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School-Based Problem-Solving Teams: Educator-Reported Implementation Trends and Outcomes

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Abstract

Research has demonstrated that school-based problem-solving teams (SB PSTs), a term describing teams engaging in efforts to remediate problems in school settings, can effectively improve student functioning while reducing special education referrals and disproportionality. Unfortunately, questions remain as to the effectiveness of SB PSTs in the absence of research oversight. Additionally, despite widespread use, little is known about how research and best-practice guidance have translated to applied SB PST implementation. Survey responses from 3233 educators were used to begin this exploration. Study results provide insight into SB PST prevalence, processes, procedures, composition, and targeted outcomes, as well as educator perceptions of team efficiency and effectiveness. Study findings suggest SB PST implementation varies widely across team name, activities, membership, roles, and functions. Stakeholder reports suggest poor alignment with practices endorsed in SB PST literature, including an apparent underutilization of school psychologists, well-qualified to contribute to, if not lead, SB PSTs. Overall, administrators, teachers, and school mental health service providers indicated favorable perceptions of the efficiency and effectiveness of their SB PSTs. Administrator ratings appeared slightly more favorable generally across these SB PST outcomes, and were significantly more favorable than ratings provided by teachers. However, ratings of perceived efficiency and effectiveness seemed inconsistent with prior empirical SB PST research, leaving clear room for improvement. Furthermore, when compared to other survey item responses, perceptions of efficiency and effectiveness appeared inconsistent, if not contrary to the widely espoused goals of SB PSTs, to remediate student challenges. These findings may be related to an apparent infrequent alignment of reported practices with evidence-based guidance, as indicated by participant responses. Collectively, this study suggests the need for (1) continued research related to SB PSTs, particularly applied SB PST practices, and (2) increased support for SB PST implementation through more explicit, prescriptive guidance, as well as initial and ongoing training and performance feedback for stakeholders.

Keywords Teams · School-based problem-solving teams · School team · Intervention

Introduction

Efficient, effective school-based problem-solving teams (SB PSTs) are a critical mechanism in the multi-tiered service delivery models (MTSS) now used in numerous schools across the USA (Buck et al., 2003; Rosenfield et al., 2018). Adoption of multi-tiered service delivery approaches is driven by the belief that prevention and early, tiered intervention efforts have the potential to address student difficulties and to foster student success in less restrictive, general education settings (Gravois & Rosenfield, 2006). Tiered systems rely on a continuum of evidence-based interventions delivered within cyclical, data-driven problem-solving and decision-making processes. The success of these systems (i.e., RtI, PBIS, MTSS) is predicated on the efficient and effective connection of available prevention and intervention services to student needs. In practice, these connections are often facilitated by a team of educators working collaboratively, broadly classified as SB PST. Welch et al.

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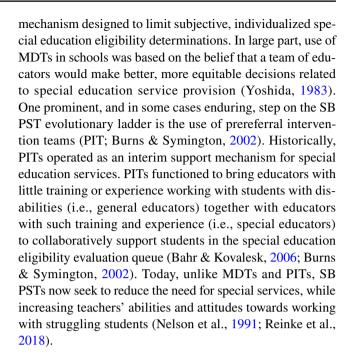[2] Palm Springs Unified School District, Palm Springs, USA

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(1999, p. 38) defined SB PSTs as "an indirect service delivery approach in which a group of three or more educators work with a colleague or family member to address an academic or behavioral problem or to meet some other specific goal through the development and execution of an action plan." As such, SB PSTs can dramatically impact the practices of school psychoeducational service providers through participation or post-process activities. Through direct SB PST participation, frequently viewed as team-based consultative service provision (Dowd-Eagle & Eagle, 2014), school psychologists can contribute to processes and procedures that seek to improve student functioning (Burns et al., 2005). School psychologists are well-suited, through comprehensive training in problem-solving and data-based decision-making processes to contribute to, if not facilitate, such teams (Burns et al., 2005). Additionally, ineffective SB PSTs can lead to an excess of students in need of supplemental (i.e., Tier II/III) or significantly modified and accommodated special education services and support (Sims et al., 2019). This excess can result in a diversion of finite school resources (e.g., educator time, district funds) away from problem prevention and intervention activities to management activities (i.e., special education services).

Irrespective of the facilitator, a variety of best-practice SB PST models have been proposed over the last four decades, each based in a core problem-solving process (see Bahr & Kovalesk, 2006; Deno, 2005; Kratochwill & Bergan, 1990; Newton et al., 2011; Reinke et al., 2018; Tilly, 2008). While the benefits of such teams are widely espoused in literature, largely absent is information about how best-practice recommendations have been interpreted and implemented outside of research activities (Burns & Symington, 2002; Rosenfield et al., 2018). The present study sought to provide insight into applied, practical implementation of SB PSTs, particularly those focused on intervention efforts occurring before or outside of special education programming.

A Brief SB PST History

The origins of SB PSTs can be traced to the evolutions and intersections of school-based consultation (Carrington, 1978; Kratochwill & Bergan, 1978), teacher assistance teams (Chalfant et al., 1979), multidisciplinary teams (Yoshida, 1983), response to intervention (RtI; Batsche, 2014), and federal legislation such as the Education for All Handicapped Children Act of 1975 (EAHCA; Public Law 94–142. U.S., 1975) and Individuals with Disabilities Education Act (IDEA; 2004). School-based consultation and teacher assistance teams supported students through sharing of knowledge, skills, and practice to expand educator practices (Kratochwill & Bergan, 1978; Yoshida, 1983). Multidisciplinary teams (MDTs; Huebner & Gould, 1991), first mandated by the EAHCA, were a procedural protection

mechanism designed to limit subjective, individualized special education eligibility determinations. In large part, use of MDTs in schools was based on the belief that a team of educators would make better, more equitable decisions related to special education service provision (Yoshida, 1983). One prominent, and in some cases enduring, step on the SB PST evolutionary ladder is the use of prereferral intervention teams (PIT; Burns & Symington, 2002). Historically, PITs operated as an interim support mechanism for special education services. PITs functioned to bring educators with little training or experience working with students with disabilities (i.e., general educators) together with educators with such training and experience (i.e., special educators) to collaboratively support students in the special education eligibility evaluation queue (Bahr & Kovalesk, 2006; Burns & Symington, 2002). Today, unlike MDTs and PITs, SB PSTs now seek to reduce the need for special services, while increasing teachers' abilities and attitudes towards working with struggling students (Nelson et al., 1991; Reinke et al., 2018).

