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A Descriptive Study of School-Based Problem-Solving

Anne W. Todd, MS[1], Bob Algozzine, PhD[2], Robert H. Horner, PhD[1], Angela I. Preston, PhD[3], Dale Cusumano, PhD[3], and Kate Algozzine, MS[2]

Abstract

We report here the type of problems and solutions that 38 school teams reported during a randomized wait-list controlled trial of one problem-solving approach (Team Initiated Problem Solving [TIPS]). The experimental results from that analysis are reported elsewhere. The purpose of this article is to summarize companion descriptive data from this analysis and suggest implications for school personnel and education researchers. Data for this analysis come from direct observation of team meetings for 38 elementary school teams in Oregon and North Carolina as they each met on four different occasions over an 18-month period to manage the behavioral supports in their schools. Our focus was on the types of problems the teams identified, the precision with which problems were identified (what behavior, who, where, when, why), the features of solutions that were developed, the extent to which solutions were perceived as being implemented, and the extent to which solutions were perceived as resulting in improved student outcomes. The most common solutions focused on varying forms of changing organizational systems. Teams were not likely to measure if their solution had been implemented or was effective prior to receiving TIPS training.

Keywords

academic, behavior(s), antisocial, delivery systems, practices, efficacy/effectiveness, teams/teaming

Although many professionals are empowered by data-driven decision making, those in education " . . . are largely failing to use data to transform and improve [what they do], even though better use of data has the potential to significantly improve how [teachers instruct] children and how administrators manage schools" (New, 2016, p. 1), and to make things right, "[s]tate departments of education and school administrators should provide educators with the *tools, training*, and incentive to use data to improve educational outcomes" (New, 2016, p. 3, emphasis added). New's promise, lament, and prescription are recurring themes in efforts to build and support education reform (cf. Brown, 2016; Goren, 2012; Honig & Coburn, 2008; Individuals With Disabilities Education Improvement Act [IDEIA], 2004; No Child Left Behind [NCLB], 2002; Spillane, 2012). For too long, it has been advocated that if teams of school personnel review data about students' academic and social behavior, identify student problems, make decisions about solutions to be implemented, and monitor the success of implemented solutions, outcomes of schooling will improve (Chalfant, Pysh, & Moultrie, 1979; Deno, 1985; Hamilton et al., 2009; IDEIA, 2004; Kilgore & Reynolds, 2011; OSEP Technical Assistance Center on Positive Behavioral Interventions and Supports, 2015).

A variety of models for effective, school-based decision making have been proposed (cf. Boudett, City, & Murnane, 2005, 2013; Bransford & Stein, 1984; Coburn & Turner, 2012; Deno, 2005; Leithwood, Harris, & Strauss, 2010; National Center on Intensive Intervention, 2016; Tilly, 2008). Common across these models is a data-driven and scripted set of steps that, despite being described with varying terminology or being parsed in different ways, reflect a consistent, iterative process (e.g., problem identification, problem analysis, plan development, action planning, plan implementation, and plan evaluation).

The enticing promise is that accurate information married with an effective problem-solving process will lead to better identification of problems, better development of intervention plans, better implementation of these plans, and better outcomes for students. Yet while teachers report

[1]University of Oregon, Eugene, USA
[2]University of North Carolina at Charlotte, USA
[3]University of North Carolina at Chapel Hill, USA

Corresponding Author:
Robert H. Horner, Educational and Community Supports, University of Oregon, Eugene, OR 97403-1235, USA.
Email: robh@uoregon.edu

