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Exploring Solutions to Address Students' Social Competencies to Facilitate School Success: A Usability and Feasibility Study

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Abstract

In this methodological illustration, we examined Tier 2 social skills interventions to support school success for students with or at risk for emotional or behavior disorders. We presented findings examining the usability and feasibility of the *Social Skills Improvement System – Intervention Guide* and *Positive Action Counselor’s Kit*, which emphasize teaching and reinforcing social skills associated with success within and beyond school settings. We described how data-informed decision-making processes were conducted to design, implement, and evaluate social skills interventions, including monitoring student outcomes across the two programs. We end with a discussion of barriers and enablers toward conducting data-informed social skills interventions in authentic educational settings.

Keywords: social skills interventions, data-informed decision making, Tier 2, social competencies, emotional or behavioral disorders

Exploring Solutions to Address Students' Social Competencies to Facilitate School Success: A Usability and Feasibility Study

Social competencies encompass a repertoire of interpersonal, cognitive, and behavioral skills which facilitate social interactions, all of which are also critical enablers for school success. In addition to facilitating relationships, social competency predicts academic success (Malecki & Elliott, 2002). Many students come to school with skills needed to meet the social demands of school, including navigating interactions with peers and adults, advocating for themselves appropriately, and deftly resolving conflicts; others are less prepared to engage successfully in expected social behaviors (Lane, Carter, Common, & Jordan, 2012).

Students with or at risk for emotional or behavior disorders (EBD) may be particularly vulnerable to social difficulties. These students exhibit externalizing (e.g., aggression) and/or internalizing (e.g., anxious) behaviors, and frequently exhibit deficits in discrete social competencies (e.g., social skills; Nelson, Benner, Lane, & Smith, 2004). Point prevalence estimates suggest between 12-20% of school-aged youth experience mild-to-severe symptoms of EBD at any given time (Forness, Freeman, Paparella, Kauffman, & Walker, 2012). Yet, less than 1% are eligible for special education for emotional disturbance. Fortunately, many schools are increasingly moving toward systems-level approaches to prevent problem behaviors from occurring and responding respectfully and efficiently when problems do occur. Due to the importance of social competencies, these efforts should include practices that teach and reinforce social skills associated with success within and beyond school settings.

Recognizing the need to focus efforts on social competencies in addition to academic and behavioral domains, many schools have adopted comprehensive, integrated, three-tiered (Ci3T) models of prevention (Lane, Oakes, & Menzies, 2014). Ci3T incorporates teaching of social skills into a framework integrating positive behavior interventions and support and evidence-based academic instruction across three tiers of support. Primary (Tier 1) prevention efforts consist of teaching and reinforcing school-wide behavior expectations and universal access to high-quality instruction based on validated curricula for academic and social skills. When

implemented with fidelity, Tier 1 efforts are expected to be effective for 80% of students; 15-20% may require additional supports (Tier 2), while intensive interventions (Tier 3) may be necessary for 3-5%. To assist all students, educators make data-informed decisions to connect students with Tier 2 and 3 interventions to address their academic, behavioral, and social needs.

Data-Informed Decision Making to Assist Students with or at risk for EBD

For students with or at risk for EBD, supports beyond what is provided at Tier 1 may be needed to support certain skill acquisitions. To meet this charge, tiered systems such as Ci3T incorporate data-informed decision-making processes to guide intervention efforts with implementation of effective practices to meet students' needs at Tiers 2 and 3. Data-informed decision making allows educators to (a) use resources efficiently; (b) identify students who may require support beyond Tier 1; and (c) select, plan, and implement interventions targeting their needs. First, educators review Tier 1 treatment integrity data to determine if the school-wide plan is being implemented with fidelity. Next, student-level data (e.g., screening, office discipline or mental health referrals) are examined to detect students needing more than Tier 1. If educators determine Tier 1 efforts are in place with high fidelity and students demonstrate additional need across multiple sources of data, Tier 2 or 3 interventions may be warranted.

Next, educators connect students to Tier 2 and 3 supports using intervention grids listed in their school's Ci3T Implementation Manual, grids of integrated academic, behavioral, and social supports. Each grid contains a name for the support, a brief description of the intervention, schoolwide data used for entry criteria, data used to monitor progress, and exit criteria (see ci3t.org/pl for examples).

Before selecting interventions for specific students, educators may elect to gather additional data. For example, when considering issues affecting social competencies, educators may seek to identify student social skill strengths and difficulties. Students with acquisition (can't do) deficits require direct instruction to learn the skill(s). Students with performance (won't do) deficits may benefit more from behavioral interventions focused on adjusting antecedent and reinforcement conditions to support student use of these skills consistently and/or

at higher future rates (Gresham, 1998). Given intervention selection depends on student characteristics (e.g., type of skill deficit), educators may seek parental permission to collect additional data from teachers—and ideally parents as well—to inform intervention planning. One potential data source is the Social Skill Improvement System-Rating Scale (SSiS-RS; Gresham & Elliott, 2008a), a norm-referenced, multi-informant tool used to identify specific acquisition deficits. An educator may use these data to connect a student to a social skill intervention (SSI).

Evidence base of Social Skill Interventions

SSIs have been used to reduce problem behaviors and promote prosocial behaviors for a variety of students. Meta-analyses examining the effectiveness of SSIs for students with EBD revealed small to moderate positive effects (Quinn, Kavale, Mathur, Rutherford, & Forness, 1999). One explanation for varying levels of SSI effectiveness is inconsistent use of individualized and socially valid approaches to intervention planning, emphasizing the need for a data-informed decision-making process (Gresham, Cook, Crews, & Kern, 2004). Evidence suggests SSIs are more successful if they target skills (a) identified as acquisition deficits and (b) are deemed socially important by stakeholders—including teachers, parents, and students (Gresham, Van, & Cook, 2006; Lane et al., 2003).