Contemporary SB PST

Adoption of tiered service delivery models is driven by the belief that prevention and early intervention efforts have the potential to foster student success within general education classrooms, reducing reliance on special education services (Fuchs & Fuchs, 1996; Gravois & Rosenfield, 2006) and disproportionally negative outcomes for marginalized, underserved groups (Henderson, 2008). Symbiotically, SB PSTs have played an important role in the progression of tiered service delivery models over time (Harrington & Gibson, 1986; Reinke et al., 2018). In 2003, a survey found that 22 state departments of education mandated a PIT process before a student could be considered for special education eligibility, and another 15 recommended them (Buck et al., 2003; Haight et al., 2001). By 2004, support for SB PST activities was formalized through federal legislation in the Individuals with Disabilities Education Act (IDEA; Yell et al., 2006). Despite mandates, recommendations, and state and federal funding for newly required prereferral intervention services (Yetter & Doll, 2007), districts and schools were given little explicit implementation guidance by departments of education related to team practices (Bahr & Kovalesk, 2006; Buck et al., 2003; Truscott et al., 2005).

SB PST Variation

The term SB PST is now recognized as a broad classification for a group of three or more educators who meet regularly and use a problem-solving process to address student academic, social, emotional, or behavioral needs (Bahr & Kovalesk, 2006; Newton et al., 2014; Reinke et al., 2018;

Rosenfield et al., 2018). Literature documents numerous variations across SB PST names, processes and procedures, stated outcomes, and structures (i.e., members, facilitators, roles, and responsibilities; Kovaleski, 2002). Literature further indicates the majority of noted variation across teams relates directly to the area of student functioning addressed by the team (i.e., behavior improvement, academic achievement, both). These outcomes often dictate team name, membership composition, and processes or procedures followed. For example, PBIS teams (Baker & Ryan, 2014) focus on linking behavior interventions and supports with students experiencing behavioral difficulties. Similarly, response to intervention (RtI) teams target remediation of student academic challenges (Duhon et al., 2009). Additional team name varietals include teacher assistance teams (TAT; Chalfant et al., 1979), prereferral intervention teams (PIT; Graden et al., 1985), instructional consultation teams (ICT; Rosenfield & Gravois, 1996), mainstream assistance teams (MAT; Fuchs et al., 1990), school-based intervention team (S-BIT; McDougal et al., 2000), instructional support team (IST; Kovaleski & Glew, 2006), student support team (SST; Bailey, 2010), or intervention assistance team (IAT; Whitten & Dieker, 1995).

Despite name differences, teams are similar in their use of general problem-solving steps (Bahr & Kovalesk, 2006; Reinke et al., 2018; Rosenfield et al., 2018), beginning with the identification of a problem, or discrepancy between a student's actual and expected performance (Newton et al., 2014). Deno (2005) presented the core problem-solving steps typically recognized and used in school settings, including (1) problem identification, (2) problem definition, (3) intervention plan design, (4) intervention implementation, and (5) problem solution. Similarly, the Team-Initiated Problem-Solving (TIPS) model, a prominent SB PST approach described in PBIS literature, also uses a 5-step process. Steps in the TIPS model include (1) identify problems, (2) develop hypothesis, (3) discuss and select solutions, (4) develop and implement an action plan, and (5) evaluate and revise the action plan (Newton et al., 2009). Teams often break these broad steps into a potentially infinite number of smaller discrete steps or procedures. For example, Bahr and Kovaleski (2006) break down the core problem-solving process into eight more explicit steps.

As with team names, variability in steps and procedures used is likely a function of the targeted outcome(s). For example, behaviorally oriented teams typically spend more time assessing and analyzing a presenting problem than academically focused teams. Similarly, data collection, both baseline (i.e., problem identification and analysis) and progress monitoring (i.e., [action] plan evaluation; Nunn & McMahan, 2000), may vary by student behavior and academic outcomes. Differences across team composition (i.e., membership) are also likely influenced by the

area of student functioning on which the team focuses. Academically focused teams would likely include members with academic learning of intervention expertise (e.g., reading specialists).

Outcomes and Empirical Support for SB PST

Literature repeatedly endorses the implementation of efficient and effective SB PSTs as they oversee identification and delivery of evidence-based interventions to positively affect school or student outcomes. Research documents the ability of SB PSTs to (1) decrease the number of students who are screened, tested, and found eligible to receive special education services (Burns & Symington, 2002; McDougal et al., 2000; McNamara & Hollinger, 2003); (2) reduce disproportionality in special education eligibility rates (Gravois & Rosenfield, 2006; Marston et al., 2003); and (3) improve academic and behavioral outcomes for struggling students (Fuchs et al., 1996; Kovaleski et al., 1999; Telzrow et al., 2000). Generally, these assertions appear to be supported by empirical evidence; however, such support may be relatively sparse and somewhat inconsistent.

Despite widespread use of PSTs for almost four decades, empirical evidence documenting positive outcomes for SB PSTs is relatively limited (Rosenfield et al., 2018). A recent meta-analysis examined effects of SB PSTs in 14 studies conducted since 1970 that met the quasi-experimental or experimental (i.e., pre-post, treatment–control) methodological and dependent outcome variable (i.e., student, system, or team) inclusion criteria (Sims et al., 2019). Included studies indicated a large overall weighted estimate of effect ($g = 0.84$) for SB PST use, a large effect ($g = 0.89$) on student academic and behavior outcomes, a moderate effect ($g = 0.66$) on systems outcomes (i.e., reduction in referrals to special education), and a large effect ($g = 1.00$) on team outcomes (i.e., procedural fidelity). These findings were consistent with prior meta-analytic work targeting SB PST effects. Though relatively limited, studies examined by Burns and Symington (2002) documented the evolution, characteristics, outcomes, and effectiveness of prereferral intervention teams. Their work identified overall large effects ($d = 1.10$), particularly for teams implemented with explicit researcher guidance and oversight ($d = 1.32$). Generally, available empirical evidence suggests that with direct guidance and oversight as part of a rigorous experimental or quasi-experimental design, teams are effective (Burns & Symington, 2002; Dowd-Eagle, 2007; Sims et al., 2019). While positive, these findings may only apply to a small percentage of SB PSTs, given that explicit procedural guidance or mandates appear lacking. This autonomy may lead educators to create their own process rather than adopt one of the evidence-based processes outlined in literature (Rosenfield et al., 2018) and to neglect important implementation

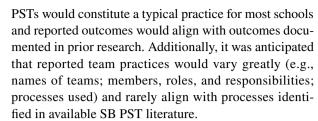considerations like procedural fidelity (Keller-Margulis, 2012).

