In 2008, the Institute of Education Sciences (IES) provided funding to the Center for Adolescent Research in the Schools (CARS) to develop and evaluate a multi-approach intervention for high school–age students with serious emotional and behavioral difficulties. The request for applications (RFA) for a national study by IES in part reflects the extremely poor outcomes among secondary age students with social, emotional, and behavioral (SEB) problems and the urgent need for rigorously tested interventions. During the 5 years of funding, CARS investigators engaged in 3 years of an iterative intervention logic model development process followed by a large-scale, 2-year randomized control trial (RCT). Our team consisted of researchers with diverse backgrounds in special education and mental health. Throughout the development phase, we created a comprehensive and multi-component intervention package along with an assessment process that provided for intervention customization based on the needs of each individual student. The purpose of this article is to (a) discuss the unique characteristics and needs of the target population that merited a multi-disciplinary approach to intervention, (b) describe the rationale for the logic model used to develop a comprehensive approach to supporting students with SEB, and (c) provide an overview of the design and rationale for measures used during the RCT to examine the efficacy of the model.

**Characteristics of Students with SEB Problems**

Educating children and adolescents with SEB problems, both those formally identified through the special education process and those without special education diagnoses, continues...
to be one of the greatest challenges in the pre-K–12 educational system (Bradley, Doolittle, & Bartolotta, 2008). Students with SEB concerns exhibit a range of difficulties including internalizing (e.g., depression, anxiety, social withdrawal) and externalizing (e.g., acting out, non-compliance, aggression) problems. In addition to emotional and behavioral challenges that typically impact academic performance, legal, family, and community challenges are also common among this population (Kauffman, Mock, & Simpson, 2007; Lane, Carter, Pierson, & Glaeser, 2006).

Together, these issues lead to extremely poor outcomes, both short- and long-term. For example, the social and emotional challenges that students with SEB experience frequently result in exclusion from school through suspension, expulsion, poor attendance, or lack of participation; poor academic performance (Sutherland, Lewis-Palmer, Stichter, & Morgan, 2008); grade retention (Trout, Nordness, Pierce, & Epstein, 2003); and dropout (Wagner, Kutash, Duchnowski, Epstein, & Sumi, 2005) at rates higher than any other disability group (U.S. Department of Education & Office of Special Education and Rehabilitative Services, 2008). These youth also face high rates of incarceration (Van Acker, 2004), unemployment, and substance abuse (Wagner et al., 2005).

Several literature reviews examining intervention research with students with SEB indicate that adolescents comprise only approximately one third of participants (Clarke, Dunlap, & Stichter, 2002; Trout et al., 2003). Given the frequent call for intervention at an early age among this population, it is not surprising that the majority of studies to date have been conducted with elementary-aged students. The literature base combined, however, identifies several interventions with strong to emerging evidence that educators and mental health professionals can feasibly implement in elementary schools. What remains lacking, however, are clear decision rules to match student need to intervention strategies as well as large-scale RCTs to test the efficacy of comprehensive approaches at the high school level (see Rones & Hoagwood, 2000). In this article, we describe the CARS logic model that guided an iterative research process and led to a comprehensive intervention package. The resulting package combines best practices for interventions for all students with SEB problems along with data-decision rules allowing educators and mental health professionals to match individualized interventions to student need.

**CARS Intervention Development Process**

As outlined above, the chronic and pervasive challenges of students with SEB concerns, coupled with few empirically validated interventions at the secondary level, presented the Center with a unique challenge. Our goal was to develop a comprehensive intervention package and identify a set of measures we could use to evaluate these interventions. To accomplish this, we used a five-phase iterative process implemented across three development years (see Kern, Evans, & Lewis, 2011, for additional details). Across the development process, the CARS team strove to strike a balance between “packaged” interventions that lend themselves to standard RCT research and the need to individualize supports, a central tenant of the special education process. To this end, the final CARS intervention process was guided by a logic model that resulted in (a) two evidence-based interventions provided to all students and (b) data-decision rules linked to a “prescribing” process to identify additional supports based on individual student need (see Figure 1). The final outcomes of the development phase were “manualized” multi-component interventions and “prescribing” assessments that were judged to be acceptable and feasible by school-based practitioners and could be implemented with minimal training and support. Below we briefly describe the phases of development that led to the final intervention.