Usability, feasibility, and acceptability of SSIs are important considerations in addition to examining efficacy (Vivanti & Stahmer, 2018). Although evidence of social skills acting as academic enablers provides a strong rationale for leveraging resources to support development of these skills as part of regular school practices (DiPerna & Elliott, 2002), interventions are unlikely to be implemented with fidelity if stakeholders (e.g., teachers, counselors) do not find the procedures socially valid (Lane & Beebe-Frankenberger, 2004). Thus, identifying effective and feasible SSIs for educators to implement is critical to ensure schools can support meaningful changes for students with or at risk for EBD. We describe two such potential SSIs subsequently.

Social Skills Improvement System – Intervention Guide (SSiS-IG). SSiS-IG (Gresham & Elliott, 2008b) is an intervention companion to the SSiS-RS. The SSiS-IG consists of 20 social skill lessons that can be provided to students guided by a data-informed decision-making

process. Although no published studies were found on the SSiS-IG for students with or at risk for EBD, several studies exist from its predecessor, the Social Skill Rating System (SSRS; Gresham & Elliott, 1990). Lane et al. (2003) employed a multiple baseline design (MBD) to evaluate a 10-week SSI for seven elementary-aged students at risk for EBD. Direct observation of classroom and recess behavior indicated decreases in negative social interactions and disruptive behavior, as well as increases in academic engaged time (AET). Miller, Lane, and Wehby (2005) utilized similar procedures but had regular school staff implement the intervention. Students' inappropriate classroom behavior decreased and AET increased. Lastly, Gresham et al. (2006) used SSRS lessons and a differential reinforcement of other behavior procedure over 22 weeks to support four students at risk for EBD. An AB_k design demonstrated large-to-moderate reductions in disruptive behavior across students and decreases in negative social interactions ranging from large ($n = 2$) to moderate ($n = 1$) to small ($n = 1$) effects. All studies used SSRS to detect specific acquisition deficits to inform lesson selection. Two studies assessed social validity and found general approval for SSIs (Lane et al., 2003; Miller et al., 2005). Yet, when school staff (paraprofessionals) provided SSI, social validity was lower in comparison to those conducted by research staff or school psychologist interns (Miller et al., 2005).

Positive Action Counselor's Kit (PACK). The PACK is a supplement to Positive Action (PA), a comprehensive social-emotional and character development program (Flay & Allred, 2003). PACK provides additional instruction and practice for students requiring support beyond Tier 1 implementation of PA (Allred, 2013). Currently, no studies report effects of the PACK. Yet, research on PA demonstrates positive outcomes for students including improvements in academic achievement and behavior (Flay & Allred, 2003). Relatedly, a small ($n = 9$) treatment outcome study of PA lessons taught as a Tier 2 support showed promising results for students with moderate-to-high levels of risk for externalizing behavior. Students receiving PA lessons showed increased levels of engagement and motivation relative to students in a book study group (i.e., active control condition; Oakes et al., 2012). Teacher and student social validity scores reflected positive views of the intervention, yet students did not like to miss class time.

Purpose

As part of a researcher-practitioner grant funded by the Institute of Education Sciences, administrators and mental health professionals identified a need for developing capacity to (a) use data-informed decision making to inform intervention decisions for supporting students' social competencies at Tier 2, (b) implement evidence-based interventions to support these students, and (c) evaluate the effectiveness of these interventions. As such, the purpose of this study was to support the design and installation of SSI and examine the usability and feasibility of manualized, data-informed Tier 2 SSIs (i.e., SSiS-IG and PACK curricula), as implemented by school counselors with minimal university support. We used an integrated model for examining usability, feasibility, and acceptability by examining necessary components for making valid inferences: treatment integrity, social validity, and student outcomes (Lane & Beebe-Frankenberger, 2004). Research questions were: (1) To what extent are two social skill curricula—SSiS-IG and PACK—feasible to implement with fidelity by school counselors? (2) To what extent do stakeholders (i.e., teachers, mental health professionals, students, parents) find these interventions to be socially valid and acceptable? And (3) how can the effectiveness of different Tier 2 SSIs be examined in authentic educational settings toward improving student outcomes? We conclude with a discussion of methodological illustrations of enablers and barriers to implementation identified as part of this small school-based inquiry.

Method

Participants

Students. Participants included 24 second-grade ($n = 10$) and third-grade ($n = 14$) students from four elementary schools. Six were female (25.00%). Seventeen were White, one was Black, two were Asian/Pacific Islander, one was Native American, and three were of mixed race. Three students were Hispanic. Students demonstrated moderate to high levels of risk for externalizing and/or internalizing behaviors according to fall 2016 scores on the Student Risk Screening Scale – Internalizing and Externalizing (SRSS-IE; Drummond, 1994; Lane & Menzies, 2009; detailed inclusion criteria to follow). For externalizing behaviors, three students

were at low risk, 14 at moderate risk, and seven at high risk. For internalizing behaviors, 12 students were at low risk, six at moderate risk, and five at high risk. One student did not have a completed rating for internalizing behaviors at the fall time point. Of the 24 students, six were receiving special education services as previously determined by a multidisciplinary team prior to the onset of the study (developmental delay [$n = 1$], emotional disturbance [$n = 2$], gifted [$n = 1$], specific learning disability [$n = 1$], other health impaired [$n = 1$]). Three additional students were referred during the course of the study; two were found eligible and the final referral was not completed prior to the end of this study (we do not report specific classifications as part of an agreement with the district to protect student confidentiality due to small numbers of referred students).