Moderators of SB PST Effects

The evidence-based practice and implementation science movements illustrate the importance of utilizing previously validated approaches to support students (Cook & Odom, 2013). Poor implementation fidelity (e.g., adherence, quality, exposure) for any practice or procedure is likely to result in effectiveness that falls below levels documented in the supporting empirical evidence for the practice or procedure in question (i.e., the evidence base; Telzrow et al., 2000). Consistent with this perspective, implementation fidelity appears to impact, if not explain, the results noted in SB PST research. Research is typically accompanied by a level of oversight not normally present in day-to-day educational practice. Burns and Symington (2002) noted the importance of procedural fidelity when attributing a drop in measured PST effects to a lack of research-driven oversight. Additional work suggests that as PST procedural fidelity wanes, so too does the positive impact teams have on student outcomes (Harrington & Gibson, 1986) and systems outcomes (Doll et al., 2005). Unfortunately, empirical evaluation of procedural fidelity on SB PST outcomes is limited. Furthermore, there is little information on how best-practice recommendations have been interpreted and implemented outside of research activities (Burns & Symington, 2002; Rosenfield et al., 2018). In short, SB PST research is sparse and often lacks acceptable research designs, sample sizes, and methodology, including evaluation of potential outcome moderators (e.g., procedural fidelity, team composition, adopted model, training, team interpersonal dynamics, or communication; Bennett et al., 2012; Dowd-Eagle et al., 2014; Nelson et al., 1991; Rosenfield et al., 2018).

Current Study

When implemented well, SB PSTs effectively support student achievement and social, emotional, and behavioral functioning. Despite the advantageous inclusion of individuals with varied expertise, applied team practices appear disconnected from available best-practice guidance. This gap documents an opportunity for improvements in SB PST utilization and subsequent outcomes. This study sought to examine stakeholder reports and perceptions of SB PST trends, outcomes, efficiency, and effectiveness. Specific aims of this work sought to:

1. Examine educator (e.g., administrators, teachers, counselors, school psychologists) reports of SB PST prevalence, processes, procedures, composition, and targeted outcomes. Specifically, this study hypothesized that SB

PSTs would constitute a typical practice for most schools and reported outcomes would align with outcomes documented in prior research. Additionally, it was anticipated that reported team practices would vary greatly (e.g., names of teams; members, roles, and responsibilities; processes used) and rarely align with processes identified in available SB PST literature.

2. Assess perceptions of SB PST efficiency and effectiveness. Favorable reports of efficiency and effectiveness were anticipated overall, but were unlikely to be universally favorable. Some less than favorable ratings of team efficiency and effectiveness were expected.

3. Determine if educator-reported perceptions of team effectiveness and efficiency varied significantly across educator groups (i.e., administrator, teacher, school mental health provider) or process adopted (i.e., evidence-based, school/district developed).

Method

Participants

Participants included 3233 certified teachers (2908), administrators (42), school mental health professionals (51), staff members (69), and other educators (163). Participants identified as predominantly female (85.1%) and White (88.2%). Additionally, 7% of participants identified their race/ethnicity as African American, 1.8% as Latinx, and < 1% for Native American, Asian/Pacific Islander, Other, and Multiracial. Participants represented a wide range of ages between 18 and over 55 years of age. The majority of respondents reported their highest level of education as "having some graduate training" (34.7%) or a Professional Degree (e.g., Ed.S.; 47.6%). The respondents were mostly general education staff (71.4%) with more than 1 year of experience. Reported years of experience as well as grade-level taught were roughly equivalent, with a slightly larger representation of high school educators participating relative to elementary and middle school educators, and with preschool educators representing a small number of participants. See Supplemental Table 1 for participant demographic information.

Measures

Educator Practices Survey

Respondents were asked a series of researcher-constructed, study-specific survey questions targeting SB PST composition, practices, and outcomes in their district or school. Additional survey items asked respondents about the demographic characteristics of their district or school and students. The number of respondents differed by question.

Table 1 Responses to Yes/No survey questions

	Total responses	Response	Frequency	Percentage
Question	Does your building have a "problem-solving team?"			
	2509	Yes	1258	50%
		No	1251	50%
Question	Does your building have a team that engages in the problem-solving process to address student difficulties?			
	1234	Yes	680	55%
		No	554	45%
Question	Are you a member of this team?			
	1929	Yes	414	21%
		No	1091	57%
		Sometimes	261	14%
		When Invited	163	8%

Note. Percentages calculated based on total question responses (e.g., 2509; e.g., 1258/2509 = 50%)

Table 2 Reported SB PST names

What does your building call this team?

Total responses	Response	Frequency	Percentage
673	RtI team	127	19%
	Tier II team	10	1%
	Tier III team	7	1%
	Child study team	4	.05%
	Care team	22	3%
	Data team	8	1%
	PBS/PBIS team	145	22%
	Stat team	1	.01%
	Other	141	21%
	Student support team*	143	21%
	Intervention assistance team*	65	10%

Note. Percentages calculated based on total question responses (i.e., 673; e.g., 127/673 = 19%)

*Added during coding based on consistency in participant responses with these names that exceeded 10% of the total responses

Generally, this variability is attributed to study attrition, either in-part or -whole. The majority of items were mixed-response formatted, with response options generated by primary investigators based on a review of pertinent literature and applied practice experiences. Numerous questions allowed participants to enter an alternative text response of their choosing if provided options were not preferred (i.e., "Other:____"). Response options for two questions related to perceived SB PST efficiency and effectiveness were formatted using a 0–10 Likert-type scale, with higher scores indicating perceptions of greater efficiency and effectiveness. See Supplemental Table 2 for survey questions, response format, and response options.

