quantifying children’s internalizing and externalizing problem behaviors. The reliability and validity of the TRF are well established (see Achenbach & Rescorla, 2001). Research indicates that students identified with disruptive behavior disorders typically score highest on the Externalizing and Aggressive Behavior scales of the TRF (Nelson, Babyak, Gonzalez, & Benner, 2003). Longitudinal research also found that decreases on the TRF Externalizing and Aggressive Behavior scales were associated with positive outcomes such as a lessening of aggression, improvements in general classroom functioning, and decreases in restrictive educational programming (Mattison & Spitznagel, 2001).

Teachers completed the TRF at baseline and at the time of consultation termination. Raw scores and normalized $T$ scores were obtained for the Social Problems, Attention Problems, Aggressive Behavior syndrome scales, and the broad-based Externalizing scale. The students’ scores were classified as “clinically significant” versus “normal” according to the borderline clinical cutpoint that begins at the 93rd percentile ($T = 65$) for the syndrome scales and the 84th percentile ($T = 60$) for the Externalizing scale (Achenbach & Rescorla, 2001). Carl’s and Mark’s TRF scale scores were all within or above the borderline clinical range prior to intervention, indicating significantly more behavior problems than typically reported by teachers of students of a comparable age and gender.

**Treatment acceptability.** An adaptation of the Behavior Intervention Rating Scale (BIRS; Von Brock & Elliott, 1987) was used to assess the consultees’ perceptions of the acceptability and effectiveness of CBC and the self-management intervention. This instrument has been used to document social validity outcomes in consultation studies (Cowan & Sheridan, 2003; Finn & Sladeczek, 2001; Sheridan et al., 2001). The BIRS Acceptability factor is comprised of 15 items scored on a 6-point Likert scale ranging from 1 (Strongly Disagree) to 6 (Strongly Agree). The BIRS Effectiveness factor includes 7 items and provides a measure of perceived consultation effectiveness. The higher the ratings, the more acceptable and effective the consultation process and intervention plan. Parents and teachers completed the BIRS following the final consultation interview.

The Children’s Intervention Rating Profile (CIRP; Witt & Elliott, 1985) was used to quantify student ratings of treatment acceptability. The scale has been used in clinical settings and field-based consultation research, and is recommended for collecting data on students’ perception of intervention acceptability (Cowan & Sheridan, 2003; Kratochwill & Bergan,
Students were asked to respond to seven items on a 6-point Likert scale ranging from 1 (Disagree) to 6 (Agree) pertaining to the fairness and acceptability of the intervention plan.

**Consultant effectiveness.** The Consultation Evaluation Form (CEF; Erchul, 1987) was used to assess consultees’ perception of consultant effectiveness and consumer satisfaction. The CEF is a 12 item, 7-point Likert scale that requires the consultee to rate statements describing the consultant on a scale ranging from 1 (Strongly Disagree) to 7 (Strongly Agree). The CEF has been used in school-based behavioral consultation research to assess interpersonal competencies and the degree to which consultees found the consultant helpful (Sheridan et al., 2001; Wilkinson, 2003). Parents and teachers completed the CEF following the treatment evaluation interview.

**Design and Data Analysis**

The integration of research and practice requires flexibility in design and methodology to measure critical student outcomes. The use of single-case or time-series designs are recommended as an alternative to group comparison designs for evaluating the effectiveness of EBIs and for making research more relevant to practice (Gresham & Noell, 1993; Kratochwill & Shernoff, 2004; Stoner & Green, 1992).

A replication across participants design with a follow-up phase was utilized to evaluate the effects of CBC and self-management on the students’ challenging behavior (Harris & Jenson, 1985). The identical consultation and intervention procedures were implemented nonconcurrently for Carl and Mark during the same academic semester. Although more rigorous designs are preferred because they pose fewer threats to internal validity, this single-case design has been shown to be a valid and useful approach for integrating the scientist-practitioner roles in school psychology practice (Galloway & Sheridan, 1994; Noell et al., 2002; Stoner & Green, 1992; Wilkinson, 1997).

Alternate methods of analyzing and reporting consultation outcome data have been recommended to enhance relevancy to practice and intervention research (Gresham & Noell, 1993). A visual (graphic) presentation of the data and percentage of nonoverlapping data points (PND) were employed to compare changes in ratings of challenging behavior across baseline, treatment, and follow-up phases for each student. Individual scores on the TRF were examined to determine whether there was a statistically
reliable reduction in syndrome scale ratings from pre- to posttreatment and whether perceived changes in students’ behavior moved from the clinical to the normative range of functioning. The results of the BIRS, CIRP, and CEF were analyzed descriptively to determine levels of perceived acceptability, effectiveness, and consumer satisfaction. Using this multimethod outcome approach and combined social validation procedure provides practitioners with an effective method of documenting educationally significant changes in behavior (Gresham & Noell, 1993).

