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The Missouri Prevention Center: A Multidisciplinary Approach to Reducing the Societal Prevalence and Burden of Youth Mental Health Problems

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The challenges presented by the growing prevalence, burden, and unmet service needs of youth mental health problems are formidable. During the past decade, scholars and other stakeholders of the Missouri Prevention Center (MPC) have been using a prevention and implementation science approach to develop, implement, evaluate, and disseminate recommended practices in promoting youth mental health in real world contexts. The purpose of this article is to describe the multidisciplinary contributions of MPC to improve the social, emotional, and behavioral health of youth, locally and nationally. We briefly summarize MPC scholarship that has addressed the individual and social–contextual risk and protective factors of youth mental health at home, school, and community. The article concludes with a description of two large-scale community projects, funded by an innovative local sales tax, that represent the systematic application of MPC scholarship and outreach. Together these projects provide mental health screening for every youth in our county three times per year and a single point of entry into the mental health service system where any family in our county can access an evaluation and referral for their child at no cost to them. The projects serve as model demonstrations for how communities can address the challenges of youth mental health concerns through multidisciplinary collaborations.

Keywords: youth mental health, prevention, school-based, multidisciplinary

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Much has been written about the growing prevalence and burden of youth mental health concerns as well as the barriers to quality care for these youth (Erskine et al., 2015; Patel, Flisher, Hetrick, & McGorry, 2007; Torio, Encinosa, Berdahl, McCormick, & Simpson, 2015). Nearly 20% of children will experience a serious mental health condition prior to adulthood, and only a fraction of them will receive care for their condition (Merikangas et al., 2010, 2011). Equally concerning, most of the youth who do receive care in community settings will benefit little from these services (Bickman, Lambert, Andrade, & Penaloza, 2000; Weisz, Jensen-Doss, & Hawley, 2006). This state of affairs persists despite great advances over the past several decades in developing effective programs and practices to prevent and treat most of the major mental health disorders that affect youth (National Research Council & Institute of Medicine, 2009).

Fortunately, a growing body of research has begun to address the challenges posed by the poor quality of youth mental health prevention and intervention care as is typically practiced. Proposed solutions tend to be rooted in an implementation science framework that acknowledges the disparities between research and practice contexts and the need to bridge these two worlds (Proctor et al., 2011). Common recommendations include conducting research in applied contexts, learning from variations in usual care, restructuring evidence-based interventions to fit better within usual care settings, incorporating ongoing progress

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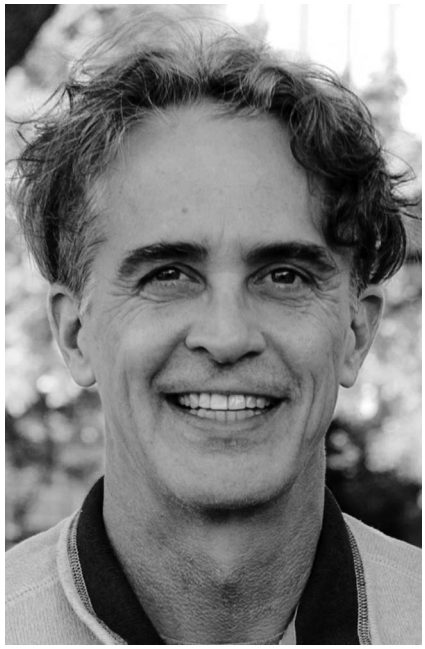

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monitoring to guide care, and identifying and altering policies that hinder recommended practices in community agency settings (Weisz, Ugueto, Cheron, & Herren, 2013). Additionally, authors have emphasized the importance of developing and implementing comprehensive, high quality interventions across the prevention–intervention spectrum (Weisz, Sandler, Durlak, & Anton, 2005) and capitalizing on schools as settings for identifying and intervening with youth (Greenberg et al., 2003).

During the past decade, scholars and other key stakeholders within the Missouri Prevention Center (MPC) have been using many of these ideas to develop, implement, evaluate, and disseminate recommended practices in promoting youth mental health in real world contexts. The purpose of this article is to describe the multidisciplinary contributions of MPC to improve the social, emotional, and behavioral health of youth, locally and nationally. We briefly summarize MPC scholarship that has addressed the individual and social–contextual risk and protective factors of youth mental health at home, school, and community. The article culminates with a focus on two large-scale community projects, funded by an innovative local sales tax, that represent the systematic application of MPC scholarship and outreach in reducing the population prevalence of youth mental health concerns. In combination, these projects screen every school-age youth in the county three times per year; support all county schools in providing universal, selective, and indicated interventions based on this screening data; and provide no-cost evidence-based evaluations, referrals, and ongoing progress monitoring to any family in our county with concerns about their child's mental health.

