Educ. Treat. Child. (2022) 45:239
https://doi.org/10.1007/s43494-022-00075-5

CORRECTION

Correction to: An Expert Consensus Process to Distill Tier 1 PBIS into Core Practice Elements Essential to Frontline Implementation

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Published online: 12 April 2022

Correction to: Educ. Treat. Child.
https://doi.org/10.1007/s43494-021-00066-y

The following funding information was inadvertently left out of the published article:

"This work was supported by the National Center for Education Research, Institute of Education Sciences (Grant#R305A190182). The statements do not necessarily reflect the views of our funders and all errors and omissions are our own."

The original article has been corrected.

The original article can be found online at https://doi.org/10.1007/s43494-021-00066-y.

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Educ. Treat. Child. (2022) 45:51–67
https://doi.org/10.1007/s43494-021-00066-y

ABAI Association for Behavior Analysis International

ORIGINAL ARTICLE

An Expert Consensus Process to Distill Tier 1 PBIS into Core Practice Elements Essential to Frontline Implementation

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Accepted: 28 October 2021 / Published online: 6 January 2022

Abstract Student outcomes depend on the implementation of intervention practice elements, which are the specific behaviors that front-line implementers deliver as part of their direct interactions with students. Tier 1 PBIS is a well established practice in schools but existing guidance on practice elements is often conflated with guidance on organizational systems that support implementation. The goal of this study was to distill the specific practice elements of Tier 1 PBIS from the established core features using an expert consensus process. A panel of nine Tier 1 PBIS research and practice experts participated in three iterative rounds of information gathering and feedback within an electronic Delphi study that structured the consensus-building process. The expert panel reached consensus by distilling Tier 1 PBIS into 16 distinct practice elements organized into five thematic domains. The thematic domains from the present study align with existing literature on core Tier 1 PBIS features but the practices in each domain clearly define the specific, expected actions of front-line implementers. Implications are discussed in terms of how the identified practice elements may be used to inform intervention fidelity monitoring and targeted implementation supports for front-line implementers.

Keywords Positive behavioral interventions and supports · Implementation · Practice elements · Teachers · Expert consensus

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Introduction

Positive Behavioral Interventions and Supports (PBIS; Horner & Sugai, 2015) is an evidence-based, multitiered system of support (Feinberg & VanLone, 2019) designed to improve social and educational outcomes for students in schools (Horner et al., 2015). Grounded in the well-established science of applied behavior analysis (ABA; Baer et al., 1968), PBIS employs a wide range of effective strategies for achieving equitable student outcomes.

The history of PBIS can be traced to the positive behavior support movement in ABA (Carr, 1997). Positive behavior support is based in person-centered values and includes an emphasis on positive reinforcement, prevention, and is inclusive of multiple theories of human behavior (Carr et al., 2002).

The positive behavior support approach has been applied across populations ranging from early childhood through late adulthood and has often focused on individuals with disabilities. PBIS is the application of positive behavior support as a school-wide multitiered framework for supporting all students with a literature spanning almost 30 years (Bradshaw et al., 2010; Colvin et al., 1993; Lewis & Sugai, 1999). It has been implemented widely since the establishment of the National Technical Assistance Center on Positive Behavioral Interventions and Supports over 20 years ago (Horner et al., 2015; Sugai et al., 2000).

Although PBIS is an EBP in the general sense, it is often described as a "framework" rather than a practice as it supports the implementation of multiple specific evidence-based interventions across tiers of prevention. As a framework, PBIS has evolved over time from a primary emphasis on supporting student social behavior to integrate supports including guidance on addressing equity and mental health through a trauma-informed lens (Swain-Bradway et al., 2019; Weist et al., 2018). Therefore, the PBIS framework has been supportive of a wide range of specific evidence-based interventions. Within this range, there are several core practices that are broadly regarded as foundational to Tier 1 of the PBIS framework, including (1) defining and teaching a set of behavior expectations, (2) establishing a reinforcement system for engaging in behavior expectations, (3) implementing a system to respond to behaviors that are inconsistent with expectations, and (4) developing a data collection system for future decision making (Horner et al., 2015). Within each of these foundational practices, there are many specific practices schools can implement, including some that are adult-facing implementation components and some that are student-facing practice elements.

Distinguishing between Implementation Components and Practice Elements

Successful implementation of any EBP, including Tier 1 of the PBIS framework, is comprised of two features: *implementation components* and *practice elements* (PEs). We define implementation components as the actions associated with an evidence-based program taken by coaches, educators, and administrators that support and prepare staff in a school to adopt, deliver, and sustain core practice elements with fidelity. Implementation components are designed to support adult behavior change and include activities such as developing and organizing resources, planning and delivering trainings, reviewing data, and providing performance-based feedback to implementers. We define PEs as the individual observable actions associated with an evidence-based program that expected implementers, such as teachers, paraprofessionals, and other school-based practitioners (e.g., counselors, school psychologists), deliver to students to promote meaningful changes in achieving desired student outcomes. PEs are designed to support student behavior change and include practices such as teaching new behaviors to students and providing feedback to students about their behavior.

Adult-facing implementation components and student-facing PEs can work together to improve the quality of experiences and supports students receive. From an implementation perspective, however, it is important to differentiate the two as each has different target recipients (e.g., implementation components target adults, practice elements target students) as well as different implications for formative evaluation and support. Researchers from the broader field of implementation science have differentiated implementation components from PEs by contrasting implementation fidelity and intervention fidelity, with the former referring to the fidelity with which implementation components are delivered as planned to support adult behavior change and the latter referring to the fidelity with which implementers deliver practice elements as planned to support student behavior change (Dunst et al., 2013).