Procedures

A list of email addresses for all employees employed in public school districts state-wide was procured through a request to the Department of Public Instruction in one Southeastern state. The list contained employee email addresses only. An email containing an invitation to participate and a link to the Qualtrics survey was sent to all 65,317 total Department of Public Instruction (i.e., State Department of Education) employee email addresses. An accurate, genuinely representative response rate is incalculable given that those invited to participate included numerous employees of school districts that are not direct instructional or support service providers (e.g., human resources managers, custodians, accountants, facility maintenance personnel). It is unreasonable to believe that these employees would have insights related to the information sought by the survey. Therefore, it would be misleading to conclude that these responses were sought, but not received. Unfortunately, a more selective, targeted

solicitation for participation could not be conducted due to the absence of information beyond email addresses. To screen out participants who lacked knowledge of their district or building's SB PST processes, an adaptive survey was constructed that routed such personnel to a gift card drawing entry item. While individuals in non-instructional or support positions were invited to participate, when indicating their role in the district, they were directed to the gift card raffle rather than core survey questions (i.e., SB PST questions).

Items used in this study were included as part of a larger survey seeking information about student support practices in schools and classrooms. Initially, the link in the email invitation directed potential participants to the study overview and consent form. Following provision of consent, participants continued to survey questions seeking demographic information. An initial demographic question on the survey inquired as to the role of the prospective participant. Prospective participants that indicated they were not direct instructional or support service providers (e.g., accountants, human resources personnel, facilities maintenance) were directed to a question to enroll in a gift card drawing. If respondents indicated they were direct instructional or support service providers (i.e., administrator, teacher, school mental health provider, staff [e.g., paraprofessional], other [i.e., speech-language pathologist]), they were routed to the larger study survey questions. Data collection occurred in the spring over a 10-week period. Reminder emails were sent weekly after the initial invitation to participate was distributed. Thirty randomly selected individuals were eligible for an Amazon gift card after completing the survey by

providing their email address. Items were presented in a forced response, open response, or combined open and forced response manner.

Data Coding and Interobserver Agreement

Survey response data were coded and checked for reliability by six doctoral-level graduate student researchers. When applicable, text responses (e.g., age, years of experience, open text response options) were converted to a numerical format corresponding to a coding scheme created by the principal investigators to facilitate statistical analyses. For example, reported ages were organized in 10-year increments, except for the 18–24 years grouping, and each increment was assigned a number. In the coding scheme, the first group, 18–24 years corresponded to a "1." The second group, 25–34 years corresponded to a "2." The third group, 35–44 years corresponded to a "3." This continued through as many options as needed for each item. A "0" was used to code items to which participants did not respond. Additionally, short answer responses (i.e., questions with an "Other:" write-in option) were evaluated, and additional coding options were added as needed. A coding option was added if the text response occurred at a rate of 10% or more of the total responses (i.e., 33 occurrences). Of the 13 items with write-in options, two additional coding options were added to the "team name" variable based on this threshold (i.e., intervention assistance team, student support team).

To ensure coding reliability, 30% of the data across all items were double coded at random by a second, alternate coder. Of the 42,029 responses, 12,609 were double-entered to evaluate interobserver agreement (IOA). Agreement across double coded data for coded data was 99.99%. Of the 12,609 IOA items, 63 discrepancies were identified and then evaluated and rectified by a third coder. Cleaned data were imported into SPSS v.25 for analysis.

Data Analysis

To address exploratory research aims related to reported prevalence and trends in SB PST practices (i.e., aims 1 and 2), descriptive statistics and frequencies were calculated. As noted, responses varied based on participant attrition. Given the inability to determine the degree (i.e., from that question forward or only for select survey questions) and reason for participant attrition, non-responses were not included in analysis and interpretation. Percentages were also calculated for some variables when appropriate. Analysis of Variance (ANOVA) was used to address research aim 3, the examination of differences in perceived efficiency and effectiveness of SB PSTs by group and process used.

Results

Trends and Practices

To address research aim 1, examining educator reports of SB PST prevalence, processes, procedures, composition, and targeted outcomes, participant responses were accumulated across several survey questions related to SB PST prevalence, processes, procedures, composition, and targeted outcomes. In response to a question asking about the presence of a SB PST (i.e., Does your building have a "problem-solving team?"), half of item respondents (i.e., participants that elected to respond to an individual question on the survey) indicated their building had a problem-solving team. An additional 723 participants (i.e., educators that responded to at least one other survey question) did not respond to this question (see Supplemental Table 3). When asked, 680 (55%) respondents indicated their building had a team that engages in the problem-solving process but goes by another name (i.e., Does your building have a team that engages in the problem-solving process to address student needs, but is not called the problem-solving team?). An additional 1998 participants declined to respond to this question (see Supplemental Table 3).

When asked, 57% of respondents indicated they were not members of their building's team (see Table 1). A majority of participants did not respond to a question asking to identify the name of their SB PST (i.e., What does your building call this team?; $n = 2259$). Responses most frequently endorsed RtI team (19%), PBS/PBIS team (22%), and Other (21%). As noted previously, two additional names were added during coding based on consistency in participant responses: student support team (SST; 21%) and intervention

Table 3 Reported team facilitator

Total responses	Response	Frequency	Percentage
	Who facilitates this team?		
1921	School counselor	803	42%
	School psychologist	200	10%
	General educator	519	27%
	Special educator	302	16%
	Speech-language pathologist	62	3%
	Instructional specialist	177	9%
	Building administrator	796	41%
	Behavior specialist	128	7%
	Specials teacher	105	5%
	Other	175	9%

Note. Percentages calculated based on total question responses (i.e., 1921; e.g., 803/1921 = 42%)

assistance team (IAT; 10%). Frequency and percentages for all responses are reported in Table 2.