Teachers. Eleven teachers across second grade ($n = 6$) and third grade ($n = 5$) served as students' homeroom teachers. Ten teachers were female (90.91%). Eight identified as White (72.73%), one as Black (9.09%), and two (18.11%) declined to specify. Teachers had an average of 12.82 ($SD = 9.50$) years teaching experience. Seven (63.64%) held a bachelor's degree; four (36.36%) held a master's degree.

Counselors. Four school counselors (one at each school) led SSI small groups. All were female, identified as White, and held at least a master's degree. Counselors has an average of 14.50 years of education experience ($SD = 7.85$) and were the primary intervention agents.

Setting

Schools. Students attended one of four inclusive public elementary schools (kindergarten to fifth grade) located in a small Midwestern city in the United States. All elementary schools were in the third year of Ci3T implementation following a year-long training series. At the time of the study, the district was in the final year of an IES funded research-practitioner partnership focused on implementing and evaluating Ci3T models of prevention. Each school implemented Ci3T as indicated by its Ci3T Implementation Manual, which specified a primary (Tier 1) prevention plan and procedures for monitoring treatment integrity of primary plan implementation (contact corresponding author for school characteristics and treatment integrity

information). All elementary schools taught PA at Tier 1. Teachers logged the number of lessons taught to monitor fidelity. The mean number of lessons taught across participating students' classrooms prior to intervention was 16 ($SD = 8.11$; Range: 7-28).

SSI intervention setting. SSIs were taught in small groups led by counselors in either the counselor's office ($k = 3$) or a flexible meeting space ($k = 1$). Counselors in two schools held groups during 25 to 30-min intervention blocks. Two counselors held groups during lunch; students brought their lunch to the group. This was to accommodate students' existing schedules to ensure they did not miss Tier 1 instruction, Tier 2 intervention blocks (during which students received other supports such as reading interventions), or other daily activities.

General Procedures

Administrators and counselors requested assistance conducting Tier 2 interventions targeting students' social competencies as part of ongoing efforts to implement Ci3T. After securing district- and site-level approvals, participants were consented as follows: principals ($n = 4$; all consented), counselors ($n = 4$; all consented), teachers ($n = 12$; 11 consented), families ($n = 25$; 25 consented), and students ($n = 25$; 24 assented). One second grade male student in the PACK group withdrew after attending one SSI session due to scheduling conflicts between the intervention and scheduled special education services. His data are reported in the demographic and pretest measures. Parallel to SSI interventions, classroom teachers completed direct behavior ratings (DBR; Chafouleas, Riley-Tillman, & Christ, 2009). Research questions related to this progress monitoring and intervention tool were dropped (described subsequently).

Participant selection process. School counselors and principals met with two principal investigators (PIs) and two doctoral-level research assistants (RA) to examine deidentified fall screening data to identify potential participants. First, they made a list of students in the second and third grade who scored in the moderate- or high-risk range for externalizing and/or internalizing behaviors on the SRSS-IE, prioritizing students at moderate risk to match student need with intervention intensity. Next, counselors and principals narrowed the list to include students with two or fewer absences during the first three months of school to ensure students

had regular access to Tier 1 supports before connecting them with Tier 2 interventions.

Participating students had an average of 1.42 ($SD = 1.33$) absences during the first three months.

Intervention Procedures. Students in each school were randomly assigned to receive counselor-led, small-groups SSIs using either the SSiS-IG or PACK. Teachers implemented DBR each day during their classroom during English Language Arts instruction. DBR is a behavioral intervention as well as a progress monitoring tool (Chafouleas et al., 2009; Vannest, Burke, Payne, Davis, & Soares, 2011). DBR began prior to SSI and ran parallel throughout the study. Counselors at each school taught two groups, one using each of the two curricula. Groups met for 22 sessions. Each curriculum recommended 45 min to cover each lesson. Due to scheduling constraints, counselors targeted teaching each lesson over two 25 to 30-min sessions per week. Counselors also taught two review sessions, one at the midpoint of the intervention and one at the end (contact corresponding authors for list of targeted unit/lessons by session number). To support generalization of skills taught during sessions, counselors sent emails (drafted by two RAs and sent to counselors at least one week ahead of lesson schedule) to students' teachers describing the lesson objectives and social skill topics.

SSiS-IG. The SSiS-IG includes 20 lessons covering seven domains. Each domain (e.g., *Communication*) represents a general social skill area; lessons within that domain cover specific skills (e.g., *speaking in an appropriate tone of voice*). Each lesson follows a predictable six-part structure: tell, show, do, practice, monitor progress, and generalize. Lesson steps are designed to maximize opportunities for practice and to support generalization of skills (Gresham & Elliott, 2008b). Lessons are scripted and include supporting materials (e.g., skill checklists, videos).

PACK. The PACK curriculum consists of seven units totaling 42 lessons. Units cover a central theme (e.g., *Social and Emotional Positive Actions for Managing Yourself*), and lessons cover specific skills related to the theme (e.g., *Managing our Feelings*). Lessons follow a predictable three-step structure. The first step, *Positive Thoughts*, involves a story related to the featured social skill. Next, *Positive Actions* involves activities and discussions related to the story such as identifying what characters may have thought. The final step, *Positive Feelings*, includes

a summary and reflection on the lesson to support students in connecting their own actions to actions of characters in the story. Each lesson includes a scripted lesson plan with materials (e.g., reproducible handouts, props, songs connected to lessons) adaptable to students' interests and developmental abilities (Allred, 2013).