The blending of implementation components, measured as implementation fidelity, and PEs, measured as intervention fidelity, is evident in many assessment tools created to monitor implementation. Specific to PBIS, the Tiered Fidelity Inventory (TFI) is a well-established, widely used measure of PBIS implementation that comingles these components (Mercer et al., 2017). Examples of implementation components in the TFI (Algozzine et al., 2014) are "Team Operating Procedures," which addresses the procedures teams use when managing PBIS, and "Faculty Involvement," which addresses the degree to which expected implementers in the school are informed about PBIS implementation and provide input on it. These are examples of implementation

fidelity. An example of a PE and measurement of intervention fidelity in the Tier 1 TFI is "Teaching Expectations," which addresses the degree to which frontline implementers directly teach behavior expectations. Most examples of PEs in the TFI are conflated with implementation components within items such as "Feedback and Acknowledgment," which addresses the degree to which a formal system of providing acknowledgements is in place (which is the implementation component element) and used by staff (which is the PE element). Although a comprehensive review of all fidelity measures of Tier 1 PBIS implementation is beyond the scope of the present study because fidelity measurement is only one potential application of a distilled set of PEs for Tier PBIS, other common measures of Tier 1 PBIS fidelity such as the Self-Assessment Survey (Sugai et al., 2009), which is completed by all staff in a school, and the Benchmarks of Quality (Cohen et al., 2007), which is completed by a team in the school, have established psychometric utility and high value in guiding broad implementation but also conflate implementation components and PEs.

Although broad implementation measures that conflate implementation fidelity and intervention fidelity such as the TFI have utility to guide implementation efforts, there are two possible issues with this approach. First, it may be difficult to identify the specific active ingredients that promote student behavior change, as well as how much of each is needed to produce meaningful changes in specific outcomes of interest (e.g., reductions in exclusionary discipline, improvements in school climate). Second, schools may experience a divergence between data revealed by the broad implementation measure and what frontline implementers are actually delivering (e.g., teachers in a classroom). For example, in a review of 33 elementary classrooms in schools with high fidelity of implementation scores in Tier 1 PBIS, Reinke et al. (2013) found that the ratio of teachers' praise relative to reprimands was less than 1-to-1, which was far below the expected level of praise implementation. Moreover, research by Cook et al. (2018) revealed many teachers were not delivering proactive strategies to precorrect and connect with students despite being in a school with a high overall fidelity score. Therefore, it is important to differentiate PEs and implementation components to gain a more precise and robust picture of implementation in service of understanding mechanisms of change in outcomes.

The Importance of Practice Elements and PBIS

Distilling an EBP, such as Tier 1 PBIS, into its core PEs is an essential activity for several reasons. First, the entire implementation process depends on having well-defined practices that implementers are expected to adopt, deliver, and sustain. Second, defining the PEs facilitates research that can help identify not only *which* of the core PEs represent active ingredients, but *what dimensions* of those elements (e.g., form, frequency, distribution over time) are essential as mechanisms of change as opposed to what may be on the adaptable periphery (Damschroder et al., 2009). Third, clearly defining PEs establishes a common nomenclature for the field when talking about Tier 1 PBIS because researchers and practitioners in the field have different ways of communicating about what implementation of Tier 1 PBIS involves, what it looks like, and what the essential frontline features are. Finally, when core PEs are conceptualized as the most proximal mechanisms of change for student outcomes, understanding staff beliefs and perceptions about their own delivery of those core PEs is relevant across each stage of the implementation process. For example, ensuring that staff are aware of, knowledgeable about, and motivated to implement core PEs before implementation is initiated is an essential aspect of establishing organizational readiness for change (Weiner et al., 2008). In addition, during active implementation and sustainment, monitoring staff delivery of well-defined PEs is essential to drive continuous improvement efforts that provide more precise training, coaching, and technical assistance.

Present Study

After 2 decades of PBIS research and practice, there are no studies that have systematically differentiated and defined the core PEs of Tier 1 PBIS that reflect the behaviors that implementers are expected to deliver directly to students to promote meaningful changes in outcomes. As a starting place, a mixed-methods approach involving research and practice stakeholder groups provides a useful structure to

reflect on the current state of Tier 1 PBIS in service of identifying and defining core PEs.

The purpose of the present study was to distill, differentiate, and operationally define the PEs embedded within the established core features to differentially guide frontline implementation of teachers and other expected implementers. Rather than attempt to address PEs across each of the different tiers of PBIS, we focused only on the PEs of Tier 1, which are useful for improving student outcomes because they are universally delivered to all students and implemented by all adult staff within a school. This study used a modified electronic Delphi (e-Delphi) approach with multiple rounds of information and feedback from research and practice experts to distill and differentiate the Tier 1 level of PBIS into core PEs, as well as group those PEs into specific thematic categories. We attempted to operationally define the core PEs of Tier 1 level of PBIS in a way that people who are familiar and unfamiliar with the core elements could comprehend. This work was guided by the following research questions:

1. What are the PEs that both research and practice experts believe are core to the delivery of Tier 1 PBIS?
2. Given a synthesized list of core PEs and domains under which the PEs fall, do research and practice experts agree that the individual PEs and domains are important to the domains and broader implementation of Tier 1 PBIS, respectively?
3. For the final set of core PEs, do research and practice experts agree they are a core feature of Tier 1 PBIS and operationally defined in a comprehensible way?

Method

Participants

To answer these research questions, our team used procedures consistent with descriptions by Okoli and Pawlowski (2004) for recruiting experts with the necessary depth of knowledge to address the research questions guiding each round of the e-Delphi study. We developed criteria to identify and recruit an expert panel representative of two different groups with expertise in Tier 1 PBIS: *research experts* and *practice experts*. Research experts were defined as nationally recognized individuals with an established record of (1) publishing and presenting on peer-reviewed research on Tier 1 PBIS and (2) supporting school systems in implementing Tier 1 PBIS through training and coaching. Practice experts were defined as individuals who had knowledge about (1) the core PEs of Tier 1 PBIS, (2) the methods used to evaluate PBIS, (3) data-based problem solving, and (4) team-based action planning. In addition, the practice experts needed to report experience implementing and supporting the use of PBIS in elementary schools for at least 3 years in a variety of roles (e.g., direct implementer, coach, trainer). The practice experts were not limited to any specific professional role within the school so long as they met the expertise criteria. The panel included both types of experts because both had experiences and perspectives regarding core features of Tier 1 PBIS and could distill those core features into PEs that reflect expected implementation by frontline implementers. After the panel was established, responses from both kinds of experts were combined for data collection and analysis.