Respondents identified school counselors (42%), building administrators (41%), and general education teachers (27%) as the most frequent facilitators of their building's team (i.e., Who facilitates this team?; see Table 3). Somewhat surprisingly, only 10% of respondents indicated a school psychologist facilitated their building's team. When asked about general membership (i.e., Who is on this team?; see Table 4), the most frequently identified members endorsed by respondents included general education teachers (76%), school counselors (66%), building administrators (64%), and special education teachers (54%). Only 26% of respondents reported that their school psychologist was a member of their team. The most frequently reported roles/jobs fulfilled by team members included facilitator (83%), record keeper/ note taker (72%), and timekeeper (40%; see Table 5).

Next, participants were asked to identify the steps followed by their building's SB PST. Of the 521 responses to this question, participants indicated that most teams engaged in between 4 and 7 steps, with as few as one step and as many as 12 steps (see Table 6). Specific steps were coded by comparing reported steps to steps espoused by several prominent PST models. Unfortunately, of the 669 responses, the majority (45%) were more closely aligned with discipline practices rather than problem-solving activities (e.g., "verbal warning, remove to another classroom, note/phone call to parent, office discipline referral, time out, and suspension"). Additionally, only 23 (2.5%) responses aligned with a model identified in available literature, whereas 273 (41%) of responses did not align with any of the evidence-based processes included in coding (see Table 7).

Table 5 Reported roles or jobs of team members

What roles/jobs do members fill on this team?			
Total responses	Response	Frequency	Percentage
1321	Facilitator	1100	83%
	Record keeper/note taker	950	72%
	Unknown	746	56%
	Time keeper	524	40%
	Case manager	490	37%
	Data manager	444	34%
	Focus monitor	264	20%
	Other	58	4%
	General member	27	2%

Note. Percentages calculated based on total question responses (i.e., 1321; e.g., 1100/1321=83%)

In response to questions about problem areas targeted by SB PSTs, the majority of respondents indicated their teams focus on behavior (49%), reading (44%), mathematics (42%), and writing (35%). No additional areas were identified by more than 27% of respondents (see Table 8). Similarly, the outcomes or goals of PSTs most frequently endorsed by participants were "improved student performance" (59%) and "improved classroom performance" (45%). In contrast, the outcome identified by the fewest participants (10%; see Table 9) was "increase in referrals to determine eligibility for special education services."

Efficiency and Efficacy

Responses from educators were used to address research aim 2, examining educator perceptions of PST efficiency

Table 4 Reported members of team

Who is on this team?			
Total responses	Response	Frequency	Percentage
1926	School counselor	1208	66%
	School psychologist	509	26%
	General educator	1463	76%
	Special educator	1040	54%
	Speech-language pathologist	256	13%
	Instructional specialist	483	25%
	Building administrator	1230	64%
	Behavior specialist	281	15%
	Specials teacher	526	27%
	Other	170	8%
	Parent	13	<.1%

Note. Percentages calculated based on total question responses (i.e., 1926; e.g., 1208/1926=66%)

Table 6 Reported number of steps in team process

Number of steps in process			
Total responses	Response	Frequency	Percentage
521	1	16	3%
	2	25	5%
	3	48	9%
	4	84	16%
	5	100	19%
	6	87	17%
	7	63	12%
	8	49	9%
	9	24	5%
	10	5	.01%
	11	14	3%
	12	6	1%

Note. Percentages calculated based on total question responses (i.e., 521; e.g., 16/521=3%)

Table 7 Alignment of reported steps with best-practice SB PST processes

What are the steps in the problem-solving process?

Total responses	Response	Frequency	Percentage
669	Deno, S.L. (2005)	4	<.01%
	Tilly, W. D. (2008)	13	2%
	Kratochwill, T. R., and Bergan, J. R. (1990)	0	0%
	Shinn, M. R. (2002)	0	0%
	Bahr, M. W., and Kovalesk, J. F. (2006)	1	<.01%
	Team-Initiated Problem-Solving (TIPS)	5	.01%
	PS model NOS	273	41%
	Refer for eligibility evaluation	8	1%
	Referral to person(s)	55	8%
	Referral form	6	.01%
	Response unrelated to any PS activities	304	45%

Note. Percentages calculated based on total question responses (i.e., 669; e.g., 4/669 = > .01%)

Table 8 Reported areas of concern addressed by PST

Which of the following difficulty areas does your building's team address?

Total responses	Response	Yes	Percentage
2511	Reading	1095	44%
	Writing	874	35%
	Math	1062	42%
	Speech	513	20%
	Language	514	20%
	Behavior	1219	49%
	Social skills	689	27%
	Small groups	212	8%
	Gross-motor difficulties	242	10%
	Fine-motor difficulties	258	10%
	Classroom management	571	23%
	Class-wide problems	394	16%
	Building-wide problems	630	25%
	Systems-level problems	186	7%
	Other	65	3%
	Unknown	347	14%

Note. Percentages calculated based on total question responses (i.e., 2511; e.g., 1095/2511 = 44%)

($n = 1640$) and efficacy ($n = 16{,}350$). The mean rating for perceived efficiency was just above the midpoint (i.e., 5) on the Likert scale used ($M = 5.97$, SD = 1.9). Similarly, mean ratings of educator perceptions of PST effectiveness were also just above the midpoint on the Likert scale used ($M = 5.88$, SD = 2.0). Ratings for both efficiency and effectiveness were slightly negatively skewed (see Table 10). The relationship between perceived efficiency and perceived efficacy was examined using bivariate correlation. As was expected, a significant positive correlation was evident between perceived efficiency and efficacy ($r = 0.885^{**}$, $p \le 0.000$).