RESULTS

Behavior Ratings

Figure 1 graphically displays the ratings recording data for Carl and Mark. Visual analysis indicates stable baselines and an immediate effect on the students’ challenging behavior with the introduction of the treatment plan. The behavioral trend was positive with 100% PND from baseline to treatment. Carl and Mark demonstrated increases in behavioral control (on-task behavior and compliance) of 68 and 60%, respectively. Mean teacher ratings were 5.00 (SD = .66; Needs Improvement) during baseline and increased to 8.21 (SD = .69; Good) with implementation of the self-management intervention. This represents an average improvement in behavior of 64% from the baseline to treatment phases of consultation. Behavioral rating data collected at a 4-week follow-up reflect maintenance of positive treatment effects, average teacher ratings of 7.12 (SD = .99; Good) remaining 42% above baseline conditions.

CBCL

The TRF (Achenbach & Rescorla, 2001) was administered at baseline and following consultation to determine perceived changes in students’ challenging behavior. The reliable change index (RC) was used to determine whether students’ TRF scale scores were significantly reduced following treatment (Gresham & Noell, 1993; Jacobson, Follette, & Revenstorf, 1984). This index is each student’s difference score (post–pre) divided by the standard error of measurement. An RC of larger than ±1.96 indicates that treatment produced a significant (p < .05) change in behavior. TRF raw scores were used for analyses rather than T scores to maximize statistical power and take into account the full range of variation in the scales (Achenbach & Rescorla, 2001). Normative comparisons of TRF data were used to determine whether changes in students’ T scores
moved from the clinical to the normative range of functioning following consultation.

As indicated in Table 1, there was a statistically reliable change in behavior from pre- to posttreatment ($p < .05$) on the Attention Problems, Aggressive Behavior, and Externalizing scales for both students. Their $T$ scores fell below the borderline clinical cut point to the normative range of functioning for the Attention Problems and Aggressive Behavior syndrome scales ($T = < 65$) and the broad-based Externalizing behavior scale ($T = < 60$). Mark also demonstrated a significant improvement in behavior on the Social Problems syndrome scale following implementation of the self-monitoring intervention.
Consultees’ acceptability of CBC and self-management was assessed on the Acceptability factor of the BIRS (Von Brock & Elliott, 1987). On a 6-point Likert scale, parents and teachers reported average item ratings of 5.83 and 5.63, respectively. This translates to a high level of perceived acceptability. Among the items that consultees endorsed as highly acceptable were “Consultation was an acceptable intervention for the problem,” “The problem was severe enough to warrant the use of consultation,” “Most parents and teachers will find consultation appropriate for other behavior problems,” and “I would be willing to use consultation again.”

The consultees’ subjective perception of the effectiveness of CBC was measured on the Effectiveness factor of the BIRS (Von Brock & Elliott, 1987). Parent and teachers reported average item ratings of 5.08 and 5.07, respectively. This suggests that consultees viewed CBC as a highly effective process. Items rated as most effective included “Consultation should produce a lasting improvement,” “The child’s behavior should remain at an improved level,” and “Consultation should not only improved the child’s behavior in the classroom and at home, but in other situations as well.”

Students’ acceptability of the self-monitoring intervention was assessed with the CIRP (Witt & Elliott, 1985). Carl and Mark provided an average
score of 3.36 on a 6-point Likert scale, reflecting a generally acceptable rating of the behavioral intervention plan. The students agreed that “The plan was fair,” “The plan would be good for use with other students,” and “I liked the plan used for my behavior problem.”

Consultant Effectiveness

The CEF (Erchul, 1987) was administered to consultees following the final consultation interview to assess their perceptions of consultant effectiveness and consumer satisfaction with CBC services. Out of a possible score of 7, the average item score for parents and teachers was 6.67 and 6.96, respectively. This indicates a high level of perceived effectiveness and satisfaction with the consultant and the consultation experience. Parents and teachers strongly agreed to items such as “The consultant offered helpful information,” “The consultant was a good listener,” “The consultant helped identify resources,” “The consultant viewed his role as a collaborator,” and “I would request services from this consultant again.”