To identify research experts, individuals who met our two inclusion criteria were included in an initial pool from which panelists were recruited via email for participation. To identify practice experts, our team decided to leverage the highly organized data and training system available within the Midwestern state where the study was conducted. The state had been managing PBIS implementation for 15 years prior to the study. Two of the principal investigators met with the PBIS State Implementation Team. They shared an overview of the project, our team definition of a practice expert, and the expectations of practice experts invited to participate. To ensure we had broad representation across the state, our team intentionally distributed the recruitment of practice experts across the three professional development regions of the state (i.e., North, South, and Metro). The three regional coordinators who were a part of the State Implementation team then invited specific practice experts who individually met the criteria for participation and were from schools or districts that met the state criteria for Sustaining Exemplar Recognition within the past 5 years. Regional coordinators were encouraged to invite up to six individuals within their

region and rank them based on the fit between their known experience and the qualifications with respect to our definition of a practice expert.

A total of nine individuals participated in our modified e-Delphi expert panel. This sample and approach are consistent with prior research involving this type of consensus-driven, mixed-methods process with experts (Avella, 2016; Carlsen & Glenton, 2011). Our team invited five research experts to participate; only three agreed, because two could not participate due to time constraints. All three participated in at least two of the three information gathering rounds. Our team invited six practice experts, two from each region, to participate. All six agreed to participate and completed at least two of the three rounds. Our team provided prompts and reminders to ensure that each expert participated in every round.

Demographic data by individual expert are summarized in Table 1 for research experts and Table 2 for practice experts. Overall, eight experts identified as white and one expert identified as Asian. All experts indicated they were not Hispanic or Latino and had at least a master's degree. Experts rated themselves on their effectiveness at training on, coaching on, and delivering Tier 1 practices on a 4-point scale from "not at all effective" to "extremely effective." All but one expert rated themselves as very to extremely effective at directly delivering, training on, and coaching on Tier 1 practices. Practice expert #5 (in Table 2) indicated they were slightly effective at all three activities. Although this individual had been implementing PBIS activities for the least amount of time (3 years), she both met our criteria for participation and was strongly recommended by the state leadership team as an expert.

Procedures

Prior to conducting this study, IRB approval was sought, and the university IRB determined that this study was exempt from human subject oversight. To gather input from our panels of research and practice experts, our research team utilized a modified e-Delphi approach with three rounds of data collection that occurred over 7 months (Chou, 2002; McMillan et al., 2016). The Delphi approach is usually a structured, iterative, anonymous process of information gathering, synthesis, and feedback that is used to derive consensus among a panel of experts (Linstone

Table 1 Demographic Information for Tier 1 PBIS Research Experts

Expert	Rounds Completed	Gender	Highest Degree Earned	Current Professional Role	Years in Current Role	Self-Rating of Expertise in Tier 1 PBIS		Activities and Experience Related to PBIS in the Last 5 Years			
						Knowledge	Skill	Number of Years Training on Tier 1 PBIS	Number of Years Coaching on Tier 1 PBIS	Number of Peer-Reviewed Publications	Number of Professional Presentations
1	2 & 3	Female	Ph.D.	Full Professor	10–15	Very Knowledgeable	Skilled	5	5	15	5
2	All	Male	Ph.D.	Full Professor	10–15	Very Knowledgeable	Very Skilled	5	5	20+	20+
3	1 & 3	Male	Ph.D.	Full Professor	15+	Very Knowledgeable	Very Skilled	5	5	20+	20+

For the years in their current role, experts were asked to select one of the following (1) 0–2 years, (2) 3–5 years, (3) 6–9 years, (4) 10–15 years, or (5) 15+ years. For self-ratings, experts were asked to rate themselves on a 4-point scale from "not very knowledgeable/skilled" to "very knowledgeable/skilled."

Table 2 Demographic Information for Tier 1 PBIS Practice Experts and Their Respective District's PBIS Implementation

Expert	Rounds Completed	Gender	Highest Degree Earned	Current Professional Role	Years in Current Role	Self-Rating of Expertise in Tier 1 PBIS		Years Engaging in Tier 1 PBIS Activities (out of the last 5 years)			School District's PBIS Training and Fidelity	
						Knowledge	Skill	Directly Delivering Tier 1 PBIS	Training on Tier 1 PBIS	Coaching on Tier 1 PBIS	Number of Schools within the District Trained in PBIS to date	Number of Schools at Fidelity on the PBIS TFI
1	All	Female	Masters	General Educator	6–9	Very Knowledgeable	Very Skilled	5	2	5	3	2
2	All	Female	Masters	General Educator	10–15	Knowledgeable	Skilled	4	4	5	26	22
3	All	Male	Masters	PBIS Specialist & Coach	3–5	Very Knowledgeable	Very Skilled	5	5	5	2	2
4	All	Female	Masters	General Educator	10–15	Knowledgeable	Skilled	5	5	5	9	1
5	2 & 3	Female	Masters	School Psychologist	6–9	Knowledgeable	Skilled	3	1	3	16	5
6	All	Female	Masters	School Psychologist	15+	Very Knowledgeable	Skilled	5	4	5	16	7

PBIS = Positive Behavior Intervention and Supports, TFI = Tiered Fidelity Inventory (Algozzine et al., 2014). For the years in their current role, experts were asked to select one of the following (1) 0–2 years, (2) 3–5 years, (3) 6–9 years, (4) 10–15 years, or (5) 15+ years. For self-ratings, experts were asked to rate themselves on a 4-point scale from "not very knowledgeable/skilled" to "very knowledgeable/skilled."

& Turoff, 2002; McMillan et al., 2016). To generate ideas, solve problems, or establish priorities, panelists independently complete questionnaires for each round of the process. Within each questionnaire, panelists are typically asked to rate a series of statements related to the topic or issue. Following each round, the investigative team analyzes and synthesizes the information gathered. In each subsequent round, the team presents data from the previous round and iteratively refines the information gathering process to obtain feedback to move closer to reaching consensus on the main topic at hand. Delphi methods have been effectively used for evaluating consensus for expert groups as small as 3 to as many as 80 (Keeney et al., 2011).

Our team modified the traditional Delphi process in two ways that aligned with other investigations and recommendations (Avery et al., 2005; Chou, 2002; McMillan et al., 2016). First, we used electronic questionnaires sent using Qualtrics (2020) software as opposed to mailed surveys. This electronic system allowed us to efficiently share the questionnaires, gather and summarize responses, and send one or two reminder emails to individuals that had not yet completed a questionnaire embedded within sequential rounds of information gathering. Second, the first-round questionnaire included both open-ended and closed-ended questions. In this preliminary round, panelists were provided with open text boxes to identify and define all PEs they considered to be representative of and essential to Tier 1 PBIS. More information about each of the rounds is detailed below.

