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Getting "SMART" about implementing multi-tiered systems of support to promote school mental health

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ABSTRACT

With the growing adoption and implementation of multi-tiered systems of support (MTSS) in school settings, there is increasing need for rigorous evaluations of adaptive-sequential interventions. That is, MTSS specify universal, selected, and indicated interventions to be delivered at each tier of support, yet few investigations have empirically examined the continuum of supports that are provided to students both within and across tiers. This need is compounded by a variety of prevention approaches that have been developed with distinct theoretical foundations (e.g., Positive Behavioral Interventions and Supports, Social-Emotional Learning) that are available within and across tiers. As evidence-based interventions continue to flourish, school-based practitioners greatly need evaluations regarding optimal treatment sequencing. To this end, we describe adaptive treatment strategies as a natural fit within the MTSS framework. Specifically, sequential multiple assignment randomized trials (SMART) offer a promising empirical approach to rigorously develop and compare adaptive treatment regimens within this framework.

1. Introduction

There has been an increasing focus on the topic of school mental health in recent years and increasing efforts to address "non-academic barriers to learning." Estimates suggest that 20% of students receive some form of school mental health service (Foster et al., 2005) with continued growth in that proportion in recent years. However, mental health challenges remain frequently under identified, making systems-level school-wide mental health promotion and prevention efforts absolutely critical (Flett & Hewitt, 2013). In this domain, student needs are diverse, ranging from internalizing problems, substance use problems, to externalizing problems. Referrals to community healthcare agencies for assessment and/or treatment services are time-consuming, expensive, and do not readily translate into interventions or accommodations that can be offered in school settings. Similarly, mandated school services such as special education and alternative learning placements require special qualifications, are costly, and available only to students with the most serious behavioral and emotional problems. Increasingly, schools have taken ownership of student mental health needs and have adopted multi-tiered systems of support (MTSS) in an effort to provide proactive, comprehensive and evidence-based supports. Typically, conceptualized as a three-tiered model, the MTSS framework provides layered interventions that begin with universal, school-wide programming and increase in intensity and differentiation depending on the students' response to preceding interventions (Fletcher & Vaughn, 2009). Examples of such models include Response to Intervention (RTI) and Positive Behavior Interventions and Supports (PBIS). These models apply a systematic and empirically-driven MTSS framework to ensure that students receive more timely and effective services (Fuchs & Fuchs, 2006; Hawken, Vincent, & Schumann, 2008).

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For example, when schools apply MTSS to student behavior, Tier 1 interventions generally consist of a school-wide code of behavioral expectations that are explicitly taught to all students and reinforced. All students regardless of their degree of risk are exposed to a general classroom management system including clear behavioral expectations and supports (i.e., universal intervention). Students showing an inadequate response (i.e., continue to display behavioral problems) are stepped-up to targeted and more intensive Tier 2 interventions. Tier 2 behavioral interventions typically consist of more focused support programs that are often delivered in a small group format, such as manualized programs like Coping Power (Lochman & Wells, 2002), social skills training, or efficient individual interventions such as behavior contracts or Check-in/Check-out (CICO). Last, students who are unresponsive to small group intervention and continue to struggle with their behavior are stepped-up to Tier 3 interventions. These are the most intensive and often provide function-based individualized behavioral intervention plans or involve referral for special education services (Crone, Horner, & Hawken, 2004). These tiered supports are additive, in that lower-level supports are still available to students requiring support at higher tiers. Critical to the MTSS framework is the monitoring of students' response to the interventions with data-based measures and establishing criteria for transitioning between levels of support (Gresham, 2005; Sugai, Horner, & Gresham, 2002). As the implementation of MTSS continues to proliferate in educational settings, there exists significant opportunity to support student mental health in ways not previously realized. Advocacy and federal directives for providing students with school-based mental health services have reinforced this movement in addressing the mental health needs of students (U.S. Department of Education, 2003).

