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From evidence to impact: Joining our best school mental health practices with our best implementation strategies

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Abstract

There is substantial research evidence for the effectiveness of school mental health strategies across problem areas, developmental levels, and the prevention-intervention spectrum. At the same time, it is clear that the education and mental health fields continue to struggle to apply this evidence at any level of scale. This commentary reflects on ways in which education-specific applications of implementation science principles – and explicit consideration of determinants of implementation success – may guide more consistent use of evidence in school mental health. After reviewing implementation determinants and strategies across multiple levels of effect (i.e., the outer setting, inner setting, individual, and intervention levels), the commentary goes on to recommend specific areas of needed attention in school mental health implementation efforts and research. These include a need to adapt interventions to better fit the context of schools, streamlining school mental health programs and practices to make them more implementable, and recognizing the critical role of assessment and selection of evidence-based interventions by school leaders. The commentary concludes by reflecting on the substantial opportunity provided by the education sector to both apply and advance implementation science.

We live in an era in which mental health disorders in children are at historically high rates and rising (Houtrow et al., 2015; National Academies of Science, 2015), and yet only a small minority of youth who would benefit from mental health supports actually receive them (Costello, 2009; Costello et al., 2014). Given the opportunity presented by schools to identify and address youths' social, emotional, and behavioral needs across tiers of prevention, early intervention, and targeted treatment, the field will benefit greatly from rigorous reviews of evidence about "what works."

As such, this excellent special issue comes at a critical juncture. All the papers in this compendium make strong and compelling arguments about the importance of their respective problems, their relevance to public health and education, and the opportunities that exist for schools to address them. Moreover, each provides research-based, actionable information for the education and mental health sectors. As detailed in this special issue, evidence around effective strategies varies across problem areas, developmental levels, and

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the prevention-intervention spectrum. Nonetheless, it is clear that we have plenty of evidence for programs that are effective at addressing problems as diverse as aggression, anxiety, attention problems, and bullying.

At the same time, it is clear that the education and mental health fields continue to struggle to apply this evidence at any level of scale. Fabiano and Pyle (this issue), for example, observe that despite its high prevalence rate and a robust research base on school-based intervention strategies, there remains little in the way of a standardized outline of interventions or supports for students with attention deficit hyperactivity disorder (ADHD). A recent study illuminates the problem starkly: a review of individual education plans for 97 students with ADHD revealed that few included strategies with demonstrated effectiveness (Spiel, Evans, & Langberg, 2014). As Fabiano and Pyle (this issue) conclude, “instead of the provision of effective interventions, children with ADHD are inconsistently supported in schools in a manner influenced by local custom” (p.XX). In sum, as noted by other authors in this special issue (e.g., Waschbush, Breaux, & Babinski), and in papers cited by these authors (e.g., Gottfredson & Gottfredson, 2002), failures of implementation are the norm in school-based mental health.

Viewing School Mental Health Interventions through an Implementation Lens

The problem of inadequate implementation support for research-based practices is, of course, not unique to schools. In healthcare, seminal work has documented that it takes 17 years for just 14% of original research to benefit practice (Balas & Boren, 2000). Fortunately, in response to these issues, a transdisciplinary field focused on supporting effective implementation has emerged to address the persistent research-to-practice gap. Having identified and synthesized a range of factors across multiple levels that influence successful implementation (Damschroder et al., 2009) and improve implementation outcomes (Proctor et al., 2011), contemporary implementation science is now focused largely on developing and testing specific implementation strategies (Cook et al., in press; Lyon et al., under review; Powell et al., 2015) that may hold promise for improving adherent uptake of research-based strategies, so we can consistently promote positive student outcomes. To do so, however, we must first take stock of the multiple levels of influence that may influence implementation success, and which can be targeted by implementation strategies.