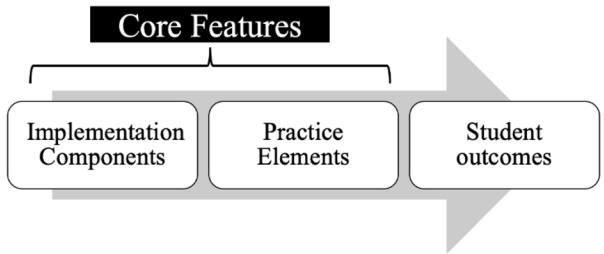
Research Question 1: Generate an Exhaustive List

Research Question 1 was answered by the first round of the e-Delphi Process. The goal of Round 1 was to have panelists generate an exhaustive list of PEs for Tier 1 PBIS. To ensure we would be evoking the intended information from our panelists, our team first carefully reviewed empirical literature and consulted with other researchers to refine our definitions of key terms such as core features, implementation components, practice elements, and expected implementers. This work led to a visual conceptual model and definitions of terms (see Fig. 1) that we provided to panelists as part of the introduction to and foundation for the questionnaire. To further explain the purpose of the study and orient our panelists to the task, a member of our investigative team created a 3-min video that we also embedded in the questionnaire.

Our team then prepared an online questionnaire for Round 1 with two elements: (1) brainstorming of Tier 1/Universal PBIS practice elements and (2) demographic information. First, following guidance from Okoli and Pawlowski (2004) for brainstorming in Round 1, we provided open text boxes for experts to identify "any and all PEs considered to be representative of Tier 1/Universal PBIS" and "write a behavioral definition for that PE." We specified that we wanted them to include only behaviors that expected implementers deliver to students. We also provided experts a final section for entering any relevant notes related to the PE they identified (e.g., "perhaps not relevant to non-teaching staff who implement other aspects of Tier 1 PBIS"). Second, at the end of the survey, we gathered demographic information about each of the experts (reported in Tables 1 and 2). For research experts, we also asked them to provide their most recent curriculum vitae. To analyze the data gathered, our research team engaged in an iterative process of content analysis. Engaging in this process allowed us to identify and code themes, while also removing redundancies and practices that reflected implementation support (e.g., using data for decision making and defining expectations).

Research Question 2: Confirm and Refine Practices, Domains, and Utility

Research Question 2 was answered by the second round of the e-Delphi Process. Following the analysis and synthesis of responses from panelists in Round 1, our team identified five core practice domains and 15 PEs that fell within the five domains. Again, following guidance from Okoli and Pawlowski (2004) for confirming and refining the generated list of domains and PEs, we prepared an online questionnaire for Round 2. Panelists were provided with a summary of the domains and PEs. Following their review, panelists rated three elements: (1) the importance of each domain to the implementation of Tier 1 PBIS, (2) the fit of the PE within the identified domain, and (3) the importance of PE within the identified domain. All ratings were on a 4-point scale anchored with "very" to "not at all." In addition, we asked experts to suggest any wording changes to the domain and PEs, suggest any missing domains or elements, and rank



Terms	Definition	Recipients
Core Features	Inclusive of all the implementation components and practice elements of a given evidence-based program that lead to changes in student outcomes.	Adults and students
Implementation Components	Actions associated with an evidence-based program taken by coaches, educators, and administrators that support and prepare for the adoption and delivery of the core practice elements with fidelity.	Expected implementers
Practice Elements	The individual observable action associated with an evidence-based program that expected implementers deliver, in isolation or combination, to achieve desired student outcomes.	Students
Expected Implementers	The individuals who receive training and support with the expectation they implement core practice elements of a given evidence-based program.	

Fig. 1 Conceptualization, Identification, and Definitions of Key Terms

the individual PEs within a domain. We used quantitative and qualitative methods to summarize the data. That is, we conducted descriptive analyses (e.g., measures of central tendency and variability) and content analyses (i.e., interpreting and coding data into themes).

Research Question 3: Confirm and Refine Operationalized Descriptions

Research Question 3 was answered by the third round of the e-Delphi Process. The third round involved gathering specific ratings to obtain consensus on the final compilation of common PEs. We also wanted to understand the extent to which the PEs could be readily understood, and thus rated, by practitioners that were familiar and unfamiliar with Tier 1 PBIS. We provided experts with a summary of the domains and PEs that were revised based on Round 2 feedback. Based on the revised domains and PEs, we again prepared a questionnaire that asked experts to reflect on the degree to which each PE (1) represented a core feature of Tier 1 PBIS, (2) could be understood by a practitioner familiar or experienced with Tier 1 PBIS, and (3) could be understood by a practitioner unfamiliar or inexperienced with Tier 1 PBIS. Panel members provided ratings for each item using a 4-point scale anchored from "strongly disagree" to "strongly agree." We used quantitative and qualitative methods to summarize the data. That is, we conducted descriptive analyses (e.g., measures of central tendency and

variability) and content analyses (i.e., interpreting and coding data into themes).

Results

In addition to the survey results that are summarized and presented for each research question, we also provide descriptions of our data syntheses and decision making as part of the iterative information gathering rounds comprising the e-Delphi process.

Research Question 1: Generate an Exhaustive List

Survey Results

Seven of the nine experts participated in Round 1 and generated a list of 49 practices with definitions. Of the full list, research experts generated 19 practices (38%), whereas practice experts generated 30 practices (62%). There was a range of practices generated across experts from a minimum of 3 PEs and a maximum of 14.

Data Synthesis and Decisions Made

Among the 49 practices, there was significant overlap and redundancy. For example, one researcher listed "teaching expectations," whereas another researcher and practitioner listed "procedures for teaching expected behaviors across all settings and students, including classroom and schoolwide" and "defining expectations to/with students," respectively. Six members of the research team then engaged in an iterative process to review and consolidate the list. The team worked to remove the following: (1) duplicates (n = 13), (2) practices that were reflective of implementation supports (e.g., using data for decision making; n = 6), (3) practices that were more broadly reflective of social and emotional learning and not specific to Tier 1 PBIS (e.g., teaching mindfulness curriculum; n = 8), and (4) practices that were too specific (e.g., "Pawsitive prints" to identify positive student behaviors; n = 2). This process resulted in 20 unduplicated PEs.