Team Goals, Composition, and Unique Contributions of Team Members

The MPC is a multidisciplinary team of scholars, community members, and other key stakeholders focused on using science to promote the social, emotional, and behavioral health of youth. Since its inception in 2007, MPC has conducted rigorous research and provided services to hundreds of schools and thousands of families and youth. The various research, outreach, training, and policy projects of the MPC are unified in their focus on fostering nurturing environments across all contexts of children's lives (Biglan, Flay, Embry, & Sandler, 2012).

MPC is composed of a diverse consortium of faculty members, postdoctoral fellows, and graduate students from school, counseling, clinical, educational, developmental, and quantitative psychology as well as social work, special education, education leadership, public health and policy, human development and family studies, engineering informatics, and psychiatry. In addition, across all of our multidisciplinary research and demonstration projects, our scholars work closely with computer scientists and software engineers to create automated systems for the large-scale collection and integration of data streams, as well as online dashboards that permit stakeholders to have easy access to relevant data. One important innovation of the MPC is our emphasis on defining multidisciplinary to include not only scholars from different fields but also community members and other key stakeholders from diverse backgrounds and specialties. It is clear to us that scholars alone, no matter how competent and invested, are not able to move social structures and processes necessary to improve youth outcomes. They also need the expertise and contributions of other social change agents in a community including law enforcement officers, the judicial system leaders, policymakers, school district superintendents, public health officials, community behavioral health agency administrators, health and social service providers, and other key community members.

Integrating Prevention and Implementation Science

The multidisciplinary contributions of scholars and community change agents is essential to alter the societal, institutional, and organizational context of preventive interventions. To improve population health outcomes, it is essential to not only develop effective interventions, but also create effective organizational contexts that support the use of these interventions as intended. Since its inception, prevention science has focused on the importance of high quality implementation of recommended prevention practices over time (see Kellam, Koretz, & Mościcki, 1999). The growth of implementation science and theory has helped further articulate key system (e.g., funding streams, districtwide

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policies), organization (e.g., schools, community organizations), individual (e.g., teachers, service providers), and intervention (e.g., cost, complexity) factors that can support or undermine effective, sustained implementation (Bertram, Blase, & Fixsen, 2015; Damschroder et al., 2009; Fixsen, Naoom, Blasé, Friedman, & Wallace, 2005; Horner & Sugai, 2015; McHugh & Barlow, 2010; Rogers, 2003).

MPC integrates this dual focus on interventions that impact youth outcomes alongside attention to implementation drivers, or the core components of effective wide scale implementation (Bertram et al., 2015). Although several models describe many implementation components, in our work, we focus on three essential ingredients to large-scale implementation. First, high quality, efficient, meaningful, accessible, and continuous data streams are needed to provide ongoing information about targeted outcomes (e.g., prevalence of youth mental health concerns) and performance feedback to implementers (e.g., fidelity of implementation) and administrators. Feedback alone is often enough to galvanize initial interest in a program or practice and to elicit behavior change and improve relevant outcomes (e.g., Lambert et al., 2001; Reinke, Lewis-Palmer, & Martin, 2007). Second, high-functioning multilevel teams that are well integrated into the relevant context are needed to support ongoing data interpretation, training, consultation, and coaching (e.g., Schoenwald, Sheidow, & Letourneau, 2004). For example, within schools, building-level problem solving teams support implementation practices in a given school and district- or county-level technical assistance teams provide training, consultation and support for these building level teams (e.g., Reinke et al., 2018). Third, administrators and leadership teams within organizations need to support and understand the implementation activity and encourage participation in it (e.g., Aarons, Sommerfeld, & Willging, 2011). In schools, this includes administrators within each school building (e.g., principals) and within each district (e.g., superintendents). When implementation occurs across an entire county or state, understanding and buy in from government officials (e.g., county commissioners, mayors, governors) and county and state leaders is also critical. These three characteristics (useful data streams, effective teams, and leadership support) are present in all of our work from conducting large-scale group randomized trials to running our research labs and implementing county-wide mental health interventions.

