Building Local Capacity for Training and Coaching Data-Based Problem Solving With Positive Behavior Intervention and Support Teams

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Positive Behavior Intervention and Support Teams use data to guide decisions about student social and academic behavior problems. In previous evaluation and research efforts, the authors taught team members to use Team-Initiated Problem Solving, a model that embeds data-based decision making into a broader problem-solving framework. In this study, the authors taught local trainer/coaches to deliver the problem-solving workshop to Positive Behavior Intervention and Support Team members. Trainer/coaches delivered the workshop and follow-up technical assistance with fidelity, and team members subsequently (a) used the problem-solving procedures in their meetings and (b) perceived positive differences between their pre- and postworkshop meetings. The study provides support for developing local capacity to deliver training and coaching, in particular as it concerns data-based decision making and problem solving.

KEYWORDS Team-Initiated Problem Solving, coaching, data-based decision-making

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Effective school personnel use data to enhance decision making about monitoring and improving instruction, documenting progress and outcomes, and informing parents and other stakeholders about key performance indicators (Bernhardt, 2009; Blankenstein, Houston, & Cole, 2010; Boudett, City, & Murnane, 2006; Burke, 2010; Deno, 2005; Hill, 2010; Newton, Horner, Algozzine, Todd, & Algozzine, 2009; Pidgeon & Gregory, 2004; Renfro & Grieshaber, 2009). At the summative level, data-based decision making involves comparing performance over time and comparing performance across schools, districts, states, or other education agencies. At the formative level, data inform decisions about what and how students are being taught, what levels of success are being achieved, and what additional supports may be needed by teachers and students (Hill, 2010). Data-based decision making at the formative level can result in improvements that are later reflected at the summative level (Algozzine & Algozzine, 2009; Bradley, Danielson, & Doolittle, 2007; Fuchs & Deshler, 2007; Sailor, Doolittle, Bradley, & Danielson, 2009; Stiggins & Duke, 2008; Sugai et al., 2005). Data-based decision making is typically the province of teams of teachers and other specialists who identify and address student problems (e.g., Deno, 2005; Tilly, 2008). There is a long history of school personnel acting in this capacity as members of a Teacher Assistance Team (Chalfant, Pysh, & Moultrie, 1979); Instructional Support Team (Kovaleski & Glew, 2006); Instructional Consultation Team (Rosenfield & Gravois, 1996); or as a member of one of multiple teams in a single school, with each team addressing a specific issue (e.g., a literacy team) within a problem-solving/response to intervention framework (e.g., Batsche, Curtis, Dorman, Castillo, & Porter, 2007).

In schools that implement Schoolwide Positive Behavior Intervention and Support (SWPBIS; e.g., Lewis & Sugai, 1999; Sugai & Horner, 2006, 2009) another such team is the Positive Behavior Intervention and Support (PBIS) team, whose members make data-based decisions in the effort to prevent, reduce, or eliminate student social and academic behavior problems (e.g., Algozzine & Algozzine, 2009; Anderson & Spaulding, 2007; Benazzi, Horner, & Good, 2006; Crone & Horner, 2003; Hyatt & Howell, 2004; Scott, 2003; Scott & Martinek, 2006). A PBIS team typically meets once a month, on a school day just before or after instructional periods, for about an hour. Given these constraints, PBIS teams may be more productive when team members possess (a) a set of standardized processes that enhance meeting efficiency and (b) a clear definition of outcomes that indicate a successful meeting.

In previous efforts aimed at helping PBIS team members conduct more efficient and effective meetings, we developed and field-tested a set of standardized processes that embed team members' data-based decision making in a broader problem-solving model referred to as Team-Initiated Problem Solving, TIPS (Newton, Horner, Algozzine, et al., 2009; Newton, Horner, Todd, Algozzine, & Algozzine, 2009). The TIPS model's processes are derived from literature associated with (a) a generic problem solving (e.g., Bransford
& Stein, 1984; Huber, 1980); and (b) problem solving as it is applied in curriculum-based measurement, an exemplar of data-based decision making that is focused on the academic behavior of students (e.g., Alonzo, Ketterlin-Geller, & Tindal, 2007; Deno, 1985, 1989, 2005; Shinn, 1989). We developed TIPS to enhance the problem-solving processes used by members of PBIS teams, who are primarily concerned with students’ social behavior problems, because that is where our experience and current research interests have greatest depth. However, TIPS is also a general problem-solving model, and its example and applicability could prove relevant for schools that establish problem-solving teams charged with addressing and resolving students’ academic and other problems.