As described, a foundational component of the MTSS framework involves the delivery of evidence-based programs. Consequently, there has been increasing pressure placed on schools to import evidence-based prevention and treatment programs in response to students' mental health needs (Langley, Nadeem, Kataoka, Stein, & Jaycox, 2010). Indeed, there are a growing number of evidence-based programs established for use in school settings (Forman et al., 2013). These programs typically address behavioral, social, and emotional factors assumed to cause or exacerbate disruptive, noncompliant and aggressive behavior (Wilson & Lipsey, 2007), although a growing number address mental health more broadly (e.g., emotion regulation, trauma, depression, anxiety). Programs feature a variety of modalities including classroom-wide support systems and behavioral health curricula, small group socio-emotional skills training and peer support, and comprehensive, multicomponent programs that typically integrate training for child, parent, and teacher (August, Bloomquist, Realmuto, & Hektner, 2007; August, Realmuto, Winters, & Hektner, 2001). To standardize and facilitate delivery, these programs are generally delivered with uniform composition, dosage, and duration to students regardless of their individual risks and needs (August, Gewirtz, & Realmuto, 2010). This “one size fits all” approach while expedient to deliver assumes that all children have similar needs. Despite their intuitive appeal and evidence base, such programs have yielded only modest effect sizes with considerable variability in individual response (Rones & Hoagwood, 2000). Such performance has led some researchers to call for more adaptive, customized approaches that are tailored to the individual needs of youth (Collins, Murphy, & Bierman, 2004).

Adopting a more tailored problem-solving approach to service delivery is consistent with the basic tenets of MTSS as a proactive and responsive framework, yet efficiency and feasibility are also very real and important concerns. For example, we must also avoid the “program for every problem” phenomenon (Domitrovich et al., 2010). Thus, determining how to deliver a tailored, problem-solving approach while maintaining efficiency and feasibility is a challenge. Additionally, while this framework offers a promising approach for providing students with the services they need, there are few guidelines for (a) selecting the most appropriate interventions for each tier, (b) determining how best to sequence the interventions in a tiered approach, and (c) how to determine the best intervention sequence for any individual student. These challenges are compounded by the emergence of programs developed with differing theoretical orientations. For example, interventions implemented within the context of PBIS are grounded in behavioral principles, while interventions implemented within the context of social-emotional learning (SEL) are grounded in the principles of positive youth development. These challenges make it incredibly difficult for school professionals to determine which programs to implement in their settings, and which programs will yield the greatest effects for their student population.

Against this backdrop, the present article describes an emerging innovation in the development and validation of precision-based interventions for youth who experience social, emotional, and behavioral impairments and need additional support. This approach is referred to as adaptive treatment strategies (ATS [also known as dynamic treatment regimes]). ATS apply principles similar to those used in MTSS to tailor each individual's intervention over time based on assessment of ongoing response but extend these models in several ways. For example, ATS specify (a) which intervention option to offer first, (b) at what time point response should be assessed and interventions adjusted, and (c) which intervention option should be offered if there is nonresponse to the first intervention option. Intervention options may vary in intensities, types, and/or modalities. The construction of these decision rules is aided by an innovative research methodology called sequential multiple assignment randomized trials (SMART). SMART empirically evaluates multiple intervention sequences and associated decision rules within a single trial in order to identify optimal ATS. In the text that follows we (a) present the rationale for ATS, (b) describe the SMART technology used to operationalize ATS, (c) describe a SMART prototype currently being delivered by a community agency to preempt the development of conduct disorder among at risk youth, and (d) describe an example of how schools might apply a SMART to evaluate multi-tiered interventions to prevent or deescalate behavior problems.

1.1. Adaptive treatment strategies (ATS)

ATS use ongoing information about an individual (e.g., changes in behavioral status) to make subsequent intervention decisions through the use of decision rules (i.e., algorithms). See Table 1 for several recommend articles in the area of ATS. Decision rules specify how the composition and/or intensity of an intervention should be adjusted at critical decision points such as when an