We began Phase I, Initial Intervention Development, with a conceptual model of support focused in three broad areas: (a) enhancing school and teacher capacity, (b) building youth competence, and (c) increasing family and community supports. Subsequently, in each of these areas, we conducted comprehensive literature reviews to identify the best available intervention programs and strategies and relevant assessments; sought input from education and mental health staff in high schools on planned and recommended interventions; piloted interventions; and assessed feasibility and acceptability in six high schools during a 6-month formative evaluation. The final activity during this phase was to convene a “Community Development Team” consisting of local stakeholders (e.g., parents, teachers, community mental health workers, school psychologists) in each of three states to obtain additional input regarding key and common issues among high school students with SEB problems, our conceptual framework, the data-decision logic model, preliminary interventions, and potential barriers to implementation. This information allowed us to refine our preliminary interventions and assessments.

With a core set of interventions, preliminary assessment strategies to match intervention to student need, and outcome measures, we began Phase II, Preparation for Implementation. During this phase, we piloted the interventions with 35 students and school staff in five high schools across three of our participating states (Missouri, Ohio, and Pennsylvania). Staff and students provided feedback on acceptability and perceived effectiveness, adequacy of the training, and estimates of time requirements that allowed us to make additional revisions to create a contextual fit to a “typical” high school (e.g., reduce number of sessions, develop supplemental materials to allow additional practice opportunities, simplify assessment steps). As a result of the pilot, the initial broad conceptual framework was reduced to two practitioner groups for intervention prescribing and
The purpose of Phase III, Implementation, Feedback, and Revision, was to further evaluate and refine the intervention process across a slightly larger and more diverse sample of students and school staff in the same three states and to develop training and integrity assessment procedures for the RCT. Based on school practitioner feedback, we employed a professional development model for training school personnel that included brief one-on-one training with follow-up coaching and performance feedback (Mortenson & Witt, 1998). To assess fidelity of intervention implementation, school staff helped us develop and refine integrity checklists containing core intervention features. We also formalized strategies for assisting practitioners in cases of fidelity lapses that included identifying the cause of lapses (e.g., needed additional procedural training, needed prompts to assist with implementation) and providing specific performance feedback and coaching (Clemens, Turner, & Kern, 2011). Intervention revision at this stage consisted of minor changes in intervention session activities, some reorganization of the prescribing process, and adaptations of classroom supports to make them appropriate for the high school (e.g., guided notes as a strategy to increase opportunities to respond).

Phase IV, Data-Based Decision/Prescribing Refinement, focused on refining the logic model to create a clear step-by-step strategy to identify student need based on data collected through the interventions and additional targeted assessments. In the final Phase V, Further Refinement with Divergent Sample, the fully manualized intervention/prescribing process was tested in eight schools across the five states participating in the RCT (Missouri, Ohio, Pennsylvania, Kansas, and South Carolina). Schools were chosen to reflect the diversity anticipated in the efficacy trial, including (a) urban and suburban, (b) small (less than 1,000 students) and large (over 1,000 students) size, (c) a variety of special education service delivery models (fully inclusive to primarily self-contained), and (d) an array of school mental health services and implementation strategies. This diversity allowed us to make final intervention modifications to fit contextually within various systems and high school configurations and identify barriers that could potentially be addressed prior to implementation. Finally, during this phase, we further evaluated the training needs of both school personnel and our grant staff to insure implementation fidelity. At the culmination of Phase V, we had a comprehensive intervention package that was tested within the RCT.

**CARS Intervention Logic**

In this section, we describe the final intervention/prescribing strategies and some of our findings from the process described above that led to their selection. We focus first on interventions provided to all students with SEB problems, then on those that were implemented for students as needed based on the developed prescribing process (see Figure 1).
Interventions Provided to All Students

Mentoring and general support. All participants were enrolled in Check & Connect. This intervention was implemented with all students because (a) there was research to support that it can reduce dropout (Anderson, Christenson, Sinclair, & Lehr, 2004), (b) school staff reported (and literature supports) that high school students with SEB problems are not connected to school, and (c) school staff and our Community Development Teams believed the intervention was feasible to implement.