In previous field-test evaluation and research efforts, we have conducted TIPS workshops at which we taught PBIS team members to apply the TIPS model in the context of their regular meetings (Newton, Horner, Todd, et al., 2009; Todd et al., 2010). After their participation in the TIPS workshop, the limited number of PBIS team members we trained were, in general, successful at implementing the TIPS model’s processes. These encouraging results led to our interest in answering three questions:

1. Could we teach local school personnel to deliver the TIPS workshop, so as to achieve broader dissemination of the TIPS model?
2. Would PBIS team members trained by local school personnel use the TIPS model’s processes in their subsequent meetings?
3. Would PBIS team members perceive differences between meetings they held before the training and meetings they held after the training?

Most state and school districts that are implementing SWPBIS have a pool of existing local personnel who could help us obtain answers to these questions.

In general, states and school districts follow a standard blueprint (Sugai et al., 2005) to achieve implementation of SWPBIS. One aspect of this blueprint involves establishing a leadership team charged with increasing the school system’s capacity to do its own SWPBIS training, coaching, evaluation, and coordination. This team increases training capacity by developing state, regional, or district PBIS trainers who are fluent in the concepts, features, systems, and practices of SWPBIS and who provide training in these content areas to members of school PBIS teams. A leadership team increases the likelihood that PBIS team members can apply the knowledge they acquire at SWPBIS training events by also developing PBIS coaches who provide on-site follow-up technical assistance to PBIS team members. (In some school systems, a person may have the dual role of PBIS trainer and PBIS coach.) First, a coach will attend a team’s monthly meetings; as team members acquire increased competence at implementing SWPBIS, a coach may attend meetings on a quarterly basis. Over time, the member of the PBIS team who
is serving as the facilitator (chairperson) should acquire the skills necessary to provide "internal coaching" when new members join the team.

In this descriptive field-based case study, we worked with a school district's PBIS trainer/coaches. These trainer/coaches were already providing coaching to PBIS team members who had received initial training in implementation of SWPBIS. We were interested in obtaining answers to three broad evaluation questions:

1. Could we teach the PBIS trainer/coaches to deliver the TIPS workshop and follow-up technical assistance to PBIS team members with fidelity?
2. Would the PBIS team members use more of the problem-solving and data-based decision-making processes exemplified by the TIPS model following their participation in the TIPS workshop delivered by the PBIS trainer/coaches?
3. Would the PBIS team members perceive differences between their baseline and post-TIPS workshop meetings?

METHOD

Participants and Settings

The first group of participants included four of the five PBIS trainer/coaches employed by a large urban school district in the southeastern United States to provide training and coaching in the implementation of SWPBIS to school PBIS team members. (The fifth trainer/coach was on leave during the time of this project.) Each participant had served in the role of PBIS trainer/coach for at least 2 years, and each provided informed consent for participation in the project.

The second set of participants included PBIS team members from schools receiving support from one of the PBIS trainer/coaches. Schools were recruited and selected for participation in this project by the school district's coordinator for PBIS, on the basis of our criteria that a selected school be an elementary school, be a participant in the district's PBIS Initiative, have a principal interested in participating in the project; and have a PBIS team that (a) holds meetings at least once a month; (b) has established (or is willing to establish) the team roles of facilitator, minute taker, and data analyst; and (c) has team members willing to provide informed consent and to allow observers at team meetings. Additional criteria were that the PBIS team be a user of the Schoolwide Information System (SWIS) and have use of a LCD projector and a computer capable of accessing their online SWIS database from the room in which the team held its meetings. The SWIS (Irvin et al., 2006; Irvin, Tobin, Sprague, Sugai, & Vincent, 2004; May et al., 2003) is an information system that consists of (a) a method for defining and collecting student discipline data (e.g., information about student office
discipline referrals), (b) a web-based computer application enabling the entry of hand-collected discipline data into the SWIS database and the subsequent production of predefined and user-defined custom reports, and (c) a process for using the reports to make data-based decisions (May et al., 2003). Three schools that met these criteria were selected and participated in the project.