Planning and training. Two RAs supported counselors in planning lessons based on students' acquisition deficits as identified by the assessment tool corresponding to each curriculum (SSiS-RS for SSiS-IG; Skills for Greatness [SFG] for PACK, described subsequently). Lessons taught from Tier 1 PA implementation were also considered to determine if skills identified as acquisition deficits had been addressed at Tier 1. Across all students, priority was given to common social skill acquisition deficits associated with lessons previously taught at Tier 1, as students had already received instruction but did not yet demonstrate acquisition of these skills. Subsequent lessons were identified prioritizing acquisition deficits (a) common across multiple students and (b) followed the instructional schedule of Tier 1 PA lessons. If slots remained, lessons targeting individual students' acquisition deficits were identified until 10 lessons and two reviews were scheduled.

Two PIs and one RA trained school counselors to implement SSiS-IG and PACK curricula during a 90-min training session. Training included instruction in SSI procedures across groups (e.g., restating school-wide expectations, providing positive reinforcement for meeting expectations) as well as specific procedures for each curriculum (e.g., predictable lesson structures, curriculum materials) using a brief PowerPoint and curriculum manuals. Finally, counselors learned to complete treatment integrity self-report forms. All counselors completed a written check for understanding with >90% accuracy at the end of the training session ($M = 93.33$; $SD = 5.44$).

Measures

SRSS-IE. The SRSS-IE is a universal behavior screener used as part of regular school practices across the participating schools. Teachers screen students at fall, winter, and spring timepoints. SRSS-IE (elementary version) contains 12 items, seven measuring risk for

externalizing behaviors and five for internalizing behaviors. SRSS-IE demonstrates adequate internal consistency ($\alpha = .84$; Lane, Oakes, et al., 2012) and convergent validity with other commercially available screening tools (Lane et al., 2015).

Descriptive. We used curriculum specific measures to identify lessons based on student's acquisition deficits.

SSiS-RS. We used SSiS-RS scores to identify acquisition deficits and select lessons for students assigned to the SSiS-IG intervention group. Description and psychometric properties of the SSiS-RS are subsequently described.

Skills for Greatness (SFG). SFG (Positive Action, 2011) is a multi-informant 50-item questionnaire. Parent, teacher, and counselor versions (identical items) of the SFG were administered. Teacher and parent versions direct the rater to indicate the level of importance for each item using a 4-point Likert-type scale (0 = *not important*, 1 = *somewhat important*, 2 = *very important*, DK = *don't know*). The counselor version rates the degree to which each item describes the student using a 4-point Likert-type scale (0 = *not true*, 1 = *somewhat or sometimes true*, 2 = *very true or often true*, DK = *don't know*). The counselor version was used to identify student acquisition deficits (e.g., items rated as a 0 = *not true*), and the parent and teacher versions were used to identify the social importance of skills (e.g., items rated as 2 = *very important*). One PI and one RA supported counselors in utilizing these data to select lessons for students randomly assigned to the PACK group. There are no published studies of the reliability or validity of the SFG.

Student Outcomes: SSiS-RS. The SSiS-RS is a nationally norm-referenced diagnostic tool used to assess social skills, problem behaviors, and academic competence. Teacher and parent versions of the SSiS-RS were used to assess student participant's social skills, levels of competing problem behavior, and academic competence at pre- and post-intervention time points. SSiS-RS scores can be used to measure differences in these constructs over periods as short as four weeks. Scales for both teacher parent demonstrate adequate internal consistency

(median scale coefficient alpha = .97 and .95, respectively) and test-retest reliability ($r = .83$ and .86, respectively) as reported by the scale developers (Gresham & Elliott, 2008a).

Treatment integrity. We used a checklist of both counselor and student behaviors to determine treatment adherence and quality, as well as participant responsiveness. The checklist contained 21 items (14 described counselor behaviors [e.g., followed lesson plan], 7 described student participation [e.g., students demonstrated positive interactions with peers]). Counselors and outside observers (during IOA sessions) rated the degree of implementation for each component using a Likert-type scale (0 = *not implemented*, 1 = *partially implemented*, 2 = *fully implemented*). Counselors collected treatment integrity data across all sessions. Three doctoral-level graduate students provided secondary observation of treatment integrity by conducting observations during an average of 27.75% of PACK and 31.13% of SSiS-IG sessions across all groups (range = 21.05-41.18%). We computed percentage of implementation fidelity at the counselor- (total \div 42 \times 100) and student-level (total \div 14 \times 100). To calculate IOA, we computed Pearson correlation coefficients between counselor and outside observer across counselor-level items for PACK ($r = 0.95$, $p < 0.05$) and SSiS-IG ($r = 0.79$, $p = 0.21$) sessions. We calculated Pearson correlation coefficients between counselor and outside observer across student-level items for PACK ($r = 0.96$, $p < 0.01$) and SSiS-IG ($r = 0.87$, $p < 0.01$) sessions.