Through this process, the research team recognized that certain practice elements were related to one another and clustered under thematic categories, which were referred to as practice domains (i.e., categories under which PEs fall). The research team then generated possible practice domains that could be used to meaningfully group PEs. Using those practice domains, six members of the research team independently conducted a closed sort of PEs into the domain they believed best represented a grouping of PEs. A total of five domains were generated.

Through a review of the sorting process and discussion about the overlap identified for five practices, the research team reached consensus and decided to retain 15 unique PEs across the five domains (left column of Fig. 2). The research team then revised the wording and definitions of the practice elements to increase clarity prior to the next round. This information provided the basis for Round 2.

Research Question 2: Confirm and Refine Practices, Domains, and Utility

Survey Results

A total of eight experts completed the Round 2 survey. Fig. 3 provides the results for the Round 2 survey. Following their review of the consolidated list of domains and PEs, all experts agreed that Domains 1, 3, and 4 were very important to the implementation of Tier 1 PBIS. For Domains 2 and 5, all but one expert agreed that the domain was very important; for each of those domains, one practice expert rated it as moderately important. There was also strong agreement among the experts for the importance of the individual PEs within an identified Tier 1 domain. For 9 out of 15 PEs, 75% or more of the experts agreed that the PE was very important. PEs 4, 5, 8, and 12 had responses that ranged from very important to moderately important. PEs 9 and 14 represented the largest spread, with three (37.5%) and four (50%) experts rating them as slightly important, respectively. No experts indicated the PEs were not at all important.

In general, there was strong agreement for the fit of each PE within the practice domains (see Fig. 3). In particular, for 12 out of the 15 PEs, 75% or more (n = 6–8) of the experts agreed that the PEs fit within their identified domain very well. For five PEs (PEs 3, 9, 12, 13, and 14), at least one practice expert indicated the PEs fit slightly well in the identified domain. There were no experts that indicated a PE did not at all fit.

	ROUND ONE RESULTS	ROUND TWO RESULTS
Domain 1	**Proactive Teaching of Schoolwide Behavior Expectations**	**Proactive Initial and Periodic Teaching of Schoolwide Behavior Expectations**
	1. Utilize effective instructional procedures to directly teach agreed upon 3-5 schoolwide behavioral expectations in the classroom 2. Utilize effective instructional procedures to directly teach agreed upon 3-5 schoolwide behavioral expectations in non-classroom settings 3. Reteach schoolwide behavior expectations after initial teaching according to a planned schedule	1. In the classroom setting, teach and model 3-5 schoolwide behavior expectations based upon the behavior expectation matrix using effective instructional strategies 2. In the non-classroom setting, teach and model 3-5 schoolwide behavior expectations based upon the behavior expectation matrix using effective instructional strategies 3. Continue to teach and review the schoolwide behavior expectations after initial teaching according to a planned schedule
Domain 2	**Proactive Reminding to use Schoolwide Behavior Expectations**	**Proactive Reminding and Encouraging Students to Demonstrate Schoolwide Behavior Expectations to Prevent Problem Behavior**
	4. Prompt students to exhibit specific expected behavior close to the time when a given situation calls for them 5. Regularly direct students' attention to visuals of schoolwide behavior expectations as reminders to students of the expected behaviors 6. Deliver pre-corrective statements about schoolwide expected behavior to students before routines which may be associated with problem behavior	4. Anticipate and deliver pre-corrective statements about schoolwide expected behavior to students well before routines which may be associated with problem behavior (for example, walking in the hallway) 5. Prompt students to exhibit specific expected behavior immediately prior to a situation that may be associated with problem behavior 6. Refer to visuals (for example, posters on the wall) to review and encourage schoolwide behavior expectations
Domain 3	**Feedback to Acknowledge and Promote Schoolwide Behavior Expectations**	**Acknowledging and Promoting Schoolwide Behavior Expectations**
	7. Acknowledge students who demonstrate expected behaviors with praise 8. Acknowledge students who demonstrate expected behaviors using schoolwide tokens or tickets 9. Facilitate the students' opportunities to exchange schoolwide tokens or tickets for higher value rewards	7. Acknowledge students who demonstrate expected behaviors with praise 8. Acknowledge students who demonstrate expected behaviors using schoolwide tokens or tickets 9. Support and allow students to exchange schoolwide tokens or tickets for tangible items, social activities, and privileges
Domain 4	**Feedback to Correct Behavior that is inconsistent with Schoolwide Behavior Expectations**	**Responding to Student Behavior that is Inconsistent with Schoolwide Behavior Expectations**
	10. Use the schoolwide agreed upon definitions for major and minor incidents to determine how to respond to student behavior 11. Use timely, specific, and progressively more intensive instructional methods to respond to minor student behavior incidents 12. Refer major student behavior incidents to administration for corrective procedures in accordance with agreed-upon schoolwide procedures	10. Use the schoolwide agreed upon definitions for major and minor incidents to determine how to respond to student behavior 11. Use timely, specific, and progressively more intensive instructional methods to respond to minor student behavior incidents 12. Refer major student behavior incidents to an administrator, or designee, for processing and addressing in accordance with agreed-upon schoolwide procedures
Domain 5	**Completing Data to Facilitate Programming**	**Completing Data that is used to Facilitate Decision Making**
	13. Complete office referral form for major incidents of problem behavior that warrant removal from the setting 14. Complete universal screenings of student behavior when prompted by administrators to inform which students may need intervention beyond universal, Tier 1 supports 15. Participate in fidelity and outcome data collection when prompted by administrators	13. Complete office referral form for major incidents of problem behavior 14. Participate in data collection to inform which students may need intervention beyond Tier 1 supports 15. Participate in fidelity and outcome data collection when asked by administrators or other staff 16. Facilitate students' completion of a climate survey when asked