Major Team Findings

Our multidisciplinary team has strengthened the quality of our research and led to important findings across the entire knowledge development cycle in many areas of youth development including developmental psychopathology; home, school, and classroom behavior management; parent engagement in education and mental health services; and youth self-management and coping. The following summary of MPC scholarship is organized around four principles that we believe are essential for reducing the population prevalence and burden of youth mental health concerns: (a) specifying malleable antecedents to youth social, emotional, behavior problems; (b) surveillance of risk/protective factors and sociocontextual antecedents; (c) multitiered preventive interventions to alter these antecedent conditions; and (d) ongoing feedback to improve quality of care.

Specifying Malleable Antecedents to Social, Emotional, and Behavioral Problems

Much of our work has focused on the identifying malleable precursors to youth mental distress and disorders. The goal of this line of research is to specify the developmental timing and sequence of common social, emotional, and behavior problems and their sociocontextual preconditions that are amenable to change (i.e., malleable). We then can target these preconditions for screening, prevention, and early intervention purposes.

Our team has completed several investigations of the co-occurrence and course of the most common social, emotional, and behavior problems experienced by youth. One series of studies focused on the covariation among depression, anxiety, inattention, academic, and conduct problems and outcomes associated with these co-occurring issues (see Darney, Reinke, Herman, Stormont, & Ialongo, 2013; Herman, Lambert, Ialongo, & Ostrander, 2007; Kerr, Reinke, & Eddy, 2013; King, Lembke, & Reinke, 2016; Reinke, Eddy, Dishion, & Reid, 2012; Reinke, Herman, Petras, & Ialongo, 2008). Collectively, these studies demonstrated that partic-

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ular types of co-occurrence (e.g., academic and behavior problems; depression and conduct problems) (a) can be identified early and (b) can lead to lasting negative consequence for youth including school dropout, delinquency, and incarceration.

In another series of studies, we uncovered important antecedents of early onset depressive symptoms to address the critical question about how and when depressogenic cognitions develop (Herman & Ostrander, 2007; Herman et al., 2007, 2016; Herman, Lambert, Reinke, & Ialongo, 2008; Ostrander & Herman, 2006). These studies highlight the complex interplay between attention problems, disruptive behaviors, and depression during the early elementary years. Moreover, these findings help demonstrate the need for, and inform the components of, our early screening and identification efforts. We used data from these studies to inform community and school partners about the value of early identification and examination of risk factors for these common problems. Further, findings from these studies guided the development of our screening instruments as we included items that assess academic concerns as well as internalizing, externalizing, and social relation challenges.

Surveillance of Risk/Protective Factors and Sociocontextual Antecedents

A basic tenet of a public health and prevention science approach to reducing the incidence and burden of disease is the need for sophisticated, efficient, and informative surveillance of disease patterns and correlates (Herman, Riley-Tillman, & Reinke, 2012). Applied to addressing youth mental health conditions, such an epidemiological approach requires the ongoing and systematic collection of data to track precursors to these conditions and their relative incidence and prevalence across settings. The MPC interdisciplinary team has developed several complementary tools that address these needs. These include tools to identify risk factors for externalizing, social/peer, internalizing, attention, and academic problems. We developed each tool to tap important malleable antecedents to proximal and distal outcomes in an efficient, user-friendly manner.

As one example, our team created a school-based universal screening system called the Early Identification System (EIS). The EIS was developed through a multiyear collaboration among school psychologists, social workers, administrators, and counselors, as well as teachers, quantitative experts, software designers, and students in our school buildings. The resulting EIS is feasible, cost-effective, linked to evidence-based practices (EBPs), and useful as a web-based surveillance system for social, behavioral, and emotional indicators. We identified the risk indicators from the extant literature, including our own studies, which predict negative social, emotional, and academic outcomes. Specifically, items tapping risk for inattention, academic failure, social skill deficits, peer relationship problems, internalizing problems, and externalizing problems were included.

Students and teachers complete the EIS online. The EIS Student includes 36 risk indicators; students in Grades 3 to 12 respond to each item on a four point scale indicating how often they experience the indicator (e.g., "I get mad easily"). The EIS Teacher presents the names of their students across the top of the screen and lists 39 risk items down the left side; teachers are instructed to check the box of each student experiencing the risk indicator. This streamlined approach allows teachers to identify only those students experiencing the risk, rather than having to rate the frequency of risk experiences for all students. Thus, the EIS significantly reduces the burden on teachers (i.e., a teacher can complete the survey for an entire class in 10 minutes) without sacrificing technical adequacy (see, e.g., Huang, Reinke, Thompson, & Herman, in press; Reinke et al., 2018; Thompson, Herman, Stormont, Reinke, & Webster-Stratton, 2017).