likely and actual use of schoolwide data (e.g., attendance, office discipline referrals [ODRs]) to make decisions about their students (Hamilton et al., 2009; Kilgore & Reynolds, 2011; Shuster et al., 2017; Sugai & Horner, 2006; Ysseldyke, Algozzine, & Thurlow, 1992), evidence from practice has not supported consistent use or improved outcomes in schools (cf. Bahr, Whitten, Dieker, Kocarek, & Manson, 1999; Berger et al., 2014; Burns, Peters, & Noell, 2008; Burns & Symington, 2002; Burns, Vanderwood, & Ruby, 2005; Doll, Haack, Kosse, Osterloh, & Siemers, 2005; Flugum & Reschly, 1994; McDougal, Clonan, & Martens, 2000; Telzrow, McNamara, & Hollinger, 2000). For example, research indicates that teams will select some elements of effective problem-solving (e.g., identifying a problem) but too often ignore the full set of elements (e.g., goal setting, comprehensive solution development, action planning) needed to achieve positive outcomes (Cochrane & Laux, 2008; Doll et al., 2005; Flugum & Reschly, 1994; Kovaleski & Glew, 2006; McDougal et al., 2000; Noell, Gresham, & Gansle, 2002; Telzrow et al., 2000). In spite of all of the conversation focused on problem-solving and data use in education, " . . . we still have shockingly little research on what happens when individuals interact with data in their workplace settings" (Coburn & Turner, 2012, p. 99).

One promising approach to school-based problem-solving is Team Initiated Problem Solving (TIPS; Newton et al., 2014). The TIPS protocol involves defining a problem with precision, building a goal, selecting a comprehensive solution, implementing the solution, monitoring both the fidelity of implementation and impact on student behavior, and adapting the solution based on evaluation data. The TIPS approach is delivered via a 6-hr team (with coach) training followed by two "coached" team meetings (Newton, Todd, Algozzine, Horner, & Algozzine, 2009). The TIPS approach has been demonstrated to improve the problem-solving of school teams (Newton, Algozzine, Algozzine, Horner, & Todd, 2011; Newton, Horner, Algozzine, Todd, & Algozzine, 2009, 2012; Todd et al., 2011) and result in school teams being more effective at implementing solutions that improve student outcomes (Horner et al., in press).

Horner et al. (in press) report a recent, randomized controlled trial in which 38 school teams were randomly assigned to an "initial" versus "wait-list" condition. Baseline measures of team meeting procedures were collected through direct observation, and both demographic and meeting procedure results indicated no differences in Baseline. Following the TIPS training for the initial group, there were measured differences in both way teams managed their meetings and their effectiveness at problem-solving. Of greater interest, the authors report that trained teams were more likely to indicate that they implemented solutions they had developed during team meetings and observe improvement in student behavior. Positive improvement in both meeting procedures and problem-solving were also observed in the wait-list teams when they received TIPS training.

We report the methodology and experimental results from the Horner et al. (in press) analysis elsewhere. Our purpose in this article is to summarize more detailed, descriptive data from observations of school team meetings. Our hope is to provide detail that will be useful both to others doing research on team problem-solving and to school teams working to improve their problem-solving processes. We addressed the following questions:

Research Question 1: What types of problems are discussed at team meetings?
Research Question 2: To what extent are problems discussed with sufficient precision to plan solutions?
Research Question 3: To what extent are goals and solutions identified for problems that are discussed?
Research Question 4: To what extent is the integrity or fidelity of the solutions discussed?
Research Question 5: To what extent is the impact of the solutions discussed?
Research Question 6: To what extent are evaluations of solutions discussed?

Method

Settings and Context

We conducted our study in schools that had previously received training in Tier I positive behavioral interventions and supports (PBIS; primary, or universal, problem behavior prevention and intervention; OSEP Technical Assistance Center on Positive Behavioral Interventions and Supports, 2015). The teams were composed of three to seven individuals from the teaching faculty, related services personnel, and an administrator who met once a month and were using the Schoolwide Information System (SWIS) to collect, summarize, and review student behavior data for decision making (Horner et al., 2008). SWIS allows school personnel to enter ODR data and produce instantaneous graphs related summarizing ODRs by (a) ODR per school day per month, (b) ODRs per location, (c) ODRs per student with an ODR, (d) ODRs per time of day, and (e) ODRs per type of problem behavior. Schools and teams in the "initial" and "wait-list" groups were evaluated and found to be comparable with respect to school size, composition of student body, number of team members, training and experience of team members, and length of time served on the team.