Multilevel Influences on Implementation Success

As referenced in several the articles in this special issue, implementation is inherently a multilevel endeavor. Waschbush et al. (this issue) pay particular attention to the multilevel influences on successful implementation of school-based interventions, referencing four domains proposed by Gottfredson and Gottfredson (2002) in their influential paper on the quality of school-based prevention programs: Organizational capacity (e.g., staff morale, turnover); organizational support (e.g., availability of training and supervision, principal support to making these activities and other resources available); program features (such as curriculum elements and quality control mechanisms built into the intervention), and local

integration (defined as the extent to which the program is built into everyday school routines).

In the years since Gottfredson and Gottfredson's influential work, over 60 implementation frameworks have been described (Tabak, et al., 2012), and mechanisms of action across elements of such frameworks are beginning to be identified (Lewis et al., 2018; Williams, 2016). While many early heuristics referenced implementation determinants, implementation strategies, and implementation outcomes somewhat interchangeably, as shown in Figure 1, implementation scientists now articulate each of these domains separately, as well as relationships across them, in an attempt to specify strategies that may address determinants and support successful implementation of research-based practices (Lewis, 2017).

In another advance, frameworks such as the Consolidated Framework for Implementation Research (CFIR; Damschroeder, 2009) have synthesized many overlapping perspectives about what determines implementation success. As a result, the field now has achieved reasonable consensus about the levels of influence in which *implementation determinants* operate – and thus, the levels where implementation strategies should be focused. These levels frequently include: (1) The *outer setting*, (2) the *inner setting*, (3) the *individuals* who will implement or enact the strategy, and (4) the *intervention* itself. Implementation processes often play out across each of these levels. Importantly, evidence suggests that implementation strategies that address more than one of these levels are frequently more effective than those targeting a single level (Beidas & Kendall, 2010). Below, we review each of these levels, drawing examples from the special issue articles, and suggest candidate strategies that may improve implementation success.

Outer setting.—The outer setting reflects the larger political, social, and economic context in which implementation occurs. This includes norms, laws, and broader policies as well as inter-organizational linkages within a larger service system. In school mental health, the outer setting may be best defined at the level of the school district and beyond. Although the outer setting is commonly identified as critically important to implementation, it is notoriously difficult to change. Nevertheless, there are plenty of examples of outer setting strategies being employed to increase the availability of evidence-based practices (EBP) in mental health, often through policy and legislation (e.g., Powell et al., 2016; Trupin & Kerns, 2017).

Papers in the current special issue provide a number of relevant examples of the influence of the outer setting to school mental health. For example, in their recommendations for implementing anxiety interventions in schools, Jones et al. (this issue) detail the ideal timing of implementation and how it can best fit within the academic calendar, which is typically set at the district level. Singer and colleagues (this issue) discuss how outer setting determinants and strategies can manifest as training or professional development mandates, such as those for suicide-related gatekeeper training. As noted by Thomeer and colleagues (this issue) in their description of the work conducted by Locke et al. (2015), funding availability – or, more commonly, lack of availability – is another critical state- and/or district-level determinant.

At the level of the outer context, many of the most relevant approaches for increasing the availability of EBP are actually *dissemination strategies* that involve the targeted distribution of information to specific audiences, such as legislators (Purtle, Brownson, & Proctor, 2017; Purtle et al., 2018). Among educators seeking to develop a comprehensive, consistent, and sustainable continuum of supports for students' social, emotional, and behavioral well-being, the policy and funding context – or outer setting – can be extraordinarily influential. For example, without accompanying funding, legislation focused on addressing one problem can impact implementation of other services – including implementation of school-based EBPs – in a way that is viewed as deleterious by local school officials. One study examined local education association officials' perspectives on an array of such unfunded or underfunded mandates (New Jersey School Boards Association, 2016), including one aimed at reducing harassment, intimidation, and bullying (HIB). Seventy percent of districts reported needing to shift funds for other programs to comply with the requirements of the HIB legislation. As one superintendent put it, “we reallocated resources [to HIB] and lost time to support students with substance-abuse concerns” (p.7). The first recommendation from this report was to urge local boards of education “to adopt resolutions calling on state and federal officials to provide adequate funding of required programs” (p. 19).