Check & Connect is an empirically supported intervention for reducing risk factors in students who are disengaged from school and learning (Anderson et al., 2004; Lehr, Sinclair, & Christenson, 2009). Staff members willing to meet with a student at least weekly across the course of a school year volunteered to become a mentor (when possible students selected mentors). Mentors monitored and recorded risk variables (e.g., attendance, grades, disciplinary actions) by contacting the student’s teachers and checking school records, then met with their assigned student per Check & Connect procedures. The meetings provided a structured mechanism for mentors to develop a supportive relationship with the students and use a problem-solving process to address concerns identified through the monitored risk variables or those identified by the student. The Check & Connect intervention provided a basis to address several classroom-related problems (e.g., organization, missing assignments, minor issues with peers). In addition, the weekly Check & Connect meeting also served to identify when previously established data-decision rules were met (i.e., failing grade, major office referral, or other behavioral infraction) indicating the need for additional classroom supports (outlined below).

Social functioning support. All participants were also enrolled in a weekly Interpersonal Skills Group (ISG; Evans, Schultz, & DeMars, 2014) implemented by a special educator or school-based mental health provider. Initially, ISG was intended to be provided to students based on the results of the assessment and prescribing process. We chose to provide it to all students because (a) research indicates high rates of social interaction challenges are common among students with SEB (Gresham, Sugai, & Horner, 2001) and (b) staff in all schools participating in the intervention development phase reported that social interaction skills was a fundamental deficit among students with SEB concerns. Specifically, 84.62% of SMHPs in our pilot work endorsed the ISG as feasible and rated ISG as the most important among the four school mental health interventions (compared with cognitive behavioral therapy [CBT] for depression, CBT for anxiety, and parent education). Furthermore, it was the only mental health intervention that SMHPs and/or special educators chose to implement at all pilot sites. Designed to replace traditional skill-based social skills programs that are primarily intended for young children, ISG incorporates important developmental tasks with training in the cognitive processes thought to contribute to social dysfunction (Sadler, Evans, Schultz, & Zoromsky, 2011). ISG involves teaching adolescents to establish goals for how they wish to be perceived by others, identify behaviors that are likely to promote those perceptions, consider verbal and nonverbal feedback from others, recognize that goals may vary by context, and modify their behavior in relation to their goals and the feedback of others. Research with high school students published subsequent to CARS intervention development process indicates that progress on proximal measures of skills learned during the ISG sessions correspond to progress on parent ratings of social functioning outside of the group (Sadler et al., 2011).

Individualized Classroom Interventions

Classroom prescribing process. As described above, students with SEB bring a unique combination of social/emotional and academic challenges to the classroom. The literature is replete with examples of the impact that strong academic instruction and supports have on both short- and long-term outcomes of students at-risk (e.g., Algozzine, Putnam, & Horner, 2010; Simonsen, Fairbanks, Briesch, Myers, & Sugai, 2008). However, the majority of students with Individualized Education Programs (IEPs) at the secondary level, including those with diagnoses of ED (emotional disturbance), receive most of their academic instruction in general education classrooms (Trout et al., 2003) from teachers who have content expertise but are the least prepared with respect to classroom and behavior management (Simpson, Peterson, & Smith, 2011). To this end, a central goal of the CARS data-driven intervention approach was to provide specific classroom supports based on student social and/or academic challenges as identified through the Check & Connect process (e.g., missing assignments, disciplinary referrals, poor grades, etc.). When any indicator emerged (i.e., pre-determined data-decision rule was met), the classroom (beginning with the one in which the student was struggling most) was identified and targeted for specific assessment.