Procedure

We collected data during team meetings using the Decision Observation, Recording, and Analysis–II tool (DORA; Algozzine et al., 2016; Algozzine, Newton, Horner, Todd,

& Algozzine, 2012). The measure has documented construct validity, reliability, and sensitivity (Algozzine et al., 2016) and is problem-focused and provides a record of team meeting foundations and problem-solving practices during school-based meetings (cf. Newton et al., 2012; Todd et al., 2012; Todd, Newton, Horner, Algozzine, & Algozzine, 2009). DORA data were collected via direct observation of team meetings and provide information both about the meeting foundation process and the specific problem-solving steps performed by teams. From completed observation forms, we were able to document the extent to which "problems" were discussed and acted on during the meeting (a problem was defined as a statement about student behavior [academic or social] indicating that the behavior did not meet expected standards and was followed by the team producing an intervention "solution"). When actions were taken, we documented the extent to which (a) the problem was "old" (had an existing intervention or solution that had been developed at a prior meeting) or "new"; (b) the problem was defined with precision (information included what behavior, who, where, when, why, how often); and (c) the problem had a goal for improvement, and the problem had a formal solution (and the elements of the solution) that was reported by team members to be implemented and perceived to have improved student behavior.

For each problem identified at a given meeting, three sets of information were recorded. Specifically, observers documented selected characteristics of the problem (e.g., who, what, where, when, why; behavior or academic; group or individual) as well as information about the solution implementation plan (e.g., who, timeline, fidelity assessment, and integrity), team members perception of whether the plan had been implemented, and their perception of the impact of the plan on student outcomes. We used this information to describe what happened when PBIS teams met to solve school-based problems.

To confirm the reliability of the data, we collected DORA data with a second observer on 35% of the team meetings. Interobserver agreement results confirmed the reliability of the data and are reported in detail in our summary of experimental results (Horner et al., in press).

Design and Data Analysis

Data were collected within a randomized wait-list controlled trial over an 18-month period. All teams received an initial baseline observation. A group of 19 randomly selected teams then received TIPS training, and at 3 and 6 months after this training, all 38 teams were again observed. A final observation was completed for all 38 teams 3 months after the 19 wait-list teams received TIPS training. The study resulted in observations across 152 team meetings; half were held prior to TIPS training and half after teams received TIPS training.

Results

We observed the extent, type, and nature of problems and selected aspects of solutions for the problems discussed at school-based problem-solving meetings. Our descriptive findings are summarized in the sections below.

Focus of Discussion

Two hundred thirty-three problems were discussed in 152 meetings by 38 teams. Solutions for these problems were developed and implemented for 196 (84.1%) of these problems and developed but *not* implemented for 37 (15.9%) of the problems. The focus of the team meetings was generally discussion of schoolwide interventions (e.g., reviewing school rules and classroom procedures) being implemented to prevent group and individual student problem behaviors. When teams acted to address problems (n = 196), they focused on old (n = 139, 70.9%) more than on new problems (n = 57, 29.1%) and on social (97%) more than on academic (3%) problems. Most of the old (89%) and new (90%) problems that were discussed concerned groups (two to 10 students) rather than individual students.

Problem Precision and Prevalence

When problems were discussed, observers documented the core elements of precise problem statements: who, what, where, when, and why. For example, of the total problems discussed (n = 196), teams most often included the location *where* a problem behavior occurred (86.7%), followed by *who* exhibited the problem behavior (79.6%), *what* the problem behavior was (71.4%), and *when* the problem behavior occurred (69.4%). On the contrary, discussion of *why* the problem was occurring (i.e., the maintaining reinforcer) was documented for less than half (46.3%) of the problems. A comparison of precision elements discussed across trained and untrained teams is in Table 1; problems discussed by teams trained in TIPS were more likely to be defined with greater precision (e.g., who, what, where, when, and why) than untrained teams. Desired goals (36.7%) and timelines for achieving goals (31.6%) were discussed infrequently; however, trained teams specified intended changes (95.8%) and expectations for when to see changes (96.8%) more than untrained teams (4.2%, 3.2%, respectively).