Upon completion of the teacher- and student-rated screening items, the data are immediately available and displayed via a dashboard using a red, yellow, green format so that school personnel can easily identify areas of need (red) and areas of strength (green). The data can be aggregated at the county, district, building, grade, or student level. Each risk area has a menu of options for schools to choose universal, selective, or indicated EBPs that match their areas of need (see Reinke et al., 2018; Thompson et al., 2017, for examples of the model).

We have also developed surveillance tools to assess the social ecology that influence and shape youth outcomes. Abundant research has identified classroom characteristics

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that promote positive youth development and those that contribute to negative outcomes for youth. For instance, clear classroom expectations, frequent opportunities for students to respond, and higher ratios of positive to negative teacher-student interactions are linked to lower levels of disruptive behavior; interventions to promote these classroom qualities reduce future risk for externalizing and internalizing symptoms (Herman, Reinke, Parkin, Traylor, & Agarwal, 2009). As two examples, we have developed and validated the Brief Classroom Interaction Observation–Revised for use in observing classroom characteristics including classwide teacher–student interactions (Reinke, Stormont, Herman, Wachsmuth, & Newcomer, 2015) and the Student–Teacher Classroom Interaction Observation for individual student-teacher interactions (Reinke, Herman, & Newcomer, 2016). Both of these tools were developed through a partnership between schools and MPC scientists, and they are now being used to (a) gather initial data on critical malleable features of the classroom environment (e.g., teacher use of praise), (b) guide teacher and classroom interventions, and (c) provide ongoing feedback to teachers to improve outcomes for students.

Multitiered Preventive Interventions to Alter These Antecedents Conditions

The third focus for MPC has been on developing, evaluating, and disseminating universal to indicated prevention programs and practices including providing training for personnel to implement these interventions. All of this work is directly informed by (a) our understanding of malleable antecedents as interventions are selected or developed based on their promise of altering these factors and (b) feasible, routine measurement of these risk and protective factors. In partnership with school and community leaders, scholars at the MPC conduct large-scale, school-based efficacy trials to examine the impact of interventions to support youth self-management and self-regulation, alter classroom ecologies, and more recently, foster whole school transformation through leadership training. Here, we briefly describe some of these studies and how each involves multidisciplinary efforts to impact youth development.

Youth self-management training. The Self-Management Training And Regulation Strategy (STARS; Thompson, 2014), developed by a social work MPC leader (Aaron M. Thompson) in collaboration with school counselors and a computer programmer, is a selective or targeted school-based intervention delivered by natural implementers (e.g., school counselors, school social workers, school psychologists, and teachers) to elementary age youth with early signs of conduct problems. Briefly, STARS provides students with training in goal setting, problem solving, and inter- and intrapersonal skills. Interwoven with the training are iterative opportunities to practice those skills and self-monitor performance throughout the school day. Ongoing performance data collected through digital tracking systems developed by our computer programmer provide immediate and constant personalized feedback from teacher performance ratings. These data are then used by school mental health providers administering the intervention (e.g., school counselors) and students to discuss progress and retrain, or rewrite performance goals to reduce areas of discrepancy between student and teacher perspectives on goal performance. A multiple-baseline study (Thompson & Webber, 2010) and a randomized clinical trial found that students who received STARS had improved teacher-rated disruptive behaviors, authority acceptance, social competence, and quality of relationships with peers (Thompson, 2014). A larger federally funded randomized control efficacy trial is currently underway.

Altering classroom ecologies. Another major intervention developed by the MPC and key school stakeholders, supports teachers in creating nurturing classroom environments. Poorly managed classrooms are a risk factor for the development and maintenance of academic and behavior problems in children (Reinke & Herman, 2002). As such, targeting this malleable risk factor (ineffective classroom management) for intervention has the potential to impact large numbers of children. We learned early on that simply telling natural implementers (such as teachers and parents) what they should do rarely works, because either they lack the skills to implement or do not agree with the suggested intervention.