The targeted classroom assessment began with a teacher interview conducted by CARS staff. During the interview, teachers were asked about their classroom expectations and routines, how they respond to problem behavior, what strategies they use to increase student response rate and engagement, and how they view as the target student’s strengths and areas in need of improvement. Subsequently, observations were conducted to ascertain the following: student engagement, student–teacher interactions (positive, neutral, negative), rate of opportunities to respond to academic material, and student disruptive
behavior. The observations also included an assessment of class-wide procedures to ascertain whether class-wide interventions were needed (e.g., low engagement across many students, negative interactions with numerous students) or whether interventions should target just the study participant (e.g., high engagement across the class, but low engagement of CARS participant).

The results of the interview and observation were summarized, which led to specific indicated intervention, such as developing routines or clearly stating expectations. Each resulting indicated intervention was then ranked by grant staff and teachers depending on the likelihood that it would improve student behavior. Teachers then rated each recommended intervention on feasibility and acceptability and selected one or more to implement based on the rankings and ratings.

**Classroom interventions.** Based on past classroom intervention literature conducted with students with SEB and information gathered during the pilot phase of the process, several core classroom-based interventions were identified and included within the class-wide assessment. These interventions were (a) clearly defining, teaching, and reinforcing student adherence to classroom expectations and routines; (b) increasing positive student–teacher interactions through specific praise and positive performance feedback; (c) increasing opportunities to respond through the use of response cards, guided notes, and peer tutoring; (d) implementing a comprehensive set of accommodation strategies based on student need and contextual features of the activity for both testing and assignments; and (e) teaching de-escalation strategies targeting both prevention and initial teacher responses to prevent high intensity student behavioral escalations (i.e., brief instructional unit to teach students to self-identify precursors to problem behavior and initiate de-escalation strategies, with support from the teacher). Each strategy consisted of manualized procedures in the form of a short overview and explanation of the intervention, supporting empirical evidence, worksheets to adapt the strategy to the unique classroom context (e.g., routines in a social studies classroom vs. a lab), and implementation steps with accompanying self-checklists to promote implementation fidelity.

To further illustrate the iterative intervention development process, we describe development of our accommodation selection guidelines. During the initial literature review and pilot phase of the process, identifying, developing, and implementing appropriate classroom accommodations was a clear struggle for special and general educators alike. Many accommodations listed on the IEPs were not interpretable. Furthermore, one of the most common accommodations listed on IEPs was the provision for “additional time,” which is consistent with large-scale survey results (Wagner et al., 2005). Also, we noted disconnection between identified student deficits and accommodations listed on student IEPs. Therefore, we developed an accommodation assessment/prescribing protocol to assist teachers in selecting, implementing (including teaching the strategy to the student), and monitoring accommodations based on student need.

**Individual Mental Health Interventions**

**Mental health intervention prescribing.** Best practices for evaluations to determine the need for and type of mental health services have included interviews and rating scales (e.g., Pelham, Fabiano, & Massetti, 2005). However, many SMHPs in the position to conduct assessments have had little training or spend little time completing this type of evaluation (Kelly et al., 2010). As a result, our goal was to create a brief measure that could be administered by a school counselor or social worker focusing on key aspects of mental health symptoms as well as the related distress and impairment.

The CARS mental health prescribing process consisted of both required and optional elements. The expectation was that the SMHPs would, at a minimum, interview the student and his or her parent. This interview consisted of open-ended questions that addressed the core aspects of the most common disorders of adolescents including depression, anxiety, attention deficit hyperactivity disorder (ADHD), and conduct and oppositional defiant disorders. The goal of the interview was not to determine mental health diagnoses, but simply to ascertain if the students exhibited distress or impairment suggestive of any of the most common constructs related to the aforementioned disorders and would benefit from prevention/intervention. After completing these two interviews, if the SMHP believed that additional information was needed to determine how to best help the student, optional additional assessments included rating scales and a teacher interview were administered. There were specific decision rules based on the results of the interviews (and other optional assessments) as well as SMHPs’ ratings of feasibility and acceptability to determine the SMH interventions that should be prescribed. Research staff worked closely with the SMHPs to provide guidance and support while they completed this assessment and prescribing process.