Types of problems. The most common problem behaviors identified by teams were physical aggression (42.0%), defiance (19.3%), disruption (10.2%), and disrespect (9.1%). Attendance (3.9%), theft (2.3%), and other problem behaviors (i.e., access to materials, bullying, distraction, low benchmark scores, inappropriate language, inappropriate problem-solving, inattention, reading fluency, talking, trash

Table 1. Precision Elements for Problems (n = 196) Discussed by Trained and Untrained Teams 6 Months After TIPS Training.

Precision element	Group	Count	%	χ^2	*df*	*p*
Who (n = 156)	Untrained	60	38.5			
	Trained	96	61.5	10.875	1	.001
What (n = 140)	Untrained	48	34.3			
	Trained	92	65.7	20.257	1	.000
Where (n = 170)	Untrained	67	39.4			
	Trained	103	60.6	12.855	1	.000
When (n = 136)	Untrained	46	33.8			
	Trained	90	66.2	20.086	1	.000
Why (n = 70)	Untrained	12	17.1			
	Trained	58	82.9	33.743	1	.000

Note. n reports the number of "problems" discussed with "precision element" identified by teams before TIPS training (untrained) and after TIPS training (trained). TIPS = Team Initiated Problem Solving.

piling up, and students walking out of area) were less prevalent, and, occasionally, problems (e.g., physical aggression, defiance, disruption, disrespect, theft, and harassment) were combined (e.g., physical aggression and defiance [n = 6], disrespect and defiance [n = 4], physical aggression and disruption [n = 3], and physical aggression and disrespect [n = 3]). For example, one team discussed "Physical aggression and disruption, in classrooms, across grades 1-4, between 9:30-1:00."

Locations of problems. The most common location for problem behavior identified by teams was the classroom (32.2%), and the bus was the second most common location (25.3%), followed by playground (19.5%) and cafeteria (9.2%). The remaining 13.8% of problem behaviors occurred in other locations across the school (e.g., home, music, school, assembly, and bathroom).

We compared team reports of the type of problem behavior by location. The most common problem behaviors (i.e., physical aggression, defiance, and disruption) were analyzed by the most common locations (i.e., classroom, bus, playground, and cafeteria). Results indicated that physical aggression was the most likely reported problem behavior on the bus (n = 15), in the classroom (n = 13), and on the playground (n = 12). Defiance (n = 7) and disruption (n = 5) were more common problem behaviors reported in classrooms.

Solution Implementation Plans

Fifty-seven (29.1%) of the team meetings focused on new problems and included discussion of a solution action plan. The person responsible for implementing the plan was identified for 52 (91.2%) of the 57 new problems that were discussed, and a timeline for implementing the solution was included for 33 (57.9%) of problems. Key aspects of solution integrity (i.e., *who* will do *what* by *when*) were discussed less frequently. For example, although teams discussed what the plan involved (26.3%) and who was to implement the plan (15.8%) more than when the plan would be completed (8.8%), their focus on these aspects of the action plans was less than on the person responsible or the timeline for the plan. Although both trained and untrained teams identified a person responsible for solution implementation plans, trained teams identified a timeline and discussed implementation integrity (i.e., what, when, and who) more than untrained teams (see Table 2).

Our descriptive analysis also indicates that the most commonly used solution element was system change (39.8% of old problems and 63.4% of new problems). This category was used for any solution steps that included adult directions (e.g., "Grade level team members will ask their teachers, 'How can the PBIS team help you with this problem?'" "The External Coach will send the AP reference cards to help teachers with defiance/noncompliance." "Strategies will be easy-to-read bulleted items."). The remaining problems were split between prevent (26.6% of old problems, 17.1% of new problems), teach (19.5% of old problems, 26.8% of new problems), reward (21.9% of old problems, 4.9% of new problems), and correct (2.3% of old problems, 0% of new problems). Combined, the categories of extinction, safety, data, and "other" equaled less than 3% for both old and new problems. These data suggest that teams were more likely to identify solutions that prevent problem behaviors, teach expectations, and reward positive behaviors.