Inner setting.—The inner setting is the immediate organizational context in which implementation occurs. Extensive research has supported the importance of inner setting organizational variables for successful implementation across service contexts (Aarons et al., 2012; Beidas et al., 2013, 2015; Bonham et al., 2014; Glisson, 2002). In schools, the inner setting is often defined at the building level, including principals, grade level leaders, and distributed leadership teams (Lyon et al., 2018). Building-level leadership – and the continua of incentives and disincentives that leaders and leadership structures adopt and support – drives school climate and is critical to the adoption and sustainment of new practices.

Research has found that principal support is important to promoting implementation of SEL curricula (e.g., Brackett et al., 2012), school-wide positive behavioral interventions and supports (PBIS; e.g., McIntosh et al., 2016), and more intensive indicated interventions for mental health concerns (e.g., Forman & Barakat, 2011). Research on PBIS has also found that the fidelity with which PBIS is implemented, including composition and activities of school-level PBIS leadership teams, is associated with impacts on outcomes such as rates of student disciplinary actions (e.g., Flannery, Fenning, Kato, McGrath, & McIntosh, 2014). Given the high level of influence that “inner setting” variables such as building-level leadership plays in achieving both implementation outcomes and student outcomes, it is noteworthy that little attention in the current special issue is paid to research on the influence of such factors on the success of the various EBPs reviewed, or inner setting strategies for ensuring their successful implementation. Such a dearth of information on these critical implementation determinants may point to a need for further research and development. As research on determinants continues to support the importance of leadership to implementation in the education sector, strategies for promoting facilitative leadership practices are increasingly indicated. Some direction may be taken from research in other service sectors that has developed strategies for influencing inner setting constructs, such as

implementation leadership and implementation climate (Aarons, Ehrhart, Garahnak, & Hurlburt, 2015), that are related to the adoption of new interventions.

Individual.—Individual-level implementation factors include, but are not limited to, the characteristics and experiences of front-line service providers responsible for delivering the types of evidence-based programs and practices described in the current special issue. Relative to some other healthcare settings, the school context provides opportunities for the expansion of interventionists to include many different types of personnel with different training backgrounds, ranging from paraprofessionals, to teachers, to dedicated school-based clinicians (Owens et al., 2014). In addition to roles, professional backgrounds, and education status, individual practitioner-level factors such as their attitudes, beliefs, and self-efficacy around applying research-based programs have been found to influence implementation success (e.g., Henggeler et al., 2008), giving rise to an array of measures of these individual-level constructs (see Lewis et al., 2015). Individual strategies for targeting key individual-level determinants – such as school-based professionals’ motivation to engage in training and implementation – are beginning to emerge. In one example, Cook, Lyon, Kubergovic, Browning Wright, & Zhang (2015) described a brief implementation strategy that leverages existing theory to target the attitudes, self-efficacy, and perceived social norms of front-line practitioners to improve implementation intentions and, ultimately, behaviors.

Perhaps most oft-cited among individual level implementation drivers, however, is workforce development. As pointed out by multiple authors in this issue (e.g., Fabiano & Pyle, this issue; Thomeer et al., this issue), training opportunities for educators are consistently suboptimal, resulting in persistent knowledge gaps among many front-line personnel. In addition to being the subjects of training, Nickerson and colleagues (this issue) also suggest that dedicated school mental health personnel may have a role in conducting schoolwide training efforts, at least in the domain of bullying prevention. This is a worthwhile suggestion to investigate provided that there are also accompanying opportunities for post-training supports. Indeed, it is perhaps the most robust and consistent finding in implementation research that one-time “train and hope” models of professional development are ineffective in producing practitioner behavior change (Herschell et al., 2010; Joyce & Showers, 2002).