Fig. 2 Domains and Practice Elements Generated following Round 1 and Round 2

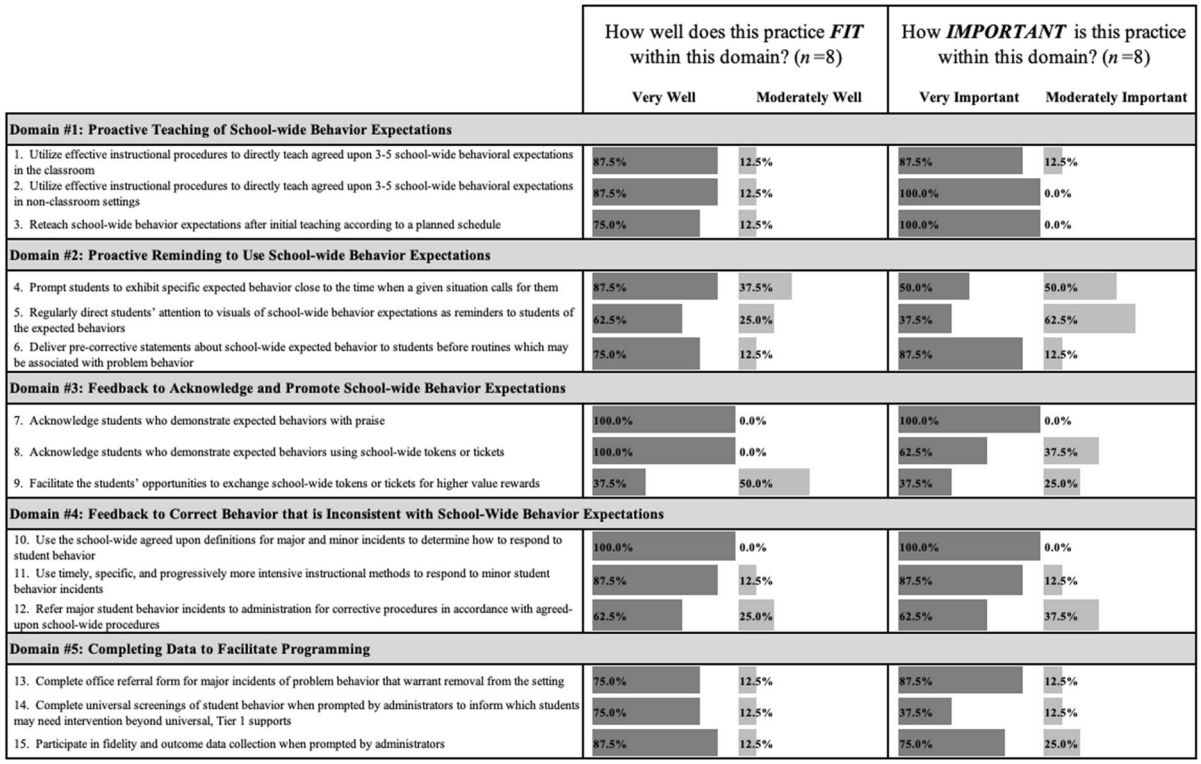


Fig. 3 Round 2 Results for the Fit and Importance of Each Practice Element within the Domain

Data Synthesis and Decisions Made

Taken together, these results provided preliminary evidence that we had reached consensus with respect to the importance of the domains and PEs, as well as the categorization of the practices into domains. Thus, in reviewing and synthesizing these data with suggestions for rewording PEs for clarity and potential missing elements, our team made three decisions. First, we decided to retain all PEs. Although a few experts rated certain practice elements as slightly important, removal of those practice elements seemed ill-advised. For example, PE #14 (*complete universal screenings of student behavior when prompted by administrators to inform which students may need intervention beyond universal, Tier 1 supports*) was rated lower relative other practice elements, but the literature suggests that it is an important element (e.g., Burke et al., 2015). For these reasons, we decided to keep all the practice elements. Second, consistent with suggestions from our experts, we made slight wording revisions to eight of the PEs to improve comprehensibility. Third, we added an additional element to the domain of "Completing Data that is Used to Facilitate Decision Making." This additional element was "facilitate student completion of the climate survey when asked" and brought the total number of PEs to 16. The right column of Fig. 2 represents the revised PEs and domains following Round 2.

Research Question 3: Confirm and Refine Operationalized Descriptions

Survey Results

A total of nine experts completed the Round 3 survey. Fig. 4 provides the results to the Round 3 survey. For all but one PE (PE 9), all experts ($n = 9$) strongly agreed to somewhat agreed that the PE was a core feature of Tier 1 PBIS. Further, for 11 PEs, 88% ($n = 8$) or 100% ($n = 9$) of experts strongly agreed that the PE was a core feature. For PE 9 (*support and allow students to exchange schoolwide tokens or tickets for tangible items, social activities, and privileges*), only