Teams identified a variety of solutions for problems, some solutions included actions for multiple solution categories (e.g., prevent, teach), while other solutions included actions in only one solution category (e.g., teach). Examples of solutions for prevent, teach, reward, correct, extinguish, and safety are found in Table 3.

Patterns before and after training. Data were also analyzed by teams before TIPS training and after TIPS training. The patterns for types of solutions used by untrained and trained teams were similar for *prevent* and *teach*, but trained teams

Table 2. Features of Solution Implementation Plans for Problems Discussed (n = 57) Across Trained and Untrained Teams.

Feature	Group	Count	%	χ^2	*df*	*p*
Person (n = 52)	Untrained	21	40.4			
	Trained	31	59.6	0.459	1	.498
Timeline (n = 33)	Untrained	7	21.2			
	Trained	26	78.8	8.634	1	.003
Integrity—What (n = 15)	Untrained	0	0.0			
	Trained	15	100.0	12.965	1	.000
Integrity—When (n = 5)	Untrained	0	0.0			
	Trained	5	100.0	4.095	1	.043
Integrity—Who (n = 9)	Untrained	0	0.0			
	Trained	9	100.0	7.529	1	.006

Note. n reports the number of "problems" with each solution implementation plan feature discussed by teams before TIPS training (untrained) and after TIPS training (trained). TIPS = Team Initiated Problem Solving.

Table 3. Examples of Types of Solutions Across Prevent, Teach, Reward, and Correct Categories.

Type of solution	Example
Prevent	▪ Teachers will review PBIS expectations/lessons the first week back at school after holiday break ▪ Provide rubrics to teachers of what is expected ▪ Create bus expectations to display on buses and have bus driver review with students
Teach	▪ Continue teaching social skills in classroom ▪ Rehearse transition procedures ▪ Reteach universal rules and procedures; teach, *Stop–Walk–Talk* ▪ Teach behavioral expectations for bus riding; meet with bus riders to teach bus riding expectation, and create videos that show expected bus riding behaviors.
Reward	▪ Create and distribute more Bus Bucks ▪ Include Lunch with a Friend/Teacher Certificate in the Reward Center ▪ Celebrate positive behaviors
Correct	▪ Remind teachers to provide immediate correction and feedback ▪ Encourage teachers to have students write and/or draw what to do next time

Note. PBIS = positive behavioral interventions and supports.

used more *rewards*, and untrained teams included more *system* elements in their solutions. Overall results were *prevent* (24.4% of solution elements from untrained teams, 24.2% of solution elements from trained teams), *teach* (24.4% of solution elements from untrained teams, 23.5% of solution elements from trained teams), *reward* (11.1% of solution elements from untrained teams, 17.6% of solution elements from trained teams), *system* (73.3% of solution elements from untrained teams, 45.8% of solution elements from trained teams), and *correct* (2.2% of solution elements from untrained teams, 1.3% of solution elements from trained teams). The remaining elements of *extinction, safety, data*, and *other* were only included by trained teams and combined, equaled just over 2% of solutions elements.

Untrained teams had a total of 56 solution elements within nine old and new problems, while trained teams had a total of 153 solution elements within 56 old and new problems. This equates to untrained teams using more than twice as many solution elements (n = 6.22) within each problem as the number of solution elements (n = 2.73) used by trained teams.

Comparisons of untrained and trained teams by new problems and old problems provided similar patterns for old problems and slightly different patterns for new problems (see Table 4). Untrained and trained teams had similar percentages of solution elements for new and old problems addressed under *prevent* and *teach*, but trained teams had more *reward* elements, and untrained teams used more *system* elements. These findings were consistent with the overall findings of both old and new problems combined. An analysis of new problems produced slightly different patterns. The findings suggested that trained teams included more solution elements of *prevent* and *teach* in new problems than were included in solutions by untrained teams, and trained and untrained teams had similar percentages of *reward* elements. Patterns for *systems* were consistent with old problems in that untrained teams included more system elements than trained teams. Interestingly, untrained and

Table 4. Types of Solutions Across Old and New Problems for Untrained and Trained Teams.