Intervention.—Contemporary implementation science tends to focus most on the inner setting and individual levels, despite consistent recognition that implementation outcomes are directly influenced by aspects of the interventions themselves (Lyon & Bruns, in press). Indeed, a recent systematic review of implementation science assessment instruments identified relatively few at the intervention level (Lewis et al., 2015). Nevertheless, the characteristics of programs and interventions provide an array of implementation determinants, as well as untapped possibilities for corresponding intervention-level implementation strategies. For example, given that many school-based practices have been transported from other service settings (Lyon et al., 2014), *intervention-setting fit* is particularly critical when implementing evidence-based practices in school mental health. The current special issue includes a wealth of reflections on the question of “goodness of fit”

of the reviewed practices, including (1) questions about when interventions are “ready” to implement, based on evidence, and (2) aspects of intervention design and usability.

Intervention readiness for large scale implementation was referenced in multiple papers. Although the traditional view on intervention development and implementation is of a relatively linear, unidirectional path from developers and testers to eventual delivery in community contexts, this perspective has certainly contributed to the aforementioned “17-year gap” between initial development and broad-based application of research-based practices (Balas & Boren, 2000). On the other hand, the development of evidence for interventions is often uneven, with robust evidence emerging for some applications of specific practices while other (often widespread) applications of the same practices remain unsupported by evidence.

As an example, Chafouleas et al. (this issue) indicate that, although there is strong evidence for some Tier 2 and 3 trauma interventions in schools, there is far less supporting evidence for Tier 1 trauma interventions. This is consistent with the results of a recent Campbell Collaboration systematic review that failed to find any studies of trauma-informed school approaches that were sufficiently rigorous to meet inclusion criteria (Maynard et al., 2017). While we agree that there is a “critical need for rigorous research on implementation processes to identify cost-efficient and effective strategies for the adoption and implementation of trauma-informed approaches by schools” (p. XX), there is simultaneously a clear and present danger of leapfrogging to develop implementation strategies before the core practices are empirically substantiated. Similarly, Fabiano and Pyle (this issue) indicate that some practices such as functional behavioral assessments and daily report cards have good evidence at the elementary school level, but that evidence becomes much more limited when considered in secondary settings.

Other papers in this issue touch on the critically important topic of intervention design, including the complexity of evidence-based programs or practices and their design quality or packaging. For instance, one paper (Waschbusch et al., this issue) discussed reviews demonstrating that single-component interventions can be more effective than multicomponent interventions for aggression. Such evidence is encouraging given that intervention complexity is also a major barrier to evidence-based practice implementation (Lyon & Koerner, 2016). Similarly, Fabiano and Pyle (this issue) point out that many interventions are multicomponent, and that “combining them all together may mask the effectiveness of some treatments and artificially inflate the effectiveness of others” (p. XX). Careful attention to the design quality and packaging of our best evidence-based programs and practices seems overdue if large-scale adoption and sustainment is the goal. User-focused intervention redesign is an underutilized implementation strategy for addressing intervention-level determinants improving design quality and contextual appropriateness (Lyon & Bruns, in press). Although relatively few implementation strategies explicitly target the intervention level, considerable direction may be taken from the field of user-centered design, which can supply new strategies geared toward ensuring compelling and usable interventions that demonstrate good fit to purpose (Dopp, Parisi, Munson, & Lyon, in press). The benefits of such redesign processes are discussed further below.

In sum, a wealth of evidence from research – as well as observations from authors of the papers in the current special issue – advise that evidence from controlled studies (where researchers are typically the intervention developers and conditions are optimally constructed to find positive effects) should only partially inform decision-making around intervention selection. Equally important, we must pay attention to the usability and feasibility of the interventions and strategies we choose to use in our schools.

Discussion

In this commentary, we have aimed to complement an outstanding compilation of reviews of school-based interventions for common social, emotional, and behavioral problems with a discussion of factors at multiple levels that are likely to drive implementation success (or failure) of these programs. In reviewing the relative attention paid to the determinants of implementation success – in both the papers in the special issue and the commentary itself – several major themes are worth underscoring.