	To what extent does the practice element represent a **CORE FEATURE of Tier 1 PBIS**? (n=9)		To what extent could each of the practice elements be understood by a practitioner **FAMILIAR or EXPERIENCED** with Tier 1? (n=9)		To what extent could each of the practice elements be understood by a practitioner **UNFAMILIAR or INEXPERIENCED** with Tier 1? (n=9)		
	Strongly Agree	**Somewhat Agree**	**Strongly Agree**	**Somewhat Agree**	**Strongly Agree**	**Somewhat Agree**	**Somewhat Disagree**
Domain #1: Proactive Teaching of School-wide Behavior Expectations							
1. In the classroom setting, teach and model 3-5 school-wide behavior expectations based upon the behavior expectation matrix using effective instructional strategies	**100.0%**	0.0%	**100.0%**	0.0%	**33.3%**	55.6%	11.1%
2. In the non-classroom setting, teach and model 3-5 school-wide behavior expectations based upon the behavior expectation matrix using effective instructional strategies	**100.0%**	0.0%	**100.0%**	0.0%	**33.3%**	44.4%	22.2%
3. Continue to teach and review the school-wide behavior expectations after initial teaching according to a planned schedule	**88.9%**	11.1%	**88.9%**	11.1%	**44.4%**	22.2%	33.3%
Domain #2: Proactive Reminding and Encouraging Students to Demonstrate School-wide Behavior Expectations to Prevent Problem Behavior							
4. Anticipate and deliver pre-corrective statements about school-wide expected behavior to students well before routines which may be associated with problem behavior	**100.0%**	0.0%	**100.0%**	0.0%	**11.1%**	44.4%	33.3%
5. Prompt students to exhibit specific expected behavior immediately prior to a situation that may be associated with problem behavior	**66.7%**	33.3%	**100.0%**	0.0%	**11.1%**	77.8%	11.1%
6. Refer to visuals to review and encourage school-wide behavior expectations	**88.9%**	11.1%	**100.0%**	0.0%	**33.3%**	55.6%	11.1%
Domain #3: Acknowledging and Promoting School-Wide Behavior Expectations							
7. Acknowledge students who demonstrate expected behaviors with praise	**100.0%**	0.0%	**88.9%**	11.1%	**66.7%**	33.3%	0.0%
8. Acknowledge students who demonstrate expected behaviors using school-wide tokens or tickets	**44.4%**	55.6%	**77.8%**	22.2%	**55.6%**	22.2%	22.2%
9. Support and allow students to exchange school-wide tokens or tickets for tangible items, social activities, and privileges	**11.1%**	77.8%	**66.7%**	22.2%	**55.6%**	0.0%	44.4%
Domain #4: Responding to Student Behavior that is Inconsistent with School-Wide Behavior Expectations							
10. Use the school-wide agreed upon definitions for major and minor incidents to determine how to respond to student behavior	**100.0%**	0.0%	**77.8%**	22.2%	**22.2%**	55.6%	22.2%
11. Use timely, specific, and progressively more intensive instructional methods to respond to minor student behavior incidents	**88.9%**	11.1%	**50.0%**	50.0%	**0.0%**	44.4%	55.6%
12. Refer major student behavior incidents to an administrator, or designee, for processing and addressing in accordance with agreed-upon school-wide procedures	**100.0%**	0.0%	**77.8%**	22.2%	**22.2%**	66.7%	11.1%
Domain #5: Completing Data that is Used to Facilitate Decision Making							
13. Complete office referral form for major incidents of problem behavior	**100.0%**	0.0%	**88.9%**	11.1%	**55.6%**	33.3%	11.1%
14. Participate in data collection to inform which students may need intervention beyond Tier 1 supports	**100.0%**	0.0%	**66.7%**	33.3%	**22.2%**	22.2%	44.4%
15. Participate in fidelity and outcome data collection when asked by administrators or other staff	**66.7%**	33.3%	**66.7%**	33.3%	**11.1%**	33.3%	33.3%
16. Facilitate students' completion of a climate survey when asked	**55.6%**	44.4%	**55.6%**	44.4%	**55.6%**	44.4%	0.0%

Fig. 4 Round 3 Results for the Extent to which Each Practice Element is a Core Feature of Tier 1 PBIS and Could Be Understood by Familiar and Unfamiliar Practitioners

one practice expert indicated that they somewhat disagreed that it was a core feature of Tier 1 PBIS.

The experts indicated that they strongly agreed to somewhat agreed that practitioners familiar or experienced with Tier 1 PBIS could understand each PE as stated; in fact, for 11 of the 16 PEs, more than 75% of the experts strongly agreed. For only one PE (PE 9), one practice expert indicated that they somewhat disagreed. There was a larger spread of opinions when experts were asked about the extent to which PEs could be understood by practitioners unfamiliar or inexperienced with Tier 1. Yet, for 10 of the 16 PEs, 75% or more of the experts indicated that they either strongly agreed or somewhat agreed, suggesting some degree of consensus.

Data Synthesis and Decisions Made

The results of the Round 3 survey suggested that we had achieved consensus among our research and practice experts that the PEs included were core features of Tier 1 PBIS. Coupling this information with the results of Round 2, our team made the determination that, for this group of experts, the domains and PEs identified through this process represent the core practices adults involved in implementation of Tier 1 PBIS should be expected to deliver as part of their work directly with students.

Discussion

PBIS is a well-established framework for implementing evidence-based interventions in schools that support a range of equitable outcomes including academic achievement and social-emotional well-being (Bradshaw et al., 2010; Horner et al., 2009; Swain-Bradway et al., 2019; Weist et al., 2018). At the universal level within this framework (Tier 1), there are multiple specific practices that can be implemented

in a school, most of which are typically grounded in ABA and fit within a set of commonly cited core practice components (Horner & Sugai, 2015; Sprague & Horner, 2006). Although prior literature has discussed core components of Tier 1 PBIS, there are several limitations, including (1) conflating adult-facing implementation supports with student-facing practice elements, (2) limited delineation of PEs as the most proximal mechanisms of change in student outcomes, and (3) lack of common nomenclature regarding what constitutes PEs as core to Tier 1 PBIS. Identification of core PEs hypothesized to cause changes in student outcomes enables the assessment of implementer intentions prior to initiating implementation (Filter & Brown, 2019) while also providing a more precise way of assessing intervention fidelity of expected implementers (Dunst et al., 2013; Lyon & Cook, 2019) and creating cycles of feedback within a data-driven quality improvement process. Our investigative team conducted this study with the goal of distilling, differentiating, and operationally defining core PEs of Tier 1 PBIS. The PEs were confirmed through an expert-driven, consensus-building e-Delphi process. The results provide a foundation for future research and support for frontline implementers of Tier 1 PBIS.

The five domains of Tier 1 PBIS PEs derived from this study are consistent with the broad components of Tier 1 PBIS in the published literature. This is an expected and positive finding because PEs are not separate from the core components of Tier 1 PBIS but are instead embedded within the core components and relate differentially to the expected behaviors of frontline implementers. This is the reason the experts in Tier 1 PBIS were recruited to support this process, because they were already familiar with the core components. Sprague and Horner (2006) and Horner and Sugai (2015) each described four components that closely match Domains 1, 3, 4, and 5 that emerged from the present study (see Fig. 3). The additional domain identified in the present study addresses proactive reminding and encouraging of behavioral expectations. In existing literature, these PEs are often embedded within the broad component of establishing and teaching behavioral expectations. Separating proactive reminding and encouraging of expectations into a distinct domain is consistent with the acquisition and performance paradigm that specifies the unique importance of two categories of strategies to support behavior change (Bandura, 1969; Miller et al., 2018). The first category reflects acquisition-based instructional techniques that support students in acquiring knowledge and learning specific behaviors. The second category reflects performance-based strategies that are embedded in the environment to encourage, prompt, and remind students when to apply the behaviors they have learned (Gresham et al., 2006). Making these types of behaviors a more explicit part of an implementer's delivery of Tier 1 PBIS may help to advance how implementation is described, monitored, and supported with individual implementers.