Finally, one-way analysis of variance (ANOVA) was used to examine differences in reports of PST efficiency and efficacy by administrators, teachers (i.e., general education and special education teachers), and mental health professionals (i.e., school counselors, school psychologists; see Fig. 1). There was a statistically significant difference between group efficiency ratings ($F_{(2,1668)} = 3.597$, $p = 0.028$; see Table 11). A Tukey post hoc test revealed that administrator efficiency ratings were significantly higher (6.76 ± 2.1, $p = 0.027$) when compared to teacher efficiency ratings (5.83 ± 2.1). There was no statistically significant difference between

Table 9 Reported outcomes or goals for PSTs

Effectiveness of problem-solving teams is seen in:

Total responses	Response	Frequency	Percentage
1744	Improved student performance	1034	59%
	Improved classroom performance	785	45%
	Decrease in referrals to determine eligibility for special education services	482	28%
	Increase in referrals to determine eligibility for special education services	177	10%
	Increase in accuracy of special education eligibility determinations	359	21%

Note. Percentages calculated based on total question responses (i.e., 1744; e.g., 1034/1744 = 59%)

efficiency ratings of administrators and mental health professionals ($p = 0.389$) or teachers and mental health professionals ($p = 0.708$). Similarly, a statistically significant difference between group ratings of effectiveness (F (2,1668) = 3.34, $p = 0.035$; see Table 12) was observed. A Tukey post hoc test revealed that administrator efficacy ratings were statistically significantly higher (6.79 ± 2.2, $p = 0.027$) when compared to teacher effectiveness ratings (5.86 ± 2.1). There was no statistically significant difference between effectiveness ratings of administrators and mental health professionals ($p = 0.207$) or teachers and mental health professionals ($p = 0.967$).

Table 10 Descriptive statistics for reported perceptions of PST efficiency and effectiveness

	N	Mean*	SD*	Skewness		Kurtosis	
				Statistic	Standard error	Statistic	Standard error
Efficient	1640	5.97	1.9	−.275	.06	−.28	.12
Effective	1635	5.88	2.0	−.30	.06	−.34	.12

Note. *Rated on a 0–10 scale

Table 11 Analysis of variance results comparing group ratings of SB PST efficiency

Efficient

				Test of homogeneity of variance			ANOVA	
Groups	n	Mean	Std. Deviation	Levene statistic	Sig	F	df	Sig
Total	1671	5.86	2.09	.306	.736	3.597*	2	.028
Administrators	34	6.76	2.12					
Teachers	1601	5.83	2.09					
Sch. MH providers	36	6.11	1.91					
	Group differences							
Groups		Tukey HSD mean difference**		Sig			95% confidence interval [LL–UL]	
Admin.—teachers		.932*		.027		.08		1.78
Admin.—Sch. MH providers		.654		.389		−.52		1.82
Teachers—Sch. MH providers		−.279		.708		−1.10		.55

Note. *Significant at the .05 level. **Conducted with adjustment for unbalanced sample sizes

Table 12 Analysis of variance results comparing group ratings of SB PST effectiveness

Effective

				Test of homogeneity of variance			ANOVA	
Groups	n	Mean	Std. Deviation	Levene statistic	Sig	F	df	Sig
Total	1664	5.88	2.10	.878	.416	3.34	2	.036
Administrators	34	6.79	2.23					
Teachers	1594	5.86	2.10					
Sch. MH providers	36	5.94	1.866					
	Group differences							
Groups		Tukey HSD mean difference**		Sig			95% confidence interval [LL–UL]	
Admin.—teachers		.937*		.027		.08		1.79
Admin.—Sch. MH providers		.850		.207		−.33		2.03
Teachers—Sch. MH providers		−0.87		.967		−.92		.74

Note. *Significant at the .05 level. **Conducted with adjustment for unbalanced sample sizes

Discussion

This study examined stakeholder reports and perceptions of SB PST trends, outcomes, efficiency, and effectiveness. Broadly defined, SB PSTs are groups of educators working together to address difficulties experienced by students in educational settings (Welch et al., 1999). Educator reports and perceptions of their building's SB PSTs were collected via a multi-item survey. Responses to one or more items from 3233 educators surveyed provided insight into naturalistic SB PST functioning (i.e., functioning in the absence of direct researcher oversight). Specific aims of this study sought to (1) examine educator reports of SB PST prevalence, processes, procedures, composition, and targeted outcomes; (2) assess perceptions of SB PST efficiency and effectiveness; and (3) determine if efficiency and effectiveness ratings varied significantly between administrators, teachers, school mental health providers or process implemented.

Reported Trends, Procedures, and Outcomes

This study anticipated that reported team practices would vary greatly (e.g., names of teams; members, roles, and responsibilities; processes used) and rarely align with processes identified in available SB PST literature. Generally, favorable reports of efficiency and effectiveness were anticipated overall, but were not hypothesized to be universally favorable. Finally, some poor or less than favorable ratings of team efficiency and effectiveness were expected. First, nearly one quarter (22%) of participants did not respond to questions about the presence of a SB PST or other team that engages in problem-solving activities to address student difficulties in their school. Similarly, another large portion of respondents explicitly indicated their school did not have a "school-based problem-solving team" (i.e., exact title; 50%) or similar team using another title (45%). Although this suggests a high likelihood that the majority of schools use SB PSTs (i.e., "SB PST" 50%; varied team names 55%), the reported or inferred absence of such teams by this number of participants was somewhat surprising. At a minimum, this suggests these individuals were unaware of team-based problem-solving efforts in their building or district. The absence of or perceived absence of collaborative teaming to address student difficulties and guide data-based decision-making is troubling, as it may reflect an absence of prevention and early intervention efforts as a whole in these schools. Whether in whole or in part, these responses raise questions about how schools engage in problem-solving activities, if not via SB PSTs. While an absence of SB PSTs may indicate use of independent problem-solving activities or individual consultation, such approaches would fail to exploit the advantages inherent in SB PST utilization (e.g., varied expertise, distribution of responsibility, increased accountability; Reinke et al., 2018). Additionally, these omissions or responses may be reflective of responses indicating the use of punitive, reactionary, and exclusionary practices rather than problem-solving activities. Generally, in spite of these responses, or non-responses, as anticipated, results suggest a team of educators working together to address student difficulties is a relatively common practice in schools. Additionally, it appears a wide range of variability exists across these teams. For example, respondents identified numerous names used to identify these teams. While variability in team moniker does not seem inherently problematic, as it is superficial relative to the core content and purpose of such teams, it may be an indication of additional inconsistency across collective guidance around teams. This is to say that autonomy in naming a team may extend to other aspects of teams, including composition, processes, and desired outcomes (e.g., potential deviation from best-practice recommendations). Such variability was evident in the results of this survey.