The first theme is that individuals championing the cause of supporting students' social, emotional, and behavioral wellness (e.g., intervention developers, purveyors, and school leaders) may have particular control of factors at the *intervention level*, and as such, intervention-level determinants may warrant particular attention. For example, most psychosocial interventions in mental health are highly complex (Comer & Barlow, 2014) and could benefit from streamlining (Lyon & Koerner, 2016). This may be particularly critical in schools, given the demands on teachers, counselors, and other school helpers, the idiosyncrasies of the school calendar, and the primacy of the education mission over social-emotional wellness (Bruns et al., in press; Lyon et al., 2015; Owens et al., 2014). As such, we call upon those who develop, select, fund, and use school-based interventions to join into concerted action to ask how these programs – across all tiers of effort – can be simplified and streamlined.

At the intervention level, we also recommend against adhering too closely to mental models that emphasize “leaky pipelines” and/or “voltage drops” in implementation, whereby deviations from adherence to research-based protocols (often developed for settings other than schools) necessarily represent bad outcomes. Instead, we offer that deliberate adaptation in response to the prospective assessment of contextual needs is necessary for successful scale-up as well as beneficial evolution of our school-based strategies (Chambers et al., 2013). Historically, implementation science has tended to see interventions as static protocols that, ideally, can be delivered with perfect reliability (Lyon & Koerner, 2016). In reality, however, “there is no implementation without adaptation” (Lyon & Bruns, in press) and substantial improvements may be made to increase the usability and utility of interventions in the school context. Ideally, in addition to more successful local implementation of EBPs, such adaptations will be accompanied by evaluation of the incremental improvements in their usability and effectiveness (Lyon, Koerner, & Chung, 2018), as well as improved iterations of school-based interventions that can be transported to other education settings. In such redesign scenarios, the effectiveness of interventions can be assured through measurement of an intervention's proximal mechanisms (Kazdin, 2007) (e.g., cognitive changes; skill uptake) that precede changes in symptoms or functioning.

Third, Chafouleas et al. (this issue) implore school mental health providers “to engage in direct and indirect assessment of key intervention usability factors, such as acceptability, feasibility, understanding, home-school collaboration, system climate, and system support.” We could not agree more. Although any such assessment of EBP feasibility, compatibility, and necessary support conditions will require additional efforts by already-overburdened school staff, such systematic assessment efforts hold promise of bearing fruit in the form of better implemented and more effective school mental health programming.

Fortunately, tools exist that can facilitate such assessment and selection. For example, the Hexagon Tool (Metz & Louison, 2018) provides an overarching heuristic framework for use by states, districts, and schools in evaluating the appropriateness of EBPs across six dimensions: *Needs* (how well the program or practice being implemented might meet identified needs); *Fit* (with local priorities, structures, support, and context); *Resource availability* (for training, staffing, data systems, and administration); *Evidence* (expected outcomes if the EBP is implemented as intended); *Readiness for replication* (including adequacy of operationalization and expert assistance available); and *Capacity to implement* on the part of the state, district, or school. In many ways, this tool provides a streamlined method of specifying categories of implementation determinants that may be relevant to schools.

To fully assess the organizational implementation context of schools, our research team has been working to adapt a suite of instruments measuring aspects of school leadership, climate, and employee citizenship behaviors that are most proximal to the implementation of evidence-based practices (Locke et al., in press; Lyon et al., 2018). Assessment of these constructs may aid in the determination of whether and when a school is ready to implement an EBP, as well as identification of key leverage points for shifting individuals and school systems to be more conducive to the introduction of new practices.