	Problems			
	Old		New	
Type of solution	Untrained (%)	Trained (%)	Untrained (%)	Trained (%)
Prevent	27.6	26.5	10.7	20.0
Teach	20.7	19.4	19.0	30.9
Reward	13.8	24.5	3.6	5.5
System	48.3	37.8	70.0	60.0
Correct	3.4	2.0	0.0	0.0
Extinction, safety, data, other	0.0	2.0	00.0	2.0

Table 5. Features of Solution Implementation Integrity for Problems (n = 139) Discussed across Trained and Untrained Teams.

Feature	Group	Count	%	χ^2	*df*	*p*
Not started (n = 10)	Untrained	6	60.0			
	Trained	4	40.0	1.040	1	.308
Partial implementation (n = 44)	Untrained	20	45.5			
	Trained	24	54.5	0.026	1	.872
Implemented with integrity (n = 54)	Untrained	27	50.0			
	Trained	27	50.0	0.951	1	.329
Stopped (n = 0)	Untrained	0	0.0			
	Trained	0	0.0	NA		
Not reported (n = 31)	Untrained	11	35.5			
	Trained	20	64.5	1.183	1	.277

Note. n reports the number of "problems" with each solution implementation integrity feature discussed by teams before TIPS training (untrained) and after TIPS training (trained). TIPS = Team Initiated Problem Solving; NA = not applicable.

trained teams included more *system* elements in solutions for new problems (70% and 60%, respectively) than old problems (48% and 60%, respectively).

Overall, patterns of solution elements were similar between untrained and trained teams for percentage of solution elements including *teach, prevent, correct, extinction, safety, data*, and *other*. However, trained teams included more solution elements associated with *rewards* and fewer solution elements associated with *system* than untrained teams. Untrained teams used more than twice the number of solution steps for their problems as did trained teams. This suggests that trained teams may have aligned their solutions with precision problem statements and not required as many solution steps to meet the desired goal (and solve the problem).

Solution Implementation Integrity

Discussion for ten (7.2%) of the old problems indicated that review and analysis of solution implementation integrity had not occurred. Information about implementation integrity was not reported during 31 (22.3%) of the discussions of old problems that we observed and none of the discussions indicated that the solution had been terminated for any reason. Partial implementation was reported for 44 (31.7%) and "implementation with integrity" was documented for 54 (38.8%) of the old problems. No differences were indicated in the extent to which trained and untrained teams addressed solution implementation integrity (see Table 5).

Status of Problems

Discussion for seven (7.7%) of the old problems indicated that the status of the problem was "worse"; for three (3.3%), it was documented as "No change"; and for 13 (14.3%), it was reported as "Unclear." "Improved but not to goal" was reported for 54 (59.3%) and "improved and goal met" was documented for 14 (15.4%) of the old problems. Untrained teams were more likely to not report on the status of a planned solution, and when solution status was reported, they were more likely to report "worse" or "unclear" outcomes than to indicate "improvement that met the goal" (see Table 6).

Table 6. Status Features Discussed for Problems (n = 101) Across Trained and Untrained Teams.

Feature	Group	Count	%	χ^2	*df*	*p*
Worse (n = 7)	Untrained	7	100.0			
	Trained	0	0	9.669	1	.002
No change (n = 3)	Untrained	2	66.7			
	Trained	1	33.3	0.650	1	.420
Improved but not to goal (n = 54)	Untrained	20	37.0			
	Trained	34	63.0	2.581	1	.108
Improved and goal met (n = 14)	Untrained	1	7.1			
	Trained	13	92.9	9.102	1	.003
Unclear (n = 13)	Untrained	10	76.9			
	Trained	3	23.1	6.691	1	.010

Note. n reports the number of "problems" with each status of problem feature discussed by teams before TIPS training (untrained) and after TIPS training (trained). TIPS = Team Initiated Problem Solving.