To overcome these challenges to teacher consultation, MPC researchers developed an evidence-based teacher consultation model called the Classroom Check-Up (CCU:

Reinke, Herman, & Sprick, 2011). The CCU is modeled after the Family Check-Up (FCU; Dishion & Stormshak, 2007), a family-centered brief intervention designed to engage families of youth with conduct problems in treatment, and includes a teacher interview, classroom observations (using the Brief Classroom Interaction Observation–Revised), personalized feedback to the teachers, development of a menu of options for effective classroom strategies targeting areas of concern, an action plan to implement the new strategies, and ongoing meetings to support implementation. We infused motivational interviewing (e.g., Miller & Rollnick, 2012) throughout the model. Several studies support the efficacy of the CCU in improving teacher practices and in turn reducing problem behaviors in students (Reinke et al., 2008). The model has been widely disseminated and extended to target additional teacher behaviors. A recent federally funded project has supported an adaption of the CCU model to include an online platform developed by researchers, computer programmers, and journalism/social marketing experts for wide dissemination and easy uptake of the CCU classroom strategies and coaching model. Additional adaptations have applied the CCU as part of a professional development model to improve culturally responsive teachings practices. A recent randomized clinical trial found positive effects of this adaptation on student outcomes (Bradshaw et al., 2018).

In addition to developing, evaluating, and disseminating the CCU model, we have conducted several large group randomized trials to evaluate the effects of universal classroom management training programs, such as the Incredible Years Teacher Classroom Management (Webster-Stratton & Reid, 2010) and CHAMPS (Sprick, Baldwin, Booher, Gale, & Garrison, 2012) programs, on teacher behaviors and youth outcomes. By supporting teachers in providing predictable, structured and supportive environments, we have found these teacher training programs led to improvements in student behaviors, academic performance (Herman, Reinke, Bradshaw, & Dong, 2018; Reinke, Herman, & Dong, in press), and internalizing symptoms (Herman, Borden, Reinke, & Webster-Stratton, 2011; Webster-Stratton & Herman, 2008), and in the case of Incredible Years Teacher Classroom Management, parent involvement patterns (Herman & Reinke, 2017; Thompson et al., 2017).

Provider training to implement EBPs. Usual youth mental health care often yields poor outcomes (e.g., Bickman et al., 2000; Bickman, Noser, & Summerfelt 1999; Bickman, Summerfelt, & Bryant, 1996; Weisz et al., 2013; Zima et al., 2005) and does not adhere to quality care guidelines (Cho et al., 2019; Cook, Hausman, Jensen-Doss, & Hawley, 2017; Garland, Bickman, & Chorpita, 2010). Led by a clinical psychologist member of our team (Hawley), we have developed a clinical training and support system for community mental health service providers to overcome these barriers to quality care. Hawley's training model is rooted in evidence on effective continuing education, adult learning and implementation science (e.g., Beidas & Kendall, 2010; Davis et al., 1999; Davis, Thomson, Oxman, & Haynes, 1992, 1995; Herschell, Kolko, Baumann, & Davis, 2010), intervention fidelity, and common elements of evidence-based practices (e.g., Cho et al., 2019; Chorpita, Daleiden, & Weisz, 2005; Garland, Hawley, Brookman-Frazee, & Hurlburt, 2008). In prior qualitative and quantitative work with clinicians at the national, state and local levels by our team and others (Cho et al., 2019; Hawley, 2011; Jensen-Doss et al., 2018; McMillen, Hawley, & Proctor, 2016), we found enthusiasm and interest in evidence-supported practices and improving youth outcomes. We also found a host of practical barriers to in-person training (e.g., time and monetary cost) and limited follow-through for online training (McMillen et al., 2016). To address these challenges, our model provides a range of learning opportunities including interactive half and full day workshops focused on scientifically supported intervention approaches for children, adolescents and families, with no-cost attendance for any area clinician. These experiences offer clinicians a chance to further their knowledge and skill development around EBPs for youth and families, and increase the likelihood that clinicians will actually implement a new strategy or technique they were exposed to in a workshop. They have the added benefit of strengthening peer-to-peer support for participating clinicians.

Ongoing Feedback to Improve Quality of Care

The fourth major theme of MPC scholarship is on providing ongoing feedback to natural implementers to improve the quality of care received by youths with the highest levels of need. Abundant research indicates that routine assessment and feedback promotes behavior change and skill development across a wide range of samples and content areas (for students [Thompson, 2014)], teachers [Reinke et al., 2012], and clinicians [Lambert et al., 2003]). The emphasis on feedback is evident in all of our interventions described above; for instance, feedback is a fundamental feature of the CCU and STARS interventions. Here we focus on our efforts to provide performance feedback to clinicians attempting to deliver EBPs in community and school settings.