These variables represent key inner setting determinants of implementation outcomes, which – as discussed above – have increasingly been found to promote implementation. The tools provide one pathway through which to increase the attention paid to those variables in education sector research. Given emerging research that is evaluating how these determinants (e.g., implementation leadership, implementation climate) may also be malleable in response to targeted intervention at the organizational level (e.g., Aarons, Ehrhart, Moullin, Torres, & Green, 2017), such constructs also reflect potentially important implementation mechanisms (Lewis et al., 2018) for organizationally-focused implementation strategies in schools.

Conclusion

As demonstrated by the depth of content of the current special issue of *School Mental Health*, understanding and mobilizing the evidence base on school-based interventions for emotional and behavioral needs of students is a complex endeavor. To demand that we also apply an implementation lens to this effort may be critiqued as only serving to exponentially increase an already burdensome challenge. Indeed, a skeptic might complain that we are now asking not just that education leaders remodel a house, but to remodel a house that is changing its shape all the time and is also continually occupied by a very large family and

all its pets. However, with an estimated two-thirds of EBP implementation efforts ending in failure (Damschroeder et al., 2009), it is incumbent that we seek guidance from sources such as implementation science, which provides a framework for accounting for the multiple and dynamic drivers of success, such as via the mechanisms proposed in Figure 1.

Fortunately, the school setting provides a particularly hospitable environment for promoting systematic, data-driven approaches to implementing effective school mental health practices. Measurement is inherent to education, with variations of implementation determinants (e.g., school climate), implementation outcomes (e.g., teacher performance), and student outcomes (e.g., disciplinary actions, attendance, and achievement) just a few examples of data points that are regularly collected and used.

Moreover, frameworks such as multi-tiered systems of student supports (MTSS; Lane, Menzies, Ennis, & Bezdek, 2013) and positive behavioral interventions and supports (PBIS; Sugai & Horner, 2009) have gained widespread adoption, and provide a means to guide selection, organization, implementation, and evaluation of student support strategies and behavioral interventions across multiple tiers of effort. As detailed by authors such as Kincaid and Horner (2017) and Freeman, Miller, and Newcomer (2015), strategies promoted by the PBIS and MTSS frameworks align well with the conceptual framework provided by implementation science. PBIS strategies are also accompanied by well-operationalized procedures and tools that do not only support adherent implementation of PBIS, but that, in and of themselves, represent potentially fruitful enabling strategies that could support implementation of any EBP.

For example, in PBIS and MTSS, district-level leadership teams promote attention to fiscal, policy, and political factors at the *outer setting*. Meanwhile, district- and school-level teams undertake specific facilitative administration supports and provide leadership training to create hospitable conditions at the *inner setting* of the school. PBIS also promotes competency at the *individual* (staff) level via strategies such as staff selection protocols, layered training systems for all school roles, and data-driven coaching. Finally, at the *intervention* level, PBIS employs tools for strategic EBP selection and consistent data collection on the fidelity and impacts of both the overall PBIS process as well as individual EBPs (Freeman, Miller, & Newcomer, 2015; Sugai & Horner, 2009).

Thus, in the form of PBIS and MTSS, the education sector benefits from “operating systems” that are not only informed by implementation science, but that attempt to mobilize implementation science via an organized system of practical strategies. Since research has shown that PBIS can effectively promote a range of positive school climate and student behavioral outcomes (e.g., Bradshaw, Mitchell, & Leaf, 2010), that adherence to these strategies is associated with positive outcomes (Kincaid & Horner, 2017), and that many of the core features of PBIS may also function as implementation strategies for carefully selected EBPs, one could argue that school mental health and positive behavioral support provides one of the most comprehensive examples currently available for the potential power of implementation science to promote evidence-based programs.

We look forward to seeing future articles and special issues of *School Mental Health* focused on efforts to explicate, implement, and evaluate implementation strategies for empirically supported school-based services. By joining our best programs to our best implementation strategies, we can meaningfully advance both the emerging field of implementation science and the social, emotional, and behavioral wellness of our students.

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Figure 1:
Causal model for applying implementation strategies to evidence-based programs (based on Lewis, 2017).