Consistent with noted variability in team names, the composition, leadership, and processes and procedures also appear to differ widely from one another. Both general team membership and facilitation duties appear to be executed primarily by teachers (i.e., general and special educators), administrators, and school counselors. While not surprising, the relative lack of representation of student support staff with specialized MTSS, problem-solving, intervention, and data-based decision-making training is concerning. School psychologists, speech-language pathologists, or school social workers, for example, offer teams unique expertise in prevention, assessment, and intervention that would contribute meaningfully to SB PST efforts. Nationally accredited training of school psychologists integrates problem-solving processes, including varied evidence-based intervention techniques, across most domains of practice. This makes school psychologists, in particular, well-suited to contribute meaningfully, if not lead SB PSTs (Burns et al., 2005; Dowd-Eagle et al., 2014). Unfortunately, school psychologists and similar specialists appear to make up only a small percentage of SB PST members or leadership.

Again, results related to the first research aim found that reports of discernible evidence-based processes used by SB PSTs were limited. When questioned, almost 80% of participants did not list any steps used by their building's SB PST. Additionally, of the responses provided, almost half appeared unrelated to any PST, referencing a punitive practice instead (e.g., ODR, suspension, call administrator), and only a small fraction of responses were consistent with any evidence-based PST process. This raises significant questions as to what, if any, process is used to drive student support efforts in the buildings of educators that did not

respond to this question. Additionally, given the disconnect between reported or apparently absent SB PST practices and evidence-based SB PST recommendations, the knowledge and expertise of facilitators and district or school policymakers appears questionable. The absence of a clear connection to evidence-based practices raises concerns about implementation fidelity of a problem-solving process (i.e., core steps consistent across processes) as well as the efficiency and effectiveness of these teams in the absence of such a process.

Regarding team effects, targeted outcomes were relatively consistent with expectations based on relevant literature. Fairly consistently, respondents identified improvement in student or classroom outcomes in behavior, reading, math, and writing (Burns & Symington, 2002; Rosenfield et al., 2018). Respondents appeared to contradict their earlier responses when they identified increasing referrals for evaluation to determine eligibility for special education as a targeted outcome. While one of the least identified outcomes on this question, such referrals were a frequently identified SB PST step. This may reflect a disconnect between outwardly stated PST goals (i.e., "the socially favored answer") and the types of activities in which teams actually engage. This result in particular raises concerns around the interpretation of respondent ratings of PST efficiency and effectiveness.

Efficiency and Effectiveness

Approximately half of the participants provided information used to address research aim 2, which targeted assessing perceptions of SB PST efficiency and effectiveness. Ratings can be considered generally favorable for team performance areas, with ratings appearing to be above the median score on the scale used, with a slightly negative skew (i.e., more higher ratings than lower ratings overall). As expected, this appears somewhat consistent with prior research, which found noteworthy desirable effect sizes for SB PSTs in student-level outcomes (e.g., response to intervention data) and systems-level outcomes (e.g., reduced referrals to special education; see Burns & Symington, 2002; Welch et al., 1999). While consistent with prior research, additional scrutiny of these findings appears warranted, given the potential impact of other confounding factors. For example, these favorable ratings seem inconsistent with responses to other survey items or with the goals underlying SB PSTs. Respondents appeared to have difficulty identifying the SB PST processes or steps used within their buildings. Given the positive impact that clearly and consistently stated procedures can have on implementation and outcomes, the variability and ambiguity reported here would seem more consistent with lesser levels of efficiency and effectiveness. Relatedly, if clear procedures are not evident, this would make it difficult to replicate or generalize these teams' successes and to identify aspects or factors that make their

teams efficient and effective. Next, given the identification of punitive discipline practices and evaluations to determine special education eligibility, rather than procedures aligning with any problem-solving process, responses may indicate the efficiency and effectiveness in executing or achieving these processes and subsequent outcomes. Unfortunately, these outcomes are inconsistent with the early intervention efforts associated with a tiered approach that many districts and schools outwardly claim underlie delivery of their services and supports. These results may be indicative of larger systemic misinterpretation (e.g., lack of awareness, knowledge, and skills), misuse, or resistance to SB PST and prevention and early intervention initiatives. Misinterpretation, misuse, or resistance in SB PST implementation or procedural fidelity would undoubtedly have a pronounced negative impact on outwardly stated SB PST outcomes.

Efficiency and Effectiveness Ratings by Group

Findings related to research aim 3 indicated efficiency and effectiveness ratings by administrators, teachers (i.e., general and special educators), and mental health support providers (i.e., school psychologists, school counselors) were generally consistent, with one exception. Administrators rated their teams as slightly, but significantly, more efficient than did teachers. There are several possible explanations for this finding. First, respondents indicated administrators are a frequent facilitator of SB PSTs. As a facilitator, administrator assessment of teams may be subjective and susceptible to biased inflation. In contrast, teachers, who may not facilitate PSTs as frequently, may be more objective. Inflated teacher facilitator rating may also be more easily hidden by the larger number of teacher raters. Additionally, if not directly involved in PST activities, it is possible administrators assume teams are effective or rely on potentially self-serving reports from teams. It is also possible that, given the constant and mounting demands on teacher time, participation in SB PSTs may be viewed as a misuse of their valuable time, leading to generally lower teacher ratings of SB PST effectiveness. Finally, for those that reported their school's use of SB PST processes as exclusionary disciplinary practices or special education eligibility evaluations, the latency between referral and desired outcome may be perceived as inefficiency. Such outcomes can, at times, be lengthy processes involving procedural safeguards for students and parents. Ultimately, these outcomes may not decrease an educator's perceived responsibility for supporting a struggling student, thus leading them to conclude that the SB PST process was neither efficient nor effective.