Again led by Hawley, we have developed an online, measurement feedback system for clinicians, also available at no cost. We developed this system in reference to vast empirical literature showing benefit of specific, largely behaviorally oriented treatment approaches for children, adolescents and families (Weisz et al., 2017) and a separate literature demonstrating the positive impact of routine outcome monitoring on clinical outcomes regardless of specific treatment approach (Lambert et al., 2003). Our feedback system includes clinician, youth and caregiver assessments

in three domains: treatment adherence to EPBs for youth anxiety, behavior, depression and/or trauma concerns (Hawley, 2013); youth symptoms and functioning (Bickman et al., 2010); and Top Problems Assessment (TPA; Weisz et al., 2011). Clinicians can use one, two, or all three of these measures, and they can opt for self-, youth-, and/or caregiver-reports on one of more of these measures, on a session-by-session basis. Based on user feedback, we have developed brief feedback reports for each of these measures. This system also generates a progress note based on clinician-report on the adherence measure, which can be used as is, or copied into and then edited within his or her own health record system. These tools are available and can be used by community mental health professionals as well as school mental health professionals.

Community-Level Outreach and Impact

Two recent projects represent the culmination and integration of multidisciplinary MPC science with community-based outreach efforts to improve the population level mental health of youth: the Boone County Schools Mental Health Coalition (Coalition) and the Family Access Center of Excellence (FACE; see online supplemental materials for Figure depicting the MPC model for impacting youth development). An innovative local sales tax funds both projects. Six years ago, citizens of our medium-sized county in mid-Missouri voted to tax themselves to create a fund to support youth mental health. Responding to growing concerns about high rates of youth mental health problems and a highly publicized finding that our community had high rates of disproportionate minority youth contact with law enforcement, a group of community members, educators, health and social service providers worked together to propose and pass the voter-funded sales tax to support youth social, emotional, and behavioral health. This was a community-based initiative, pulling together key stakeholders from policy, government, school systems, health and social service providers, community organizers, and faith leaders, alongside scholars and scientists with a shared mission to use our collective knowledge and experiences to nurture positive youth outcomes.

Although at least 10 other communities throughout the United States have passed similar initiatives, our county tax is unique in how it has been administered. Notably, the county government actively sought input and needs assessments from experts across our community including scientist–practitioners from the MPC. Such collaborations led to the development of data streams and feedback loops to directly inform the funding of services. Today, the Children's Services Fund generated by the tax supports several large-scale, science-based screening, prevention, and intervention projects that touch every youth in the county.

Schools Mental Health Coalition

Immediately after the tax passed, superintendents from all county school districts were inundated with calls from mental health service providers asking to partner with them to access the tax monies. The superintendents bonded together and requested support from scholars at MPC to provide guidance on how to respond to the calls and the county request for funding proposals. These initial meetings were the foundation of what would become the Coalition. We launched the Coalition as a partnership between scientists and clinicians from MPC and school-based educators, practitioners, and administrators in the county. The partnership has resulted in a fully enacted coordinated system of prevention and intervention in line with calls to "establish research-based training and technical assistance approaches for superintendents, principals, teachers, and parents to foster high-quality implementation of new school innovations" (Greenberg et al., 2003, p. 474).

Over the past 3 years, every public school and one private school ($n = 54$) has screened every school-age youth in the county (≈25,000) three times per year for social, emotional, and behavioral risk factors using the EIS system described earlier (MPC Principles 1–2). School problem solving teams use these data to assess areas of concern at the school and grade levels, identify existing supports, and determine if new universal or indicated prevention efforts are needed. In addition, the dashboard generates individual student reports using a similar red, yellow, and green system to identify students with elevated risk on any EIS construct relative to their peers. School teams use these reports to determine the appropriate next steps for supporting students at greatest risk (e.g., develop an individualized behavior support plan, provide small group counseling, initiate community referrals). The dashboard also serves as part of a functional feedback loop to inform progress over time in addressing school and student needs (MPC Principle 4).

Regional coordinators, school-based mental health clinicians with advanced degrees and experiences in working with youth with mental health problems, provide ongoing support to Coalition schools. These regional coordinators serve as technical assistant experts to enhance school capacity. In particular, they support administration of the triannual screeners; help school personnel interpret the data; consult with problem solving teams in determining universal, selective, and individualized EBPs; and implement direct intervention services to youth in school buildings (MPC Principle 3).