Treatment Integrity

The consultant monitored the integrity of the consultation process by using detailed protocols to ensure that each interview included the goals and objectives of the CBC model (see Sheridan et al., 1996). The treatment integrity of the intervention plan was assessed through interviews with consultees and examination of permanent products. To verify fidelity to the self-management procedure, teachers were asked to complete a daily treatment plan checklist by indicating whether each component (e.g., cued student to self-monitor, gave incentive when earned, sent self-recording checklist home for signature) was fully or partially implemented. The checklists and self-recording sheets were reviewed during the CTMI and at the conclusion of consultation to determine whether the intervention plan was implemented as planned. An evaluation of permanent products indicated 90% adherence to the treatment plan.

DISCUSSION

These case studies build on existing research documenting the effectiveness of CBC in delivering treatment to students with a wide range of learn-
ing and behavior problems (e.g., Sheridan et al., 2001). They provide an ex-
ample of the scientist-practitioner model as an “Experimenting School
Society” (Stoner & Green, 1992, p. 159) approach in which the school psy-
chologist conducts practice as research and employs scientific procedures
to assess critical student outcomes related to local problems encountered in
actual school practice. The data gathered across baseline, treatment, and
follow-up conditions in each case provide useful and valuable outcome in-
formation despite threats to internal validity. The intervention package
consisting of CBC and self-management was associated with an immediate
and distinguishable improvement in ratings of behavioral control (on-task
and compliant behavior) for both students. The treatment effects were also
maintained over time. Further evidence of positive treatment effects was
found in the statistically reliable and clinically significant changes in teach-
ers’ perception of students’ challenging behaviors from pre- to
posttreatment. Consultee ratings also indicated considerable satisfaction
with the process (acceptability) and outcomes (effectiveness) of consulta-
tion. Parents socially validated CBC and the treatment plan by reporting
concurrent improvement in their children’s home behavior, thereby sug-
gest generalization of treatment effects across settings (Gresham, 2004).
Finally, consultees indicated a strong willingness to use CBC again and rec-
ommended the use of consultation to other parents and teachers.

Limitations of the Case Studies

Although positive results were obtained in these case studies, scien-
tist-practitioners do not ignore the limitations of their work (Stoner &
Green, 1992). School psychologists must be aware of the continuum of
methodological rigor and conditions that will strengthen their ability to
make meaningful inferences from field-based outcome data (Sheridan &
Gutkin, 2000). For example, applying a more rigorous single-case design in
this study would have increased confidence in the validity of student out-
comes. A related methodological concern involves the small sample size.
Given that CBC was initiated with only two cases, generalization of these
procedures to other consultants, consultees, and students requires replica-
ation. Another condition involves the reliability and validity of observa-
tional ratings by classroom teachers. Although interrater data were col-
lected prior to consultation, objective behavioral observations and
interrater agreement (reliability measures) indexes were not completed
during the consultation process. Independent observations or traditional
direct recording methods may have produced a more precise measure of
student behavior. Finally, practical constraints associated with school-based research such as student and teacher absences, scheduling problems, and time limitations limited the number of observation rating sessions that could be completed during the consultation process. Extending the treatment and follow-up conditions would have increased confidence in student outcomes.

**Directions for Future Research**

Further investigation is needed to document the effectiveness of CBC as a service delivery model for students with challenges to learning and behavior in applied settings. Although the single-case methodology used in this study is a significant improvement over uncontrolled and posttest-only methodology, a more robust design will enhance the ability to conclude that improvement in behavioral control was a function of the intervention plan. Strategies to address practical issues such as the reliability of ratings, systematic assessment of treatment integrity, and longer term follow-up also require research attention. The potential of CBC and self-management to promote generalization is one of its attractive benefits. More research is needed on the generalization of treatment effects across settings, students, and behaviors. Self-management interventions are most often implemented independent of behavior pertaining to behavioral function. Future investigation might link self-management strategies to functional behavior analysis to identify specific behaviors for treatment (Smith & Sugai, 2000). The intervention in this study was conceptualized as a treatment package comprised of CBC and self-monitoring. Neither can be identified in isolation as producing the identified behavioral change. A component analysis should be completed to determine the differential effects of CBC and self-monitoring on treatment outcomes. The inclusion of a CTMI in the consultation process should also receive research scrutiny to determine its utility as a technique for improving treatment integrity. Finally, future consultation studies might include parent and teacher outcome measures in addition to traditional client outcome measures to assess gains for consultees and determine their continued use of intervention strategies.