The parent interview also contained questions about the student’s history of mental health services to inform the prescribing decisions and to learn parent preferences and beliefs about interventions. For example, if a mother reported that her son went to counseling many times and it never helped, the parent may not be enthusiastic about another referral to counseling. Also, the procedures for conducting the parent interview indicated when the SMHP should explain how services we recommended differed from those received previously, discuss ways to determine progress, and keep the parent informed of progress on those indicators. There was an emphasis throughout the assessment process to keep the
parent informed of the process and help him or her feel comfortable contacting the SMHP if needed.

Mental health interventions. The intervention literature for adolescents with problems related to depression and/or anxiety clearly supports the use of CBT (David-Ferdon & Kaslow, 2008). However, in spite of its effectiveness, many school-based therapists do not provide CBT interventions for reasons such as inadequate administrative support and coaching or time intensiveness (Beidas et al., 2012). Indeed, data from the pilot phases confirmed that CBT interventions were rarely used and SMHPs confirmed lack of familiarity and training with them.

One important aspect of CBT that has not received adequate attention yet influences implementation in schools relates to the procedures. During the development phase, we implemented and assessed the feasibility of some of the most well-researched CBT programs for adolescents with anxiety or depression and encountered a variety of obstacles. These included complaints that the programs were too childish for high school students, time was not consistently available in schools for the common 50-min length sessions, and the procedural manuals were not adequately specific. As a result, after piloting three well-established CBT manuals, we wrote new procedures for intervention implementation that (a) were explicit, (b) incorporated the core components of evidence-based CBT for problems with mood and anxiety, and (c) were designed for high schools. The procedures were organized into phases with specific criteria for moving from one phase to the next. Activities within phases could be implemented based on the needs of the group or an individual student receiving the intervention by varying session length and repeating activities when participants needed more practice to make progress in a specific area. We believe that this emphasis on phases and flexibly implementing instruction within phases is more feasible for implementation in schools than rote adherence to traditional clinic-based session guidelines in most CBT manuals. Activities and graphics were made age appropriate and actual scripts, necessary materials, and very specific directions were developed for SMHPs. The core components of the original CBT manuals were maintained, so that the revised versions used in this study contained evidence-based intervention procedures and also were feasible in a high school.

Another mental health intervention available to SMHPs based on the results of the assessment was self-management. This involved helping students learn to accurately monitor their own behavior and improve selected actions (e.g., bringing supplies to class, completing work) to enhance school performance. There is case study evidence that self-management can be helpful for middle and high school students (Gureasko-Moore, DuPaul, & White, 2007; Wills & Mason, 2014). Although there are many variations to the methods for providing self-management, we used procedures that included significant adult involvement and other effective approaches identified by Briesch and Chafouleas (2009) in their literature review.

The second additional intervention was parent education. There is substantial evidence supporting the use of parent education with elementary school–age children, but very little for parents of adolescents. Nevertheless, involving parents in the life of their adolescent is often encouraged and considered quality care for youth with a variety of emotional and behavioral problems. The parent education group included in the CARS interventions was one previously used in other high school–based treatment studies (Evans, Schultz, & DeMars, 2014) and focused on education about development, emotional, and behavioral problems, and transitions to adulthood. In addition, parents learned to develop and negotiate contracts with their children around behavior problems, homework completion, or other targets of their choosing. Research staff in the Evans, Schultz, and DeMars, 2014, study provided the 10-week group interventions at the high schools and parents attended an average of 7 out of the 10 sessions.

In contrast to the literature suggesting good attendance and parent engagement in school-based parent training for parents of high school students, the data we collected during our pilot testing of the interventions across all sites consistently indicated that SMHPs believed parents would not come to the group sessions and it was not feasible to provide this intervention. Discussions with SMHPs suggested that many were not trained or experienced with parent education interventions and not interested in providing groups in the evenings. Nevertheless, given the importance of engaging parents in services and the evidence supporting the use of parent education with children, we kept this as an intervention option during the trial and increased our efforts to encourage SMHPs to consider it.

CARS RCT

The CARS interventions followed the finalized logic model described above resulting in standardized core interventions provided to all participants and additional individualized strategies based on data-decision rules and prescribing processes. All interventions were guided by a manualized step-by-step process, with training and technical assistance. Given a secondary purpose of the study was to examine the feasibility of implementing a data-driven intervention process among typical school personnel, interventions were implemented by school-based practitioners, with grant staff providing only training and technical assistance.