Social validity. We assessed social validity before and after the intervention to examine the extent to which the intervention met stakeholders' expectations and the acceptability of intervention procedures and outcomes (Common & Lane, 2017). General education teachers, counselors, and parents completed the Intervention Rating Profile (IRP-15; Witt & Elliott, 1985), which consists of 15 items related to the suitability of intervention procedures and importance of outcomes with an internal consistency of .98. For interpretation, higher scores (range = 15-90) indicate higher levels of perceived social validity. Each item is rated using a Likert-type scale from 1 (*strongly disagree*) to 6 (*strongly agree*). The IRP-15 also contains space for open-ended comments. General education teachers and counselors completed two IRP-15 forms at each time

point (e.g., pre- and post-intervention), one form for DBR, and one for the SSI. Parents rated the entire intervention package (DBR and SSI) by completing one IRP-15 at each time point.

Students completed a modified version of the Children's Intervention Rating Profile (CIRP; Witt & Elliott, 1985). The CIRP contains 7 items scored using a six-point Likert-type scale ranging from 1 (*I agree*) to 6 (*I do not agree*) and a section for open-ended comments (transcribed by RAs if students requested) with an internal consistency ranging from .75 to .89 (Common & Lane, 2017). Similar to the IRP-15, higher scores (range = 7-42) indicate higher levels of perceived social validity. Items were reverse scored if wording reflected disapproval so that higher CIRP scores reflect greater approval of intervention procedures.

Experimental Design and Analysis

Initially, we planned for a randomized control trial (pretest-posttest two-group design) with single case methodology (MBD) in each intervention group. The intent was to examine the extent students with varying social skills responded to supplemental instruction (DBR + SSiS-IG [group 1] or DBR + PACK [group 2]). DBR was to serve as an initial condition (A₁) and be used to examine the additive benefit of SSI (B₁). Yet, several circumstances prior to implementation necessitated adaptations to the intended design. Participating teachers reported DBR support was most needed during instructional times such as whole-group reading; however, activities presented during this time (e.g., teacher read aloud, whole-group instruction) did not offer students frequent opportunities to exhibit social skills learned. Additionally, ceiling effects were found in many participants during the initial baseline phase, suggesting DBR conducted during these classroom activities would not be sensitive to changes in social skills or improvements in academic engagement. Lastly, there was concern that staggered introduction of the intervention would diminish the number of social skill lessons taught to students in the final tiers of MBD. Thus, although teachers continued to receive technical assistance in implementing DBR for the duration of the study, these data were not used to evaluate outcomes related to SSIs and no questions pertaining to the MBD were addressed. As such, the planned pretest-posttest two-

group design was our only means to evaluate outcomes of the two SSIs using SSiS-RS scores as the primary dependent measure.

For data analysis, we used descriptive statistics to address the first two research questions examining counselors' implementation of SSIs with fidelity and shifts in stakeholders' social validity. An underpowered pretest-posttest two-group design using 2×2 analysis of variance (ANOVA) was used to address the third research question regarding shifts in students' social skills performance in authentic educational settings.

All statistical procedures were conducted in SAS (SAS Institute, 2013). We examined descriptive statistics (M , SD , Hedges' g) and Pearson correlation coefficients to examine treatment integrity, social validity, student outcomes, and reliability estimates. We interpreted effect sizes following guidelines proposed by Cohen (1988) for the standardized mean difference: small (< 0.20), medium (0.20 to < 0.80), and large (≥ 0.80) effects. To examine shifts from pre to post across groups we employed a series of two-way mixed ANOVAs to examine effects of pretest score and group assignment on posttest score for teacher's SSiS-RS for social skills, problem behavior, and academic competence. Due to incomplete rating scales and/or unreturned pre- or posttest measures, missing data ranged from 0-8% on teacher forms and 9-45% on parent forms. High percentage of missingness on parent/caregiver posttest measures indicated arbitrary patterns of missingness; therefore, we attempted to employ Markov chain Monte Carlo (MCMC) method for multiple imputations. Multiple imputations allow data to be filled in with imputed values using specified regression models, which allows for more accurate variability with multiple imputations for each missing value (Stef van Buuren et al., 2017). Our model was unable to converge with meaningful output (as demonstrated by high standard errors), not uncommon in small sample research ($n = 10-30$) with high percentages of missingness (upwards to 50%). For student outcomes from parent perspectives, we employed pairwise deletion to report descriptive statistics for pre and post measures. We removed student outcomes from parent perspectives for analyses using inferential statistics due to high degree of missing data and inability to converge meaningful imputed data.

Results

Treatment Integrity

Twenty-two sessions were planned for all intervention groups. For PACK, two counselors implemented all sessions and two implemented 19 sessions (86.36%). For SSiS-IG, one counselor taught 21 sessions (95.45%), two taught 20 sessions (90.91%), and one taught 17 sessions (77.27%). Three counselors rated their average implementation of SSIs across curricula to be high ($\geq 85\%$), and one counselor rated their implementation as moderate (70-84%). Two counselors' average implementation of SSIs across curricula were similarly rated as high by outside observers, whereas one counselor rated their implementation higher than the outside observer and another rated their implementation lower than the outside observer. Similar patterns were reported in students' participation in lesson components (see Table 1).

[Place Table 1 here]

Social Validity

Ratings of social validity across curricula on the IRP-15 pretest form were moderate across teachers and counselors. Slightly lower scores were reported at posttest by teachers for PACK and slightly higher for SSiS-IG (see Table 2). Magnitude differences between pre- and posttest for teachers were small ($g = -0.06$ for PACK; $g = 0.05$ for SSiS-IG).