**Implications for Practice**

These case studies further the agenda of integrating the scientist and practitioner dimensions in professional practice and have several impor-
tant implications for the school psychologist. For example, research indicates that school psychologists enthusiastically endorse the concept of parent involvement in education and perceive their own involvement in home-school partnership activities as critically important (Pelco, Jacobson, Ries, & Melka, 2000). CBC offers practitioners a structured approach for intervening and engaging educators and families in shared decision making, which in turn has the potential for enhancing children’s behavioral competency. The model provides a template for professionals to combine resources across home and school and deliver high-quality consultation and intervention services to parents, teachers, and students in real-life settings. Likewise, the evidence-based approach used in this study is consistent with the paradigm shift in school psychology from traditional service delivery models (e.g., refer-test-place) to an ecological and problem-solving model of professional practice (Kratochwill & Stoiber, 2000; Sheridan & Gutkin, 2000).

A further implication involves the implementation and evaluation of self-management as an EBI in the context of CBC services to parents, teachers, and students. Evaluating the “transportability” of an empirically supported intervention strategy increases our knowledge base regarding how well a treatment protocol works and under what conditions an EBI can be implemented with acceptability and effectiveness in the real world (Kratochwill & Shernoff, 2004; Rosenfield, 2000). The feasibility and effectiveness of CBC and self-management demonstrated here suggests that this intervention strategy might be effective as part of a multimodal treatment package for increasing the inclusion of students with behavioral challenges and transitioning others from special education back into general education classrooms. It might be also useful to school-based teams in the decision-making process (e.g., special education eligibility) and for treatment planning when developing students’ individualized education programs. Moreover, the research-based practice demonstrated in these case studies is consonant with the new reforms under the IDEA (2004), which mandates early intervention services, use of scientifically based academic and behavioral interventions, and implementation of prereferral activities to minimize over-identification and unnecessary referrals to special education. Finally, the CBC service delivery paradigm is congruent with the response to intervention approach in which a student’s response to an EBI is used as a basis for deciding whether to maintain, modify, or withdraw a treatment (Gresham, 2004). This shift to a “refer-intervene-evaluate” approach to practice allows the school psychologist to play a critical role in identifying and disseminating instructional and behav-
ioral interventions with demonstrated effectiveness (Gresham, 2004; Kratochwill & Shernoff, 2004; Rosenfield, 2000).

An important implication of these case studies concerns the need for school psychologists to structure their practice around data-based problem solving. As Stoner and Green (1992) observed, we do not know in advance whether our treatment recommendations will be effective in remediating a target problem. Although the findings in this study were convincing, consistent results should not be expected across all participants. Even students with similar academic and behavioral problems are likely to have differing responses to a given treatment strategy (e.g., self-management) implemented under typical practice conditions. Some will demonstrate highly effective treatment effects, whereas others will experience limited or negative effects (Cole et al., 2000). Therefore, the contemporary scientist-practitioner must collect data in an ongoing fashion to determine whether an intervention should be changed, revised, or eliminated based on student outcomes. This includes follow-up procedures to establish the need for further support or intervention. Thinking and behaving like a “scientist” requires that we start with an understanding of the extant intervention literature, collect relevant data, design a treatment plan, implement the plan, and gather data to evaluate critical student outcomes (Sheridan & Gutkin, 2000; Stoner & Green, 1992). In keeping with the experimenting school society approach, documenting student outcomes enables the practitioner to answer the critical question, “Did student outcomes improve?” Likewise, emphasizing scientific procedures enhances professional accountability because continuous outcome data are gathered in an objective and systematic manner to determine a student’s progress relative to a stated criterion. Utilizing this process as a “roadmap” to improve educational practices, student outcomes, and professional accountability in everyday practice allows the school psychologist to legitimately claim the title, “scientist-practitioner” (Sheridan & Gutkin, 2000; Stoner & Green, 1992).

CONCLUSION

Despite the limitations of these case studies, the findings suggest that CBC can be a useful tool for practitioners to establish partnerships between home and school systems and that applying a self-management strategy within the model can result in effective treatment outcomes for students. Importantly, this study provides a real-world example of how school psychologists can bridge the research-to-practice gap in school-based consul-
tation by the (a) use of single-case methodology and multimethod outcome measures; (b) repeated measurement across baseline, treatment implementation, and follow-up conditions; (c) replication of procedures and treatment; (d) assessment of treatment integrity, treatment acceptability, and social validity; and (e) application of time-series analyses and RC indices to evaluate critical student outcomes (Gresham & Noell, 1993; Kratochwill & Shernoff, 2004; Sheridan & Gutkin, 2000; Stoner & Green, 1992). Although infrequently included in the delivery of consultation services, these scientific procedures are essential for strengthening the link between research and practice. Expanding this scientist-practitioner approach in school psychology practice will help inform research; increase accountability; improve generalization of our interventions; and enhance the quality of services to students, parents, and teachers.

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REFERENCES


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