Measures

As noted above, Phase IV of the development process consisted of Data-Based Refinement. The iterative procedures
for selecting and revising measures for use in the final RCT study were very similar to the intervention development process described previously. The study assessments served three primary purposes: (a) to measure characteristics of the students and providers, (b) to provide data for prescribing interventions to individual students, and (c) to measure changes in student behaviors (both proximal and distal outcomes). Similar to the intervention development process, we began with a review of the literature. We were interested in identifying a combination of both direct and indirect measures to address limitations of each (e.g., reactivity, floor/ceiling effects of direct observation data; Gresham, Elliott, Cook, Vance, & Kettler, 2010). Our review yielded 82 articles published between 1995 and 2008 that were evaluations of interventions (psychosocial, education, or medication) with high school–aged adolescents with SEB problems. These articles described 178 different measures. We classified these measures according to the domains we wished to assess, including internalizing problems, externalizing problems, global functioning, social functioning, cognitive or academic skills, family functioning, and other. We coded the individual measures to determine which were reliable, valid, included racially and ethnically diverse participants in their standardization sample, had normative data, and were found to be sensitive to change in the intervention articles. This process guided our initial selection of measures and also helped us to identify gaps in the assessment literature for high school–aged adolescents. We addressed gaps by conducting additional pilot studies using an iterative process similar to that used during intervention development. We described the prescribing process above, therefore our description below focuses on the processes of assessing the impact of the intervention and student characteristics.

Assessing intervention outcomes. Consistent with recommendations from the literature, we chose to include both distal and proximal measures of symptoms and impairment using a variety of assessment modalities such as performance measures, ratings by parents and teachers, and direct observations. Following the literature review described above, we selected measures that were reliable and valid and did not overburden parents, teachers, and our research staff. Four of the measures targeted for inclusion met our needs but had very little or no normative or validity data available for our age group and therefore we conducted additional validation research during the initial years of the center. Three of these were teacher ratings including the Disruptive Behavior Disorders (DBD) rating scale, Impairment Rating Scale (IRS), and the Classroom Performance Survey (CPS), with limited evidence of psychometrics. The fourth was direct observation measures of teacher and student behavior using the Multiple Option Observation System for Experimental Studies (MOOSES; Tapp, Wehby, & Ellis, 1995), where for example, key duration and rate variables described in the literature for academic and behavioral success pertained to younger students (e.g., rates of Opportunities to Respond; typical academic engaged time). Therefore, we conducted pilot studies to address the limitations with these four measures and the results, as well as a description of some of the other measures we used, are below.

Pilot research of teacher ratings. As noted above, neither the CPS, DBD, nor the IRS had psychometric data relevant to high school students. To assure that these assessments were appropriate for high school–age students, we gathered teacher ratings from 875 racially diverse, gender balanced, and randomly selected high school students attending 19 high schools adjacent to four of our five research sites to determine validity indices and normative values. Psychometric properties for teacher ratings using these three scales were subsequently published (Brady, Evans, Berlin, Bındır, & Kern, 2012; Evans et al., 2013). The pilot studies of these teacher ratings provided us with normative and other psychometric data that we will use when interpreting the results of the study.

Pilot research of direct observations. Direct observation measures of teacher and student behavior were considered essential to measure the impact of the intervention model; however, normative rates and duration across the key variables for high school teachers and students were not available. The MOOSES (Tapp et al., 1995) is an observation and recording software that allows users to program specific observation codes for both frequency and duration events. We evaluated the use of MOOSES software on handheld devices to collect data on a set of identified essential teacher (e.g., active instruction, opportunities to respond, positive feedback statements) and student (e.g., on-task, active engagement, disruptions) behaviors. We were particularly interested in examining reactivity when used with high school students, sensitivity to change, and inter-observer agreement on related behavioral codes commonly found within elementary research. During pilot phases of the study, baseline levels of teacher use of instructional procedures and behavior management practices and student engagement were established. We found that these rates differed from those previously found within elementary and middle school student samples (e.g., low rates praise, low number of opportunities to respond), indicating that extensive teacher coaching might be needed to improve classroom practices (Scott, Alter, & Hirn, 2011).