Counselor posttest ratings decreased ($g = -0.35$ for PACK; $g = -1.21$ for SSiS-IG), indicating expectations were not met. Several counselors' comments recorded on social validity forms indicated challenges related to scheduling intervention groups rather than the curriculum itself, an important distinction we explore in the Discussion. Counselors who met with students during lunch reported this time as beneficial for some students (“[student] does not do well in large groups socially so lunch was great time for group”) and challenging for others (“Lunch time two times per week took him away from social time with peers”). One counselor reported difficulty meeting the needs of individual students using the SSiS-IG curriculum (“language too complicated for ESL [English as a second language] student”; “not enough flexibility in program, too repetitive, steps being taught way to [sic] confusing”). Another counselor reported

the PACK curriculum as beneficial for one student in particular (“This intervention helped his needs. The student has extreme trauma and hopefully some of these skills will help him in the future”).

Parent social validity ratings of the intervention package (DBR + SSI) were moderate following listwise deletion at pre-intervention ($M = 70.10$, $SD = 14.38$; $n = 10$) and post-intervention ($M = 74.50$, $SD = 7.01$; $n = 8$). Magnitude differences between parents’ pre- and posttest were small and non-significant ($g = 0.36$, 95% CI: -5.78, 5.06). Parent comments on social validity forms reflected general approval of intervention procedures and outcomes. A parent of a student in the SSiS-IG group reported, “My child enjoyed the groups and was always very eager to show me the form [DBR] related to his observed time each day.” A parent of a student in the PACK group wrote, “[student] liked this and seemed to be making and keeping friends better – A positive outcome.” Student perceptions of SSIs at pretest ranged from moderate to high for PACK ($M = 35.09$, $SD = 4.72$) and SSiS-IG ($M = 36.75$, $SD = 4.49$). Students reported similar, albeit higher average scores at posttest for PACK ($M = 37.45$, $SD = 6.28$) and SSiS-IG ($M = 37.42$, $SD = 5.74$). This was associated with a moderate magnitude increase between pre and post for PACK ($g = 0.41$), and a nominal difference in SSiS-IG ($g = 0.13$).

[Place Table 2 here]

Student Outcomes

Descriptive statistics and effect sizes for student outcomes are reported in Table 3 for the pretest-posttest two-group design used to evaluate student outcomes. Due to the small sample size and high level of missing data, inferential statistics examining pre-post-test differences for parent-completed SSiS-RS ratings were not examined. We attempted first to include missing data by performing multiple imputations, but the models did not converge, producing non-interpretible results with high standard errors. A two-way ANOVA was conducted to examine the effects of pretest score and group assignment on teacher-completed posttest ratings of social skills. A group difference was not statistically significant, $F(1, 19) = 0.06$, $p = 0.81$. An

additional two-way ANOVA was conducted to examine the effects of pretest score and group assignment on teacher-completed posttest scores of problem behavior. The group difference was not statistically significant, $F(1, 20) = 0.06, p = 0.81$. A final two-way ANOVA was conducted to examine the effects of pretest score and group assignment on teacher-completed ratings of posttest scores for academic competence. Again, the group difference was not statistically significant, $F(1, 20) = 0.08, p = 0.78$.

[Place Table 3 here]

Discussion

We conducted this study to examine the usability, feasibility, and acceptability of two SSIs implemented as Tier 2 supports in the context of four elementary schools implementing Ci3T models of prevention. Treatment integrity data collected from two perspectives (i.e., counselor self-report and outside observers) indicated counselors were able to implement the intervention with moderate-to-high levels of integrity. In general, counselors were able to navigate and follow lesson plans across curricula, indicating both curriculums to be usable. It should be noted counselors were provided with the lessons for each group, they were not charged in this study to connect students to specific lessons. However, six of the eight intervention groups were not able to complete all planned intervention lessons, indicating some barriers (e.g., logistical challenges) in the feasibility of putting SSIs into practice. Social validity data suggested both SSIs met parent, teacher, and student expectations and were acceptable, while counselors raised concerns with scheduling (e.g., so as not to conflict with other essential activities) and differentiating instruction to meet individual student needs (e.g., ESL students, students with behavioral challenges).

Differences in problem behavior, social skills, and academic competence were non-significant across teacher-completed rating scales (SSiS-RS). Parent-completed rating scales suggested improvement across domains of social skills and problem behaviors; however, large amounts of missing data did not allow for inferential tests of significance from parent

perspective. Missing data patterns were arbitrary with monotone and non-monotone patterns, suggesting missingness was random. Thus, these data should be interpreted with caution.

Methodological Considerations and Limitations

Based on these moderate-to-high levels of feasibility (as measured by treatment integrity data) and mixed acceptability and usability (e.g., social validity), it is important to determine features that facilitate and impede successful implementation of SSIs. In the subsequent sections we explore methodological considerations to inform future efforts in designing, implementing, and evaluating SSIs in authentic educational settings.

Data-informed decision making. Counselors and administrators partnered with researchers to identify students who demonstrated social skill needs. This included examining school-wide data (e.g., treatment integrity and social validity of Tier 1) and multiple sources of student-level data (e.g., screening) to connect students to Tier 2 SSIs. During this process, counselors and administrators expressed a preference to include students with scores in the high-risk range on the SRSS-IE despite our recommendation to focus on students with moderate risk. Also, students were identified and selected for Tier 2 SSIs prior to administering social skill rating scales (SSiS-IG and SFG) as necessitated by consenting procedures. Thus, some students received Tier 2 supports when Tier 3 supports may have been needed. Furthermore, other students received SSI when a different Tier 2 support (e.g., DBR alone) may have been sufficient. The availability of school-wide data (e.g., SRSS-IE, attendance data) to utilize for decision-making purposes represents a substantial advancement over reliance on teacher referrals. Yet, results emphasize the importance of aligning Tier 2 interventions with student-specific factors (e.g., level of risk, nature of challenges—acquisition deficits vs. performance deficits). Future research is needed to identify effective supports and procedures for educators in utilizing multiple sources of data to make optimal intervention decisions.