School A was a neighborhood elementary school with a population of 1,169 students with 26% African American, 59% Caucasian, 5% Hispanic, and 10% belonging to other ethnic groups. Of students, 495 were male, 6% were identified as English language learners, and 6% were receiving special education services. The school met 17 of its 17 annual yearly progress (AYP) targets, 73% of students passed end-of-grade statewide tests in reading, and 85% passed in math. The PBIS team had 15 members: the assistant principal, the school psychologist, 8 teachers, and 5 teacher assistants.

School B was a neighborhood elementary school serving 928 students, with 56% African American, 25% Caucasian, 11% Hispanic, and 8% belonging to other ethnic groups. Of students, 51% were male, 9% were identified as English language learners, and 13% were receiving special education services. The school met 18 of its 23 AYP performance targets, 48% of students passed end-of-grade statewide tests in reading, and 57% passed in math. The PBIS team had 11 members: the assistant principal, a school counselor, 8 teachers, and an administrative assistant.

School C was a districtwide math, science, and environmental studies magnet school serving 630 students with 75% African American, 6% Caucasian, 7% Hispanic, and 12% belonging to other ethnic groups. Of students, 55% were male, 13% were identified as English language learners, and 10% were receiving special education services. The school met 18 of its 23 AYP performance targets, 48% of students passed end-of-grade statewide tests in reading, and 57% passed in math. The PBIS team had 9 members: the assistant principal, a school psychologist, 6 teachers, and a teacher assistant. All PBIS team members from all three schools provided informed consent for participation in the project.

Procedure

We provided the 5-hr TIPS workshop for the four PBIS trainer/coaches to prepare them to deliver the workshop independently to the PBIS team members from the three schools. We modeled the presentation of the TIPS workshop sessions, described the follow-up technical assistance they were to provide to the PBIS team members, and ended with a question-and-answer period. The TIPS workshop, which has been described in detail elsewhere (Newton, Horner, Algozzine, et al., 2009; Newton, Todd, Algozzine, et al., 2009), consists of the following sessions referenced to components of the TIPS model. (See Figure 1 for a graphic depiction of the TIPS model.)
1. Establishing Problem-Solving Foundations—Structuring Efficient and Effective Team Meetings
2. Identifying, Defining, and Clarifying Student Problems; Developing Precise Problem Statements
3. Developing a Hypothesis; Discussing and Selecting Solutions
4. Developing and Implementing a Problem-Solving Action Plan
5. Evaluating and Revising the Action Plan to Achieve Problem-Solving Success

We gave each trainer/coach a set of TIPS materials: (a) electronic copies of the TIPS presentation slides and (b) a TIPS notebook containing hard copies of the presentation slides and notes to be used in preparing to conduct the TIPS workshop for PBIS team members; a "Meeting Minutes and Problem-Solving Action Plan" form, which they would teach PBIS team members to use; and a TIPS Technical Assistance Checklist, which described the follow-up technical assistance they were to provide to PBIS team members after the workshop. The checklist included boxes into which a trainer/coach was to enter a check mark once the described technical assistance had been provided (e.g., contact the team's minute taker before the team's first post-TIPS workshop meeting, and ask if he or she needs additional assistance in learning to use the Meeting Minutes and Problem-Solving Action Plan form in preparation for the upcoming team meeting). We advised the trainer/coaches that we would attend the TIPS workshop for PBIS team members and that we would bring a copy of the TIPS notebook for each participant. One week
after we provided the TIPS workshop to the trainer/coaches, they provided the TIPS workshop for the PBIS team members from the three schools. The TIPS workshop for PBIS team members was attended by six of School A’s 15 PBIS team members, by eight of School B’s 11 team members, and by six of School C’s 9 team members.

Measurement and Interobserver Agreement

To answer the evaluation questions, we obtained measures of the extent to which (a) the PBIS trainer/coaches delivered the TIPS workshop and follow-up technical assistance with fidelity, (b) PBIS team members engaged in the problem-solving and decision-making processes exemplified by the TIPS model components during their meetings, and (c) PBIS team members’ perceptions of their baseline and post-TIPS workshop meetings differed. We also gained information from PBIS team members regarding their satisfaction with the TIPS workshop, via a generic workshop evaluation form that school district personnel require those attending a district-sponsored workshop to complete.