The online system links collected data to a menu of evidence-based universal, selective, and indicated interventions that schools can choose to implement. Schools also collect fidelity data on their implementation of chosen interventions and progress monitoring data to assess the effects of these interventions (Principle 4). During the 2016–

2017 school year, the regional coordinators assisted schools in delivering high quality supports to over 7,000 youth based on EIS data collected in each building. Additionally, over 1,200 youth received selective or indicated supports based on EIS data during the school year. Findings indicated that across intervention domains (attention and academic, peer relations and social, internalizing, self-regulation and externalizing, and school engagement) over 75% of youth who received these supports experienced improvements.

The Coalition also partners with child psychiatry at our university to provide school-based psychiatric services. Laine Young Walker, a child psychiatry faculty member, developed the Bridge program to address the gap in psychiatric services for youth in our county. Funded by the same county tax, Bridge provides psychiatry care for all youth in our county and is designed to bridge the gap the need for psychiatric care and access psychiatric care in the community. Historical wait times for child psychiatric services in our county were approximately 8 weeks. In the first year of the program, Bridge served 394 youth and all were seen within 10 days of referral. Moreover, 67% of these youth were from families with incomes at or below poverty levels an indication that Bridge was serving youth who experience the most barriers to accessing care (e.g., lack of insurance, transportation, structural and perceptual barriers). In a recent article (Herman, Cho, Marriott, & Young Walker, 2018), we found that 82% of youth who were prescribed psychotropic medications through Bridge last year were complying with the regimen at follow-up, and 92% of youth who were referred to community providers attended their first appointment. Paired-sample *t* tests revealed significant symptom reductions on all teacher-rated Vanderbilt scales (attention-deficit/hyperactivity disorder, oppositional–defiant/conduct problems, anxiety/depression, and performance problems) suggesting on average that youth who received services through Bridge experienced significant symptom improvement in the school setting. Additionally, 59% of children experienced clinically significant improvements in mood, behavior, and/or attention-deficit/hyperactivity disorder symptoms (using the reliable change index) according to parent ratings. Participants were consistently positive in their rating of Bridge related activities and services. In the most recent annual report summarizing the second year of Bridge, all of these effects persisted and/or got stronger.

Family Access Center for Excellence

The FACE of Boone County is a coordinated, multidisciplinary, and collaborative initiative designed to improve the mental health, well-being, and safety of children. FACE was designed by the multidisciplinary MPC team to achieve this goal by (a) providing an single access point for families of youth 0–19 years needing mental health supports; (b) using an evidence-based approach to engaging families in services and monitoring success of services over time; (c) increasing the capacity of community mental health providers to implement EBPs through training and ongoing feedback support; and (d) conducting outreach including launching a mental health destigmatization campaign throughout the community.

FACE is the hub of our county youth mental health system and was designed to overcome the well-documented barriers to accessing care that many families experience including perceptual (e.g., stigma, prior negative experiences) and structural barriers (e.g., lack of insurance or funding, fragmented care, and complicated service systems). Solutions to overcome these challenges included (a) a coordinated, case-management approach founded on scientifically based developmentally appropriate and comprehensive assessments, (b) referral to a menu of evidence-based services based on identified needs, (c) ongoing monitoring of the success of those referrals to ensure services are accessed by youth and families, and (d) progress monitoring of outcomes of youth receiving services. Additionally, FACE has a board of directors, which is composed of community leaders from diverse fields including public health, the courts, juvenile detention, law enforcement, and schools. These members bring their community influence and expertise to help overcome systemic barriers to mental health resources. During bimonthly meetings, the board reviews data to identify progress and problem solve any areas of concern. For instance, at one meeting, the data revealed relatively few referrals to FACE were coming from law enforcement. With law enforcement leaders at the table, the group discussed barriers to law enforcement referrals and solutions to overcome these barriers. A parent advocate and school superintendent, also board members, provided additional insight into barriers and ways to overcome them. In subsequent meetings, the board examined data to track progress of proposed solutions.

The centerpiece of the FACE process is an integrated data system created in collaboration with our computer programmer and based on all of our prior work specifying and monitoring risk conditions and providing ongoing feedback. The system allows families and youth to complete assessments online. Once complete, the system produces a family report of strengths and areas of concern based on evidence-based leverage points for improving family and youth outcomes. The web-based case management system houses strength and risk factor assessments that are developmentally responsive and family systems oriented. It also provides an automated, user-friendly system for collecting and summarizing assessment and progress monitoring data (Principles 1, 2, and 4).