Treatment integrity and dosage. Minimal training and moderate-to-high levels of treatment integrity indicate SSIs are feasible to implement in authentic school settings. However, treatment integrity data suggested differences existed between counselors' implementation,

which may have implications for refining procedures for SSI delivery. The counselor at School 4 self-reported lower levels of treatment integrity relative to other counselors, particularly on student-level items. Lower ratings may reflect student problem behaviors occurring regularly during group, leading to a greater focus on behavior management at the expense of SSI objectives. The inclination to include students with more substantial risk (e.g., students with higher scores on the SRSS-IE) in Tier 2 SSIs may be a barrier to implementation. Students at higher risk may require more intensive and individualized interventions (e.g., Tier 3). Alternatively, implementers of SSIs may require additional behavior management strategies to decrease disruptive behaviors and increase engagement, a finding aligned with similar inquiry on conflict resolution and study skills as Tier 2 supports (Kalberg, Lane, & Lambert, 2012; Robertson & Lane, 2007). A further potential barrier related to implementing SSIs with integrity may lie in the relation between it and social validity; if intervention agents view their procedures as socially acceptable, they will likely follow the intervention components with higher integrity (Lane & Beebe-Frankenberger, 2004). In this study, we assessed social validity, both before and after the intervention, which helped answer what did stakeholders think about the social significance of the intervention goals, the social acceptability of the intervention procedures, effects of the intervention (as anticipated at pretest and as concluded at posttest), and how those opinions shifted. These questions help assess the degree to which the goals, procedures, and effects of the intervention meet, exceed or fail to meet the expectations from the onset to the conclusion of the intervention (Common & Lane, 2017). Results of this study indicated counselors' expectations were not met by either SSI.

Dosage, or the extent to which students were exposed to the curriculum, also requires consideration in the context of the present study. Similar studies have varied widely in the duration and intensity of intervention provided. For example, Lane et al. (2003) implemented a 10-week intervention consisting of two 30-min sessions per week, whereas Gresham et al. (2006) provided a substantially higher dose (3 hrs per week for 20-weeks). Two primary considerations were applied to determine dosage in the current study. First, since SSIs were conceptualized as

Tier 2 supports, the lower range of dosage evidenced in the literature was deemed appropriate. Second, time constraints made it difficult to schedule intervention sessions longer than 25-30 min despite curricula recommending slightly longer sessions. Some counselors selected lunch as their best option relative to existing school schedules. Given the complexities of scheduling these interventions and the potential for insufficient dosage as a contributor to unsuccessful interventions (Gresham, Sugai, & Horner, 2001), identifying effective dosages for students demonstrating diverse risk profiles may support future use of SSIs.

Social validity. Counselors and students—the two stakeholder groups most exposed to the SSI interventions (e.g., as intervention agent and participant)—showed different patterns of rating social validity across time points. Counselor social validity ratings decreased from pre- to post-intervention whereas student social validity ratings increased. Decreased ratings may suggest the curricula and/or procedures did not meet initial expectations (Common & Lane, 2017). Counselors described challenges related to scheduling, curricula rigidity, and differentiating instruction. Low social validity scores represent a potential barrier as social validity relates to successful intervention implementation (Common & Lane, 2017). To improve social validity, future work is needed to support a variety of educators' confidence in implementing validated programs. This may include additional training in classroom management to increase engagement or support in differentiating instruction and modifying curricular materials while maintaining intervention integrity (Kalberg et al., 2012; Robertson & Lane, 2007).

Experimental considerations. Many factors determine a study's ability to detect effect, including how strong the theory of change is, how well the program is implemented, the degree to which data were received from all stakeholders, and the strength of experimental design (Seftor, 2016). In contextualizing null effects of the present study, it is possible our theory failed, implementation was insufficient, experimental design procedures shifted, and/or the research design failed). Missing data from parent perspectives at both timepoints also contributed to difficulty determining effects. Gathering data from parents proved difficult, perhaps due to the

amount of information requested remotely or relying on written communication between PIs and families). Although details were provided during the consent process, more detailed follow-up contacts may be necessary for completion of all measures.

Given the mixed findings, future research is needed to explore not only the effectiveness of SSIs but transportability of these supports into school systems as regular practices. A larger study meeting the power requirements for hierarchical linear modeling would allow for analyses accounting for the nested nature of these data. More work is needed to examine individual, group, and school level differences. For example, social skills deficits, level of risk for externalizing and internalizing needs, ESL, disability status, group size, treatment integrity and social validity of Ci3T primary plan. Furthermore, systematic qualitative inquiry may be an important source of information for understanding and overcoming potential barriers to implementing SSIs such as those described here.