To determine whether we succeeded in training the PBIS trainer/coaches to deliver the TIPS workshop, three researchers observed the TIPS workshop for PBIS team members and independently awarded the trainer/coaches a simple plus or a minus for (a) showing each of the TIPS workshop presentation slides, including those slides that prompted PBIS team members to engage in activities (e.g., using their school’s SWIS database to identify a student problem and to write a precise problem statement describing the what, who, when, where, and why of the problem); and (b) presenting the relevant content for each slide (on the basis of the presentation notes we provided), including providing assistance that enabled participants to complete the activities with success. To determine whether the trainer/coaches delivered the follow-up technical assistance with fidelity, we reviewed the completed TIPS Technical Assistance Checklists returned to us by the trainer/coaches.

To obtain measures of team members’ problem-solving and decision-making processes, we observed PBIS team meetings. After PBIS team members had given informed consent, but before their participation in the TIPS workshop, we obtained baseline measures at two PBIS team meetings for Schools A and B, and at a single meeting for School C. We used the Decision Observation, Recording, and Analysis (DORA) instrument (Newton, Todd, Horner, et al., 2009; Todd, Newton, Horner, Algozzine, & Algozzine, 2009) to obtain the measures. Later, after the team members participated in the TIPS workshop conducted by the trainer/coaches, we attended two additional PBIS team meetings at Schools A, B, and C, and used DORA to obtain post-TIPS workshop measures. The direct observation information recorded
on DORA provided the following measures (scores), which allowed us to
determine the extent to which team members engaged in problem-solving
processes that are exemplified by the components of the Team-Initiated
Problem Solving (TIPS) model.

- Foundations—The foundations score is the percentage of 11 foundation
  items demonstrated by the PBIS team members. Foundation items are
structural elements for conducting effective and efficient meetings (e.g.,
meeting starts on time; previous meeting minutes are available; agenda is
available; team members serve as facilitator, minute taker, and data analyst;
quantitative data are available for decision making).
- Problems Identified—Problems identified refers to a count of the number
  of student social and/or academic problems identified by team members
in the course of the meeting. Identifying a problem is a crucial step in any
problem-solving model because failure to identify at least one problem
renders team members unable to engage in any of the following additional
problem-solving processes.
- Problem Precision—For each problem identified by team members, the
  problem precision score is the percentage of the following five elements
identified by the team members, adding precision to a broadly identified
problem: (a) what (the specific problem behavior that is occurring),
(b) who (the individual student, or group of students, engaging in the
problem), (c) where (the school locations in which the problem is
occurring), (d) when (the times of day when the problem is occurring, and
(e) why (a hypothesis about what may be setting the occasion for, and
maintaining occurrences of, the problem behavior).
- Use of Quantitative Data—For each problem identified by team members,
The use of quantitative data score is a simple plus or minus indicating
whether the team used quantitative data (e.g., SWIS data) to identify the
problem. A plus results in a score of 100%; a minus results in a score of
0%.
- Solution—For each problem identified by team members, the solution
score is the percentage of five possible solutions (i.e., prevention, teaching,
reward, correction, extinction) team members selected for implementation
to resolve the problem.
- Action Plan—For each problem identified by team members, the action
plan score is the percentage of three solution-implementation elements for
which team members demonstrated accountability (i.e., by indicating who
will complete a solution-related task; the date by which the solution task
will be completed; and the goal that, when met, will provide evidence
that team members’ implementation of the solution tasks has resolved the
problem to their satisfaction).
- Thoroughness of Problem Solving—The thoroughness of problem solving
score is an average of the scores for problem precision, use of quantitative
data, solution, and action plan. It is an overall measure of the thoroughness with which PBIS team members engaged in problem-solving processes after having identified a student problem.

We assessed interobserver agreement for these measures by having two observers independently complete a DORA at 10 of the 11 PBIS team meetings at which DORA data were obtained. In calculating observers' agreement on the foundations scoring at a team meeting, we examined the 11 foundation items on the two DORA instruments and compared the scoring on a discrete trial (item-by-item) basis by (a) adding the number of items that both observers agreed the team demonstrated at the meeting (e.g., agenda is available) to the number of items that both observers agreed the team did not demonstrate; (b) dividing that total by 11, and (c) multiplying the quotient by 100 (e.g., Cooper, Heron, & Heward, 2007; Page & Iwata, 1986). Interobserver agreement for the Foundations score across the 10 DORAs was 93% (range = 73–100%).