Although previous literature often provides examples of ways in which established domains of Tier 1 PBIS can be implemented, the present study was unique in its focus on delineating 16 core PEs that can guide specific actions of expected implementers. This was intentional on the part of our investigative team to distinguish PEs from implementation components that are designed to support the adults to follow through with the delivery of specific PEs with fidelity. For this reason, researchers from the broader field of implementation science have urged others to differentiate implementation fidelity from intervention fidelity (Lyon & Cook, 2019). The former term refers to whether implementation supports are delivered as planned, whereas the latter term refers specifically to the practices that expected implementers are supposed to deliver to improve the quality of experiences and supports service recipients receive (i.e., students). Although implementation components such as training, consultation, and teaming are core features of Tier 1 PBIS implementation, well-delineated PEs are necessary for communicating implementation expectations and creating the conditions for successful implementation planning among expected implementers. The PEs identified in the present study include implementer actions that can be described as one or more of the following: (1) directed towards students (e.g., *teach and model behavior expectations in the classroom* [PE 1]), (2) prompted by student behavior (e.g., *acknowledge students who demonstrate expected behaviors with praise* [PE 7]), and (3) informative for implementation efforts (e.g., *participate in fidelity and outcome data collection* [PE 15]).

Limitations

The results regarding expert consensus on Tier 1 PBIS PEs should be considered in the context of limitations in the present study. First, participation of research and practice experts was inconsistent across rounds of data collection. Although all experts who provided feedback in each round met the expertise criteria, it is possible that minor differences could have emerged in the PEs if all participants had provided input each round. Second, practice experts were all from one state in the Upper Midwest. This group of experts was recruited through a state system of Tier 1 PBIS management that ensured that practice experts met criteria. It is possible, however, that practice experts from outside of the state would have provided different perspectives on PEs. Research experts that participated in the study, however, were employed by universities around the United States and worked with schools nationally and internationally.

Implications for Practice

The 16 PEs distilled, differentiated, and operationally defined in the present study are relevant to work of teachers, coaches, and others who support frontline implementation of Tier 1 PBIS. The PEs should not be viewed as a replacement for existing guidance on Tier 1 PBIS, such as those provided by the PBIS Technical Assistance Center, but instead should be viewed as delineated and operationalized ways to communicate the specific implementation behaviors expected of frontline implementers that were already embedded within existing guidance.

The PEs and domains derived from the present study can be used to support schools with Tier 1 PBIS at any stage of the implementation process (Sanetti & Collier-Meek, 2018). Schools that are intending to implement, implementing, or sustaining Tier 1 PBIS can reference the PEs and domains when communicating implementation expectations to frontline implementers, such as teachers and staff. Further, strategies may be identified to address individual or organizational barriers (e.g., attitudes or role alignment) that are more readily identified when implementation expectations are made more explicit to frontline implementers when preparing for implementation. During early implementation, teams and trainers can organize professional development for teachers and staff around the domains and use the PEs for specific implementation guidance. To facilitate sustained fidelity, internal coaches can use the PEs and domains to organize evaluations and feedback. Although this guidance and feedback will include information that was already available within the existing literature, the PEs provide more specific and differentiated language to describe the expected implementation behaviors to frontline implementers.

Future Research

The present study also provides several implications for future research. PEs and domains of Tier 1 PBIS can be used as a basis for developing measures of intervention fidelity and staff commitment (Filter & Brown, 2019; Lyon & Cook, 2019). Current measures of Tier 1 PBIS fidelity that mix PEs and implementation components have been successful at evaluating implementation at a macro level in support of broad organization level implementation (Mercer et al., 2017), but micro-level intervention fidelity measures that target well-defined PEs are needed to support intervention fidelity at the level of frontline implementation. The PEs of Tier 1 PBIS are behaviors that frontline implementers can self-report for fidelity or can be observed.

The present study also provides a foundation that can inform the development of measures of staff commitment and buy-in, issues that many teams have found to be potential barriers to successful Tier 1 PBIS implementation (Kincaid et al., 2007). Though there have been previous efforts to develop measures of buy-in and commitment (Filter & Brown, 2019), that work has been hindered by insufficient delineation of practices to be delivered. When questions of are asked of frontline implementers based on PEs, then the expected implementers can more accurately represent readiness, commitment, and buy-in relative to the specific behaviors they are being asked to perform. Grounding new measures to these empirically derived PEs and domains may provide a new approach to examining implementer attitudes, perceptions of social norms, and self-efficacy as critical antecedents to behavior change that enables successful adoption and eventual delivery of PEs with high fidelity.

The expert consensus process facilitated identification of the form PEs core to Tier 1 PBIS should take

when delivered as a "dose" of intervention. Future work, however, must specify additional dimensions, such as frequency, duration, and cumulative dosage, that inform delivery of PEs in ways that effectively produce changes in outcomes (Warren et al., 2007). It is likely that, although all PEs are important, some may PEs contribute more relative value and/or must be delivered at a certain intensity to achieve an impact on student outcomes. In addition, future research that examines intervention fidelity as more than a unidimensional measure of occurrence/nonoccurrence of individual PEs is warranted. That is, examining the multidimensional aspects of dosage may offer new ways to promote effective implementation and achieve broad scale impact on student outcomes. When combined with more targeted measures of implementer attitudes and perceptions about individual PEs relative to the response effort needed to deliver them effectively, a more precisely defined implementation support system may be deployed.

Conclusion

The process of supporting students through the implementation of EBPs is an ever-evolving process. Tier 1 PBIS has evolved over time and will continue to evolve in response to the needs of schools, students, and families. Therefore, the 16 PEs organized into five domains identified in the present study are not likely to be static. They represent the current perspective of Tier 1 PBIS experts on practices expected of frontline Tier 1 PBIS implementers. Although the specific PEs of Tier 1 PBIS may evolve over time, it is important to have well-defined PEs. The present study provides a process for identifying the PEs of Tier 1 PBIS and results that support direct language for communicating expectations to frontline implementers that can guide evaluation efforts in terms of the specific practices that adults deliver to students.

Compliance with Ethical Standards

Conflicts of Interest The publication of this original research involves no conflicts of interest for the authors.

Research Involving Human Participants and/or Animals This study was reviewed by the IRB at the two participating universities and deemed exempt.

Informed Consent All participants were informed of their rights, the purpose of the study, and risks associated with the study before choosing to participate.

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