Summative Decisions

Summative evaluation decisions (e.g., retaining, revising, or terminating the solution and/or precisely-defined problem) were discussed during 69 of the old problems. Trained teams (43.1%) were more likely (χ^2 = 6.744, df = 1, p = .009) to discuss summative evaluation decisions than untrained teams (25.3%).

Discussion

The ability of schools to be effective will depend in part on the competence of teams to identify and solve local problems. Our experience observing in elementary schools suggests that there is potential for teams to be effective and efficient problem solvers but that this is unlikely without careful attention to (a) how teams are organized, (b) access to the right information in the right format at the right time, and (c) clearly defined protocols for how to use data for decision making.

The organization of successful teams follows commonsense recommendations to have a constant group that meets at planned times with specific objectives, the authority to perform activities needed to meet these objectives, and roles that facilitate efficient operation. Two frequent patterns we observed with ineffective teams were (a) to meet without a clearly defined purpose or a process for making decisions and (b) to meet either without data or with data that were used only to describe a problem rather than guide problem-solving.

Increasingly, schools are investing in data systems that define the frequency and pattern of academic and social behavior. School teams are most effective at using these data to identify and solve problems when they use formal problem-solving protocols. It is very helpful to have at least one team member review the school data prior to the meeting (the data analyst). This person can summarize the data quickly and focus a team on the specific areas in need of problem-solving. We also observed that one of the most common challenges for school teams was to know when to shift from "problem definition" to "problem solution." Teams with limited time were very prone to define a problem with limited precision (e.g., "students are rude in the cafeteria") and adopt solutions that were a poor match with the problem (e.g., packaged social skills program). The same teams became much more effective and efficient when they reviewed their data in advance, defined problems with precision (i.e., what happens, how often, where is it most likely, who is performing the behavior, when are problems most and least likely, and why do they keep happening), and selected "solutions" that matched the problem pattern.

We were particularly struck by the ability of school teams to problem solve effectively when they had the information needed to define problems with precision. One example was a team that struggled when they only knew that "inappropriate language" was occurring too often, yet developed simple and practical solutions when they defined the same problem in two precise patterns: Third graders during second recess using name calling to access playground equipment and fifth graders on bus 512 using inappropriate languages when they entered the bus to get attention and access to preferred seats. Teams not only need data, they need protocols for using data to define problems with precision and build solutions that are practical and logically matched with the problem and their local context.

In the elementary schools, we observed teams documented physical aggression among students as the most frequent concern across settings, but especially in unstructured settings (e.g., playground, bus), and defiance and disruption as problems that were more common in structured settings (e.g., classroom). These patterns suggest a heightened need for providing school teams with relevant information (data) and practical problem-solving protocols that may help prevent and resolve these challenges.

A specific gap in problem-solving that should be further examined was that even when school teams had solid team meeting foundations, functional data, and the TIPS protocol they were too often likely to produce solutions that did not attend to the behavioral function of a problem behavior. Teams were much more likely to build solutions that focused on preventing a problem by changing the context, teaching desired behavior, or rewarding appropriate behavior than on considering how the maintaining function (e.g., get attention) should guide selection of consequences that placed the problem behavior on extinction (e.g., removed the natural reward). There is a compelling body of research to suggest that a problem behavior that continues to access reinforcement will endure even when alternative behaviors have been taught (Cooper, Heron, & Heward, 2007; Tiger, Hanley, & Bruzek, 2008). Helping school teams better understand how to build comprehensive solutions that simultaneously prevent, teach, reward appropriate behavior, and minimize reward for problem behavior will be useful.

Our experimental reports have demonstrated that school teams trained and supported in implementation of the TIPS protocols are more effective at solving behavior problems (Horner et al., in press; Newton et al., 2012; Todd et al., 2011). Our goal with this article was to provide more descriptive information about the types of problem behavior elementary school teams are facing, the common features of strategies they are developing to address these behavioral challenges, and the organizational supports they are finding necessary to do effective problem-solving.