In calculating observers' agreement on the problems identified scoring, we examined the two DORAs to determine what student problem descriptions (e.g., instances of aggression on the playground) the two observers wrote on their DORAs, indicating that the team identified the problems during the meeting. We then (a) divided the number of problems that both observers agreed the team identified, by (b) the number of problems that both observers agreed the team identified plus the number of problems that only one observer indicated the team identified, and (c) multiplied the quotient by 100. Interobserver agreement for the problems identified score across the 10 DORAs was 92% (range = 50–100%).

Last, to calculate observers' agreement on the problem precision, use of quantitative data, solution, and action plan components, we restricted the analysis to the ten problems that both observers agreed team members identified across the 10 meetings. We compared the observers' scoring on the individual items of a TIPS component on a discrete trial (problem-by-problem) basis by (a) adding the number of the component's items that both observers agreed the team achieved for an identified problem (e.g., the what, who, where, when, and why items of the problem precision component) to the number of items that both observers agreed the team did not achieve; (b) dividing that total by the number of items in the component (e.g., 5); and (c) multiplying the quotient by 100. Interobserver agreement for the components was as follows: problem precision, 94% (range = 90–100%); use of quantitative data, 90% (range = 67–100%); solution, 86% (range = 70–100%); and action plan, 77% (range = 67–100%).

To determine whether PBIS team members perceived their baseline and post-TIPS workshop meetings differently, we asked each team member to complete a TIPS feedback form at the close of involvement in the project. The form contained 12 statements concerning various aspects of
a PBIS team meeting (e.g., "Our team used data to identify group-level problems"). For each statement, a participant was instructed to respond by checking one box to indicate the extent to which she or he agreed with the statement concerning team meetings held before participating in the TIPS workshop (i.e., the baseline condition), and to check a second box to indicate the extent to which she or he agreed with the same statement concerning team meetings held after participating in the workshop. The response options ranged from strongly disagree to strongly agree. For the purpose of summarizing responses across participants and easily assessing possible differences between team members' perceptions of their baseline and post-TIPS workshop meetings, we scored the responses as ranging from 1 (strongly disagree) to 5 (strongly agree).

RESULTS

We were interested in determining whether we could teach the PBIS trainer/coaches to deliver the TIPS workshop and follow-up technical assistance with fidelity. We were also interested in determining whether the PBIS team members would (a) use more of the problem-solving and data-based decision-making processes exemplified by the TIPS model after their participation in the TIPS workshop, and (b) perceive differences between their baseline and post-TIPS workshop meetings.

Trainer/Coaches' Delivery of the TIPS Workshop and Follow-up Technical Assistance

Three of us observed the TIPS workshop for PBIS team members, and each of us independently awarded the trainer/coaches a plus for (a) showing each of the TIPS workshop presentation slides, (b) presenting the relevant content for each slide, and (c) providing the PBIS team members with sufficient assistance to ensure they completed the workshop activities with success. Thus, we agreed that following our training the trainer/coaches delivered the TIPS workshop with fidelity. In addition, workshop participants' responses to the generic workshop evaluation form provided by the school district indicated their satisfaction. As Table 1 shows, all participants responded with either "strongly agree" or "agree" to each of six questions concerning their satisfaction with the workshop.

To determine whether the trainer/coaches delivered the follow-up technical assistance, we reviewed their completed TIPS Technical Assistance Checklists. Data from the checklists showed that the assigned trainer/coach contacted each team's facilitator, minute taker, and data analyst at least once after the TIPS workshop and before the team's first post-TIPS workshop
TABLE 1 Positive Behavior Intervention and Support Team Members' Responses to Team-Initiated Problem Solving Workshop Evaluation Form