Future Directions

In this study we examined the usability, feasibility, and acceptability of two SSIs to support development of social competencies for 24 students at risk for EBD. We found counselors were able to implement the intervention with moderate-to-high treatment integrity, and parents, teachers, and students found the intervention met their expectations. Although results were mixed regarding feasibility of these programs from counselors' perspectives and in terms of student outcomes, this study provides important insight for future examination of SSIs in the context of school settings. First, consideration must be given to data-informed decision-making processes, such as making intervention decisions based on school-wide (e.g., screening, attendance) and diagnostic (e.g., SSiS-RS) data. Second, potential supports for intervention agents such as counselors should be explored to maximize curriculum implementation and effectiveness. Support may focus on empowering interventionists with behavior management strategies and approaches for adapting curricular materials (e.g., differentiating instruction) to meet student need while maintaining high levels of fidelity. These supports may benefit interventionists and students by addressing concerns apparent in social validity data regarding

perceived inflexibility of SSI programs. Third, attention must be given to logistical issues such as scheduling SSIs and creating structures to support gathering complete data from all stakeholders. Concerns regarding scheduling apparent in this study suggest schools may benefit from having clearly defined intervention blocks during which targeted supports can be provided without taking away from core subjects (e.g., ELA) or social times (e.g., lunch). Fourth, future research is needed to examine the merits of universal and curriculum specific SSI treatment integrity measures. Fifth, qualitative research is needed to inform enablers and barriers to data-informed SSI. Finally, as schools continue to prioritize social competencies, adequate means of identifying effective SSIs using a variety of group and single-case designs is an important next step. Although the present study demonstrated null effects, findings presented here provide important considerations for future design, implementation, and evaluation of SSIs in authentic school contexts.

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Table 1.

Treatment Integrity Social Skills Small Groups

	School							
	1		2		3		4	
	PACK	SSiS-IG	PACK	SSiS-IG	PACK	SSiS-IG	PACK	SSiS-IG
Number of sessions								
Planned	22	22	22	22	22	22	22	22
Taught	22	20	19	20	22	17	19	21
Counselor TI items across sessions								
Counselor rating <i>M (SD)</i>	90.24 (24.73)	91.14 (21.23)	97.74 (1.48)	97.98 (1.40)	96.97 (4.88)	95.63 (5.43)	74.94 (9.47)	76.64 (9.95)
Observer rating <i>M (SD)</i>	90.82 (10.33)	90.00 (8.32)	86.67 (11.98)	89.05 (10.05)	79.59 (14.41)	77.89 (5.62)	87.50 (5.28)	84.82 (8.81)
Student TI items Across sessions								
Counselor rating <i>M (SD)</i>	89.67 (26.93)	95.99 (16.65)	100 (0.00)	100 (0.00)	99.35 (2.10)	94.03 (11.87)	58.19 (29.19)	67.04 (23.78)
Observer rating <i>M (SD)</i>	88.37 (14.33)	84.52 (13.09)	93.43 (12.92)	94.64 (8.95)	85.71 (14.87)	84.18 (17.77)	76.79 (13.36)	75.98 (12.75)

Note. TI = treatment integrity. Pearson correlation coefficients between counselor and outside observer across counselor level items was 0.95 ($p < 0.05$) and 0.79 ($p = 0.21$) across PACK and SSIS-IG, respectively. Pearson correlation coefficients between counselor and outside observer across student level items was 0.96 ($p < 0.01$) and 0.87 ($p < 0.01$) across PACK and SSIS-IG, respectively.

Table 2.

Social Validity

Variable level	Intervention group				Effect size (pre to post)	
	<i>M (SD)</i>		<i>M (SD)</i>		PACK	SSiS-IG
	<i>n</i>		<i>n</i>			
Pre	Post	Pre	Post			
Teacher						
IRP-15 – SSI	70.30 (10.99) 10	69.73 (8.64) 11	71.30 (6.71) 10	71.68 (6.74) 12	-0.06	0.05
Counselor						
IRP-15 – SSI	76.36 (8.73) 11	73.27 (8.28) 11	74.92 (4.06) 12	61.58 (14.49) 12	-0.35	-1.21
Student						
CIRP – SSI	35.09 (4.72) 11	37.45 (6.28) 11	36.75 (4.49) 12	37.42 (5.74) 12	0.41	0.13

Note. IRP-15 – Intervention Rating Profile (Witt & Elliott, 1985); DBR = Direct Behavior Rating; SSI = Social skill intervention; CIRP = Children’s Intervention Rating Profile (Witt & Elliott, 1985).

Table 3.

Social Skills Rating Scales: Student Outcomes

Variable level	Intervention group <i>M (SD)</i> <i>n</i>				Two-way mixed ANOVA (group difference) <i>p</i> value	Hedges' <i>g</i> effect size (pre to post)	
	PACK (<i>n</i> = 11)		SSiS-IG (<i>n</i> = 12)			PACK	SSiS-IG
	Pre	Post	Pre	Post			
SSiS-RS (parent) – standard score							
Social Skills	83.90 (23.49) 10	93.83 (12.35) 6	85.80 (9.61) 10	98.57 (11.83) 7	N/A	0.46	1.15
Problem Behaviors	121.91 (11.66) 11	109.00 (15.43) 6	118.00 (9.65) 10	109.29 (14.89) 7	N/A	-0.94	-0.69
SSiS-RS (teacher) – standard score							
Social Skills	84.00 (12.71) 11	85.64 (12.12) 11	89.91 (13.18) 11	89.36 (13.63) 11	0.81	0.13	-0.04
Problem Behaviors	114.82 (13.20) 11	121.45 (16.53) 11	112.42 (12.67) 12	115.18 (15.30) 11	0.81	0.43	0.19
Academic Competence	83.45 (10.67) 11	83.60 (12.83) 10	100.75 (17.32) 12	100.55 (17.01) 11	0.78	0.01	-0.01

Note. Inferential significance testing was not performed on parent measures due to high percentage of missing data. Effect sizes non-significant.