A significant gap remains between the models being proposed for problem-solving teams and the practices most commonly seen in schools (Riley-Tillman & Reinke, 2011). As educators build more successful strategies for identifying and resolving problems in schools, we encourage attention to the organization and structure of school teams, the format and availability of data, and operational protocols for using data in the problem-solving process. We are encouraged by the ability of educators to bring detailed knowledge about their students, families, and context to the problem-solving process. As a field, we need to define, document, and disseminate problem-solving practices that make better use of this knowledge.

Limitations

Two important limitations should be considered with these results. The first is our emphasis in this article on providing descriptive information. No causal association should be inferred or implied. Causal inferences are drawn from controlled research designs, and the data from those analyses are reported elsewhere (Horner et al., in press).

The second major limitation is that the 38 elementary schools participating in this research were selected based on their access to existing sources of student data (academic and behavioral) and their active engagement in schoolwide PBIS. Schools from different grade levels, with different data systems, and with different organizational systems may identify different patterns of problem behavior.

Implications for Future Research and Improvement of Practice

The descriptive nature of our results forces modesty in drawing implications. There are, however, considerations that may be helpful both for educators and researchers. For those focused on improving schools, our data suggest that additional attention focuses on the two most common patterns of externalizing problem behavior reported by teams: (a) physical aggression between students in unstructured settings such as the playground, hallway, or cafeteria and (b) defiance and disruption in the classroom. For school teams building plans to prevent, monitor, and respond to behavioral challenges, these patterns suggest that early investment is warranted in teaching the social behaviors needed to (a) interact and share in unstructured settings, (b) define and resolve conflict without aggression, and (c) interact effectively with adults during instructional routines. For those building school data systems, the results suggest that there is value in delivering data summaries that allow documentation of what problem behaviors are most common, the most likely location where these behaviors occur, and assessment of the behavioral function maintaining problem behavior.

The present results further encourage professional development events targeting design of solutions that are both effective and adapted to the local context. We were struck by the large proportion of intervention plans (solutions) that were developed by teams but reported to not be implemented (15.9%). The plans too often proved overly complex or too demanding in time and skill. School teams are most likely to use a strategy they have used in the past, but they are open to working with school psychologists and behavior specialists who can propose practical, contextually appropriate, and efficient alternatives. Historically, behavior support has been guided by strategies that are perceived to “work.” Our observations suggest that teams need strategies that are both likely to work (e.g., are technically sound), fit the local culture of the school, and are procedurally practical (cf. Monzalve & Horner, under review).

For researchers, we hope this article prompts further analysis of how school teams identify and solve problems. The DORA measure is important for its emphasis on direct observation of team performance. The level of precision provided by DORA opens many avenues for future study. Understanding how to train, coach, and support a team to master problem-solving procedures will be an important line of scholarship. Understanding how teams use problem-solving rubrics for academic as well as behavioral problems will be important. More information is needed on how to sustain effective team operations once they have been established and how to achieve sustainability with high efficiency. Of special note will be the design of strategies for maintaining effective team operations when there is turnover in the key roles of building principal, team facilitator, or team data analyst. In addition, further research focused on the type, form, and timing of data (both behavioral and academic) provided to a team will be of value, especially as teams move to deliver multitiered academic and behavioral systems of support.

Conclusion

Schools are in a continuous process of development and transformation. As political, social, and demographic variables shift, the success of a school will increasingly depend on the ability of local personnel to engage in effective problem-solving. An emerging body of scholarship now suggests that with a modest investment in professional development, school teams can establish the meeting foundations and problem-solving protocols that improve academic and social outcomes for students. The descriptive data provided here point to the need for procedures that address physical aggression in nonstructured settings and defiance in classrooms. Furthermore, school teams need support to build solutions that are more closely tied to the behavioral function of problem behavior and matched to the social and organizational culture of the school. These patterns suggest implications for the design of school data systems, ongoing professional development in schools, and fruitful directions for future research.

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