Unlike efficiency, SB PST effectiveness research is more prevalent in available literature. Consistent with meta-analytic findings (see Burns & Symington, 2002; Sims et al.,

2019), respondents consistently indicated favorable perceptions of SB PST effectiveness. Although to an apparently lesser degree, across student outcomes (i.e., academic and behavioral functioning) and system outcomes (e.g., special education referrals), respondent ratings suggest SB PSTs result in improved or desired outcomes. While favorable and consistent with prior research, these findings are not beyond cautious scrutiny. As with efficiency, those responsible for conducting SB PST activities would likely have a biased interest in favorable reports of team outcomes. For example, the potential disconnect (bias) between raters' evaluations was illustrated by qualifying text provided by one respondent. The respondent added to their rating, "Our team is ineffective and only listens to the principal talk." It seems reasonable to think the principal in question would likely have a personal interest in assessing their team's effectiveness as higher (i.e., limited objectivity).

Lastly, as with efficiency, if processes identified align more with disciplinary action or referral for an evaluation to determine eligibility for special education services, effective PSTs would mean higher rates and severities of discipline (e.g., removal from classroom, suspension) as well as more referrals for evaluations to determine special education eligibility. Defined this way, effective SB PSTs would mean increases in much less desirable, more restrictive outcomes for students, particularly those disproportionately represented in these outcomes.

Limitations and Future Direction

While this study provided some insight into the applied practices of SB PSTs, this study and the resulting information are not without limitations. First, the geographic location of the respondents limits the generalizability of these findings. All responses were provided from educators in one Southeastern state. Due to likely regional or local differences in SB PST practices, these findings may not be representative of those used by all districts or schools across the country. Similarly, the sample of respondents appears very homogeneous. Responses from this predominantly White and female group of participants may not generalize across responses from a more diverse sample of educators. Next, although the number of overall responses appears large (3233) and a truly representative response rate is incalculable, the response rate was likely low, also limiting generalizability. Furthermore, it is unclear why individuals declined to participate in-full or -part. Only 22 potential respondents actively declined to participate (i.e., provided a reason or comment). A portion of participants (i.e., instructional or certificated student support staff that responded to at least one survey item) did not respond to specific items. This missing information complicates interpretation because there is no way of understanding

why a participant declined to answer a given question. Additional responses may have influenced results and subsequent interpretations or conclusions. Next, while the survey was designed to be as comprehensive as possible, the inclusion of additional questions on the survey may have strengthened findings. When replicated, additional supplemental or replacement items should be considered to expand on survey findings. For example, "Does your team use a particular PST model?" Furthermore, question formatting may have limited responses in some cases. Open-ended questions, while more difficult to aggregate, have the potential to yield more qualitatively rich data. Additionally, future work related to SB PSTs should include a variety of methods. Future research may include mixed methods approaches as well as direct observation activities to explore SB PST practices and outcomes. Finally, as noted when interpreting study results, information collected about team efficiency and effectiveness must be interpreted with caution, given the potential for subjective bias in responses. Ideally, evaluation of efficiency and effectiveness would be collected directly via observation or permanent product data (e.g., intervention outcome data, referral rates). Future work should include procedures to collect more objective data to strengthen results and subsequent interpretations.

Implications

This study holds important implications for school districts, education stakeholders, researchers, and policymakers whose interest lies in promoting effective SB PST practices. Although SB PSTs are recommended, if not mandated, at state and federal levels, this study supported the hypothesis that there is considerable variability in educators' reports of SB PST general knowledge and use, processes, composition, targeted outcomes, efficiency, and effectiveness. Of particular concern is that (a) half of the participants surveyed indicated that their school does not have an SB PST or a similar team and (b) majority of the participants listed punitive and exclusionary practices as part of their team's processes, instead of processes aligned with evidence-based practices. This variability may, in part, reflect both the lack of explicit implementation guidance provided by state and federal education departments, as well as the numerous frameworks available for SB PSTs in scientific literature. To address these gaps, policymakers and education stakeholders should consider providing more explicit guidance for SB PST implementation based on best-practice recommendations. Providing more explicit guidance in varied forms regarding evidence-based SB PST processes, procedures, and targeted outcomes can support the efficacy of these teams and ensure that schools are more unified in the services they provide to students and families. Most central to this guidance is

training and ongoing implementation support (i.e., coaching and performance feedback) at the state, regional, district, school, and team levels. Initial and ongoing training and support are essential to ensuring implementation of SB PSTs align with best-practice recommendations and to promoting improved student performance (Burns & Symington, 2002) as well as reductions in disproportional special education placements (Telzrow et al., 2000).

Furthermore, to address the gap between SB PST research and practice, schools should encourage participation of school psychologists on SB PSTs, including facilitating team activities. School psychologists receive specialized training in each of the individual steps of the problem-solving processes and indirect service delivery (i.e., consultation), making them uniquely suited to support, if not lead, effective SB PSTs (Dowd-Eagle et al., 2014). Unfortunately, the results of this study confirm what has been well-documented previously. School psychologists continue to report spending only a small percentage of their time engaged in SB PST–related activities, particularly when compared to them engaged in evaluation and planning activities related to special education (Walcott et al., 2016). Including school psychologists and other specialists in SB PST processes could lead to improved outcomes (i.e., remediation of student difficulties and fewer special education eligibility evaluations). Better SB PST outcomes would likely lead to less time spent conducting evaluation activities (e.g., paperwork, testing), affording multidisciplinary team members more time to directly support students, teachers, families, and communities. While these recommendations can provide a starting point for improving applied SB PST practices, more research should be conducted to identify what works, what does not, and how best to support evidence-based SB PST practice dissemination and sustainable implementation.

Conclusion

The results of this study noted significant variability in educator reports of SB PST names, processes, composition, leadership, and perceived efficiency and effectiveness. Although respondents identified improvement in student performance through SB PSTs, respondents also had difficulty identifying their school's PST processes, or they described activities that were not aligned with evidence-based practices. Oftentimes, administrators, teachers, and counselors served on or as leaders of SB PSTs, while well-qualified support staff (e.g., school psychologists) membership or facilitation was much less frequently reported. When examining the difference in perspectives of these team members, it was found that administrators tended to rate their SB PST more favorably than teachers. These findings indicate that more work is to be done in understanding the ways SB PSTs

are conducted in actual practice as well as whether they are effective in improving student outcomes.

Declarations

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