<table>
<thead>
<tr>
<th>Evaluation statement</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The purpose/objectives of the activity were clear.</td>
<td>18 (95)</td>
<td>1 (5)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2. The activity increased my knowledge of the content.</td>
<td>17 (89)</td>
<td>2 (11)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3. The activity was organized effectively and was</td>
<td>17 (89)</td>
<td>2 (11)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>interactive.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Activities were appropriate for my needs.</td>
<td>17 (89)</td>
<td>2 (11)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5. Overall, this activity was worthwhile.</td>
<td>17 (89)</td>
<td>2 (11)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6. Questions were encouraged and allowed.</td>
<td>17 (89)</td>
<td>2 (11)</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

meeting. The trainer/coach asked whether the team member required any technical assistance to fulfill the responsibilities of the position (e.g., data analyst), as described in the relevant section of the "Responsibilities of PBIS Team Members" presentation slides contained in the TIPS notebook. For every instance in which a team member serving as a facilitator, minute taker, or data analyst requested technical assistance, the trainer/coach provided it. Thus these data provided evidence that the trainer/coaches did deliver requested technical assistance to these team members before the first post-TIPS workshop meeting.

Team Members' Use of Problem-Solving and Data-Based Decision-Making Processes

DORA measures showed that School A's PBIS team members did not identify any student problems at either of the two meetings they held during the baseline condition; at each of the team's first two post-TIPS workshop meetings they identified a single problem. School B's PBIS team members identified two student problems during the first baseline meeting, one problem during their second baseline meeting, and one problem at each of the first two post-TIPS workshop meetings. School C's PBIS team members identified one problem at their single baseline meeting, and one problem at each of their first two post-TIPS workshop meetings.

Table 2 contains summary information about DORA scores (expressed as percentages, per the scoring rubric presented earlier) for the teams' two baseline meetings and for their first two post-TIPS workshop meetings. As previously noted, we collected DORA data for only a single baseline PBIS
### TABLE 2 DORA Means, Standard Deviations, Mean Contrasts, and Effect Sizes for Baseline and Post-TIPS Meetings

<table>
<thead>
<tr>
<th>TIPS component</th>
<th>First baseline meeting</th>
<th>First post-TIPS meeting</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M_1$</td>
<td>$SD_1$</td>
<td>$M_2$</td>
</tr>
<tr>
<td>Foundations</td>
<td>73.00</td>
<td>9.00</td>
<td>79.00</td>
</tr>
<tr>
<td>Problem precision</td>
<td>33.33</td>
<td>30.55</td>
<td>86.67</td>
</tr>
<tr>
<td>Use of quantitative data</td>
<td>50.00</td>
<td>50.00</td>
<td>100.00</td>
</tr>
<tr>
<td>Solution</td>
<td>16.67</td>
<td>20.82</td>
<td>26.67</td>
</tr>
<tr>
<td>Action plan</td>
<td>28.00</td>
<td>34.83</td>
<td>22.33</td>
</tr>
<tr>
<td>Overall thoroughness</td>
<td>32.00</td>
<td>33.60</td>
<td>59.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TIPS component</th>
<th>Second baseline meeting</th>
<th>Second post-TIPS meeting</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M_1$</td>
<td>$SD_1$</td>
<td>$M_2$</td>
</tr>
<tr>
<td>Foundations</td>
<td>54.50</td>
<td>26.16</td>
<td>91.00</td>
</tr>
<tr>
<td>Problem precision</td>
<td>50.00</td>
<td>70.71</td>
<td>80.00</td>
</tr>
<tr>
<td>Use of quantitative data</td>
<td>0.00</td>
<td>0.00</td>
<td>66.67</td>
</tr>
<tr>
<td>Solution</td>
<td>10.00</td>
<td>14.14</td>
<td>53.33</td>
</tr>
<tr>
<td>Action plan</td>
<td>33.50</td>
<td>47.38</td>
<td>89.00</td>
</tr>
<tr>
<td>Overall thoroughness</td>
<td>23.50</td>
<td>33.23</td>
<td>72.33</td>
</tr>
</tbody>
</table>

*Note: DORA = Decision Observation, Recording, and Analysis; TIPS = Team Initiated Problem Solving. $(M_2 - M_1)/SD_1, M_2 = mean 2; M_1 = mean 1; SD_1 = standard deviation of mean 1. Mean 2 minus mean 1 divided by the standard deviation of mean 1. Data for School C were available for only one baseline meeting before the TIPS workshop.