Proximal outcomes. Many of the interventions incorporated assessments that measured proximal outcomes. For example, Check & Connect mentors routinely gathered data about the daily functioning of their assigned student including grades, tardiness, absences, suspensions, detentions,
and office behavior referrals. These data were used to guide the interventions provided by the mentors, identify classrooms where interventions were needed, and also served as a proximal outcome of this intervention. Other interventions including both CBT interventions (student self-assessments) also included the collection of proximal measures. For example, students regularly rated their levels of anxiety and depression at each session to inform progress through the CBT protocols. In addition, our direct observation system served as a proximal measure of the various classroom interventions. Initially, we collected data quarterly to assess progress. However, we found that this was not efficient and did not always align well with intervention implementation. Therefore, to better align our observations to serve as proximal measures of the classroom interventions, we adjusted the observation schedule, so they were conducted just prior to and just after intervention implementation.

**Distal outcomes.** The distal measures we selected focused on academic skills, school functioning, and symptoms of emotional and behavioral problems. To use a range of measurement types, these included data routinely collected in the school as well as teacher, parent, and student ratings. We gathered grades, attendance, and discipline data via permanent school records and asked teachers to complete a variety of rating scales. Two of the teacher-completed rating scales focused on classroom impairment (CPS & IRS) and were completed by multiple teachers, whereas the Behavior Assessment System for Children–Second Edition (BASC-2) was completed by one teacher at three time points during the RCT.

We monitored several performance areas aligned with our intervention framework. To monitor progress in academic performance and school engagement, all students completed an academic achievement battery at the beginning and end of the trial (i.e., Woodcock–Johnson III; Woodcock, McGrew, & Mather, 2001). In addition, behavior ratings scales were completed by parents and/or students to monitor behavioral, emotional, and mental health, including standardized measures for depression, anxiety, and risky behaviors (i.e., Reynolds Adolescent Depression Scale–Second Edition [RADS-2], Reynolds, 1987; Multi-Dimensional Anxiety Scale for Children [MASC], March, Parker, Sullivan, Stallings, & Conners, 1997; Youth Risk Behavior Survey [YRBS], Eaton et al., 2010). Given that our participants were adolescents, self-report of depression, anxiety, and risky behavior was included as adolescents are an important source for data on these emotions and behaviors. In addition, we collected student self-report of overall satisfaction with life in domains such as school, family, and relationships (i.e., Brief Multidimensional Student’s Life Satisfaction Scale [BMSLSS]; Huebner, Drane, & Valois, 2000). We supplemented student report by having both teachers and parents report on additional measures monitoring behavioral and emotional functioning (e.g., BASC-2; DBD scale; Reynolds & Kamphaus, 2004).

**Assessing participant and environmental characteristics.** In addition to proximal and distal outcome measures, we completed assessments primarily to allow us to describe the sample of students, relevant school staff, and environmental characteristics. Intake interviews were conducted with all parents and school professionals involved in our study. We gathered information on both individual-level (e.g., demographics, special education status, risk/protective factors) and school-level variables (e.g., school demographics). These data will also be used to examine moderators and mediators of intervention effectiveness.

We also gathered data about students’ use of school and community services (community-based mental health, private counseling, mentoring, academic support, and medication) to determine the type and dosage of supports that were provided to our participants. We collected these data via a parent interview that integrated questions from the Services Assessment for Children and Adolescents (SACA; Hoagwood et al., 2000) and the Services for Children and Adolescents—Parent Interview (SCAPI; Jensen et al., 2004) and a teacher interview administered at both intake and the end of the RCT to ascertain services received both historically and during the trial. At the conclusion of the study, these data will be used to evaluate the role of supplementary services as a mediating variable.