*Effect size was not calculated, $SD_1 = 0.$

A team meeting at School C before their team members attended the TIPS workshop. The top panel in Table 2 shows summary data comparing the teams' first baseline meeting with their first post-TIPS workshop meeting; the bottom panel shows summary data comparing the teams' second baseline meeting with their second post-TIPS workshop meeting.

With only one exception, the teams' mean DORA scores from the post-TIPS workshop meeting exceeded their mean DORA scores from the corresponding baseline meeting. (The one exception concerns the Action Plan TIPS component, for which the team's mean DORA score for the first baseline meeting was 28%, exceeding the first post-TIPS workshop meeting score of 22.33%.) For example, data in the top panel show that for the first baseline meeting the teams achieved a mean DORA score of 33.33% on the problem precision TIPS component, indicating that they identified an average of 33.33% of the five elements required to add precision to the definition of a broadly identified problem (i.e., the what, who, where, when, and why). For the first post-TIPS workshop meeting, the teams achieved a mean DORA
score of 86.67% on the problem precision TIPS component, indicating that they implemented an average of 86.67% of the five elements required to add precision to the definition of a broadly identified problem. In terms of overall thoroughness of problem solving, the teams achieved a mean DORA score of 59% at the time of the first post-TIPS workshop meeting, and a mean score of 72.33% at the time of the second post-TIPS workshop meeting.

The mean contrast (difference) for DORA scores on the TIPS components ranged from −5.67 (the action plan component in the top panel) to 66.67% (the use of quantitative data component in the bottom panel). Table 2 also shows effect sizes (i.e., the mean contrast divided by the standard deviation for the baseline condition) computed as Glass's delta (Gass, 1976; Glass, McGaw, & Smith, 1981). Effects range from −.16 to 3.06. For example, the data in the bottom panel show an effect size of 1.47 for overall thoroughness of problem solving, indicating that this post-TIPS workshop DORA score was almost 1.5 standard deviations greater than the corresponding baseline score. Cohen (1988) suggested that an effect size of .80 or greater may be regarded as a large effect size.

Team Members' Perceptions of Their Meetings
To determine whether PBIS team members perceived their baseline and post-TIPS workshop meetings differently, we summarized data from 27 completed TIPS feedback forms. (We provided a TIPS feedback form to each member of a school's team, regardless of whether a team member attended the TIPS workshop.) Table 3 provides the summary of team members' responses to the statements on the feedback form. For each statement, the mean response for the post-TIPS workshop meeting exceeded the mean response for the baseline condition. For example, for the baseline condition team members' mean response for statement number two (Our team used data to identify group-level problems) was 2.89 (undecided); their mean response for the post-TIPS workshop condition was 4.93 (strongly agree), and the effect size was 1.67. All effect sizes were large (Cohen, 1988), ranging from .90 to 1.70.

DISCUSSION
The results of this field-based case study provided encouraging findings concerning our effort to teach the local PBIS trainer/coaches to deliver the TIPS workshop and follow-up technical assistance with fidelity. We also obtained evidence that PBIS team members who were trained by the local trainer/coaches implemented more of the problem-solving and data-based decision-making processes exemplified by the TIPS model following their participation in the TIPS workshop, a finding matched by perceptions about
### TABLE 3 Means, Standard Deviations, Mean Contrasts, and Effect Sizes for TIPS Feedback Statements at Baseline and at Post-TIPS Workshop

<table>
<thead>
<tr>
<th>TIPS feedback statement</th>
<th>Baseline $M_1$</th>
<th>$SD_1$</th>
<th>Baseline $M_2$</th>
<th>$SD_2$</th>
<th>$M_2 - M_1$</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Our team used data to identify school-level problems.</td>
<td>3.22</td>
<td>1.28</td>
<td>4.96</td>
<td>0.19</td>
<td>1.74</td>
<td>1.36</td>
</tr>
<tr>
<td>2. Our team used data to identify group-level problems.</td>
<td>2.89</td>
<td>1.22</td>
<td>4.93</td>
<td>0.27</td>
<td>2.04</td>
<td>1.67</td>
</tr>
<tr>
<td>3. Our team used data to identify student problems.</td>
<td>2.85</td>
<td>1.26</td>
<td>4.69</td>
<td>0.55</td>
<td>1.85</td>
<td>1.47</td>
</tr>
<tr>
<td>4. Our team used data to develop hypotheses about why identified problems were occurring.</td>
<td>2.84</td>
<td>1.34</td>
<td>4.88</td>
<td>0.33</td>
<td>2.04</td>
<td>1.52</td>
</tr>
<tr>
<td>5. Our team discussed possible solutions for identified problems.</td>
<td>3.73</td>
<td>1.00</td>
<td>4.88</td>
<td>0.33</td>
<td>1.15</td>
<td>1.15</td>
</tr>
<tr>
<td>6. Solutions were implemented for identified problems.</td>
<td>3.65</td>
<td>1.16</td>
<td>4.81</td>
<td>0.40</td>
<td>1.15</td>
<td>0.99</td>
</tr>
<tr>
<td>7. Our team used data to monitor the degree to which implemented solutions were successful in reducing identified problems.</td>
<td>2.62</td>
<td>1.20</td>
<td>4.65</td>
<td>0.49</td>
<td>2.04</td>
<td>1.70</td>
</tr>
<tr>
<td>8. Data indicated that, in general, our solutions were successful in reducing identified problems.</td>
<td>2.80</td>
<td>1.15</td>
<td>4.36</td>
<td>0.76</td>
<td>1.56</td>
<td>1.35</td>
</tr>
<tr>
<td>9. Our team meetings were thorough, covering all important aspects of problem solving.</td>
<td>3.56</td>
<td>0.89</td>
<td>4.70</td>
<td>0.47</td>
<td>1.15</td>
<td>1.29</td>
</tr>
<tr>
<td>10. Our team meetings were efficient, making good use of our time.</td>
<td>3.63</td>
<td>1.15</td>
<td>4.67</td>
<td>0.55</td>
<td>1.04</td>
<td>.90</td>
</tr>
<tr>
<td>11. I was highly satisfied with our team meeting processes.</td>
<td>3.65</td>
<td>1.06</td>
<td>4.77</td>
<td>0.43</td>
<td>1.12</td>
<td>1.06</td>
</tr>
<tr>
<td>12. I was highly satisfied with our team meeting results (i.e., our ability to solve problems).</td>
<td>3.67</td>
<td>0.92</td>
<td>4.67</td>
<td>0.55</td>
<td>1.00</td>
<td>1.09</td>
</tr>
</tbody>
</table>

*Note. TIPS = Team-Initiated Problem Solving. $(M_2 - M_1)/SD_1$. Mean scores were reported on a 5-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree).*

their post-TIPS workshop meeting processes as compared against their baseline meeting processes.

The post-TIPS workshop results are, of course, tempered by the fact that this was a field-based case study that did not allow us to demonstrate a functional relation between trainer/coaches’ delivery of the TIPS workshop and follow-up technical assistance, and PBIS team members’ subsequent use of the TIPS model’s problem-solving and data-based decision-making processes. Further, that the teams met only once a month, and that our involvement with trainer/coaches came near the middle of the school year, did not allow us to follow the teams over a longer period of time, which would have allowed us to examine the extent to which (a) team members...
continued to use the TIPS model’s processes, including the development of problem-solving action plans, at additional meetings; (b) team members actually implemented the problem-solving action plans they developed during meetings; and (c) team members’ problem-solving action plans, when implemented with fidelity, succeeded in solving the targeted student problems. However, the promising results from this study suggest that follow-up research that addressed the above issues in the context of, for example, a longer term randomized controlled trial involving a significant number of Positive Behavior Intervention and Support Teams is warranted.

Although we posited that TIPS has applicability not only for PBIS teams but also for other problem-solving teams, research to address this issue may also be warranted. For example, it is at present unknown whether a factor in the PBIS teams’ successful implementation of TIPS was their prior training and experience in implementing SWPBIS. In any event, the results from this study provide additional support for the growing interest in, and utility of, developing local capacity to deliver training and coaching (Bernhardt, 2009; Knight, 2004, 2005, 2009; Martin & Taylor, 2009; Mraz, Algozzine, & Kissel, 2009; Renfro & Gresham, 2009; Scott & Hunter, 2001; Scott & Martinek, 2006; Vogt & Shearer, 2007), in particular as it concerns the problem-solving and data-based decision making of PBIS team members.

REFERENCES