**Intervention acceptability, feasibility, and satisfaction.** Feasibility and acceptability levels appear to be important predictors of intervention integrity (Finn & Sladeczek, 2001). Thus, social validity ratings were collected from both providers and students using the School Intervention Rating Form (SIRF). The SIRF was adapted from the Treatment Acceptability Rating Form—Revised (Reimers & Wacker, 1988) to reflect interventions implemented in schools. The SIRF queries respondents about their perceptions of a variety of domains of social validity, such as intervention effectiveness, cost, ease of implementation, and contextual fit. SIRF ratings were collected throughout the intervention development phase and served to inform intervention modifications. In addition, the SIRF was administered 1 month after initial intervention implementation and at the end of each school year during the RCT.

**Implications for Research and Intervention**

Based on our logic model and the preliminary findings from CARS, we recommend a dual intervention approach that addresses students’ universal and common needs through the use of empirically validated strategies as well a process to make ongoing data-based decisions to tailor additional
supplemental supports to address unique student needs. This approach is similar to an adapted intervention framework that has been used effectively in the health field (e.g., Lei, Nahum-Shani, Lynch, Oslin, & Murphy, 2012; Weisz, Chu, & Polo, 2004) and is beginning to be applied in education (e.g., Swoszowski, McDaniel, Jolivette, & Melius, 2013). An adapted intervention framework relies on evidenced-based interventions that are adapted or tailored to meet individual needs (e.g., Wehby & Kern, 2014). However, rather than relying on trial and error or clinical judgment to tailor interventions, we recommend relying on data to determine additional interventions that are indicated (e.g., Kern & Wehby, 2014). In future research, the prescribing process, such as the one we utilized in CARS, should be further evaluated and refined to assure that the assessment information is precisely matched to an effective intervention. In addition, further research is needed to identify “universal” interventions (e.g., Farmer et al., 2010) that will benefit all students with SEB and determine how those interventions interact with individualized prescribed interventions to address the diverse and comprehensive needs of this population. Finally, as new interventions emerge and existing interventions are refined that better address the unique needs of adolescents, this must involve an iterative process with ongoing updates.

In conjunction with articulating an adapted intervention framework in education, research is also needed to determine the social ecology within high school settings, including the subsystems that influence teacher implementation of evidence-based practice. For instance, in a model advanced by Motoca and colleagues (2014), teacher implementation of evidence-based intervention is influenced by microsystems (e.g., families, administration, personal beliefs), mesosystems (e.g., immediate school context), exosystems (e.g., discipline policies, school culture, organizational supports), and macrosystems (e.g., state and national education policies). We agree that there are many variables and systems that influence whether interventions are implemented and how they are altered during implementation. Future research to enhance our understanding of these systems and how they interact will be critical for developing acceptable and sustainable evidence-based practices.

Another area in which additional research is imperative pertains to adolescents with SEB. As we discussed in our description of this population, relatively limited intervention research has been undertaken with older students and few interventions were available during out development process that were specifically suited to adolescents (e.g., ISG). Our iterative intervention development process, therefore, included modifying strategies that had evidence of effectiveness with younger students. We found that significant modifications were needed so that interventions addressed the developmental issues of adolescents and the contexts in which the interventions were implemented. This raises questions about the way we approach intervention with older students who generally have chronic problems and has implications for future research. First, the chronicity of their behavior problems may suggest that a different nature of intervention may be needed, rather than those that have focused primarily on prevention (Farmer & Farmer, 2001). Second, because most students have multiple risk factors, it is important to understand not only what those risk factors are but also the timing of risk factors, particularly those that emerge in adolescence, and how they correlate or interact (e.g., Farmer & Farmer, 2001). This is likely to enhance our ability to identify a coordinated set of interventions that are responsive to natural developmental transitions and function in a preventive manner (Farmer & Farmer, 2001). Finally, because systems of care shift during adolescence (e.g., juvenile justice, vocational), models of collaboration, and service provision need to also shift to assure that services appropriate for adolescents can be readily accessed (Evans, Rybak, Strickland, & Owens, 2014). Greater emphasis on the unique developmental needs of adolescents with SEB and the systems in which they function is likely to yield increasingly efficacious interventions.

Authors’ Note

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Note

1. We use the term school mental health professionals (SMHP) to refer to all school staff with a masters degree or higher in a mental health field including counseling, school psychology, and social work.

References