The FACE engagement and assessment process is based upon the FCU and CCU consultation approach described previously (Principle 3). Clinicians have access to the FACE dashboard and present the summary report to fami-

lies during the feedback phase, typically during the same visit. Clinical staff summarize areas of risk (red), areas at risk (yellow) and also take time to celebrate the strengths or assets of a child and his or her family (green). The purpose of the feedback session is to strengthen motivation and commitment to change and help families focus on one to three areas of concern, which we call the top problems. Once families prioritize concerns, they are asked to rate the severity of the problem before clinical staff assist the families to rank order those problems. Lastly, clinical case managers then work to link those families to existing community providers who offer services to reduce risk or build strengths to buffer the negative impact of those concerns on family functioning. Families are followed over time and complete the TPA (Weisz et al., 2011, described earlier) on a weekly or biweekly basis. These data provide information on the effectiveness of community services as well as help determine when families need additional supports or when the case can be successfully closed.

Provider training and support. Under the direction of Hawlay, FACE also cosponsored 16 trainings in 2017, providing 1,474.25 hr of training to 454 providers (MPC Principle 3). Evaluations were completed by 389/454 (85.7%) of attendees. Rates of satisfaction were consistently very high (4.56 out of 5, with 357/389 or 91.8% giving a 4 or 5 satisfaction rating). Provider perception of feasibility of implementing the strategies learned into their practice was also high (4.25 out of 5, with 285/388 or 73.5% giving a 4 or 5 feasibility rating).

Reducing mental health stigma. MPC, city and county public health officials, journalism faculty and students, social marketing experts, law enforcement, school systems, and community members partnered to design and implement a range of informational, awareness and destigmatization efforts. The resulting product, initially coordinated through the County department of public health and later shifted to the FACE, is a social marketing campaign, called *Look Around*, targeted at youth and families to improve awareness of youth mental health concerns and to destigmatize these concerns (see www.lookaroundboone.org). The campaign incorporates clear messages to youth about where to go if they have concerns for themselves or another. Our media experts ensured that we tapped into a wide range of venues, including print, social media, radio and TV spots. Journalists came together with educators and mental health providers to ensure the message was one that would reach young people, engage their attention, and provide accurate information about mental health and a clear message of what to do, who to call, and where to go if they were concerned.

The Coalition EIS also allows us to monitor the effects of social marketing campaigns on youth awareness. Prior to the start of *Look Around*, we added items to the EIS that assess youth attitudes about stigma. We recently examined the changes in attitudes over time and found that youth in Coalition schools (Grades 3–12) reported significant increases in acceptance of people with mental health problems ($N = 13{,}932$, $t = -24.71$, $p < .001$; $ES = .24$) and in stigma attitudes surrounding their own and others mental health status ($N = 13{,}932$, $t = -34.55$, $p < .001$; $ES = .35$). Although it had a pre/post design that cannot rule out threats to internal validity, it illustrates the flexibility of the EIS to collect efficient time series data to inform community practices.

Outcomes and feedback loop. FACE successfully engaged and assessed 257 (50% of all referred) families between January 1 and December 31, 2017. The clinical dashboard for FACE tracks family progress from their initial appointment through their full engagement with a community service providers. We use the TPA as our family guided assessment tool to identify treatment needs and track progress following assessment. The result is a ranked list of up to three top problems identified by families along with a measure of severity ranging from 0 (*not at all*) to 10 (*very much*; Weisz et al., 2011). Figure 1 shows the scores for all families completing TPAs between January and December 2017. Of the 255 families who engaged in the FACE assessment process, 245 families selected at least one top problem. Table 1 shows the average ratings across all families for each TPA at assessment and for a weekly follow-up check-in for four consecutive weeks. At the bottom of the figure, we report the mean on the TPA change scores from assessment to the 4-week follow-up point. In sum, the amount of improvement in family rated top problems reflected a significant and positive change across family ratings for each problem area: TPA-1 (average reduction of 5.16), TPA-2 (reduction = 3.66), and TPA-3 (reduction = 2.40).

National Dissemination

Although the Coalition and FACE developed in a particular context and with the support of university and community partnerships, we believe the big ideas of both models can be widely disseminated. Toward that end, we are currently working to expand, refine, and integrate a suite of online tools and supports into a comprehensive online EIS data and training system to serve as a platform for ongoing data collection and intervention supports for any school district to use. The final EIS model will provide schools with systematic processes and practices for (a) identifying students in need of support; (b) using data to target prevention and intervention efforts; (c) identifying and using EBPs that map directly onto areas of need; (d) using progress monitoring tools with automated feedback on whether an intervention is working, if the intervention is being conducted with fidelity, and when to intensify or reduce an intervention based on these data; and (e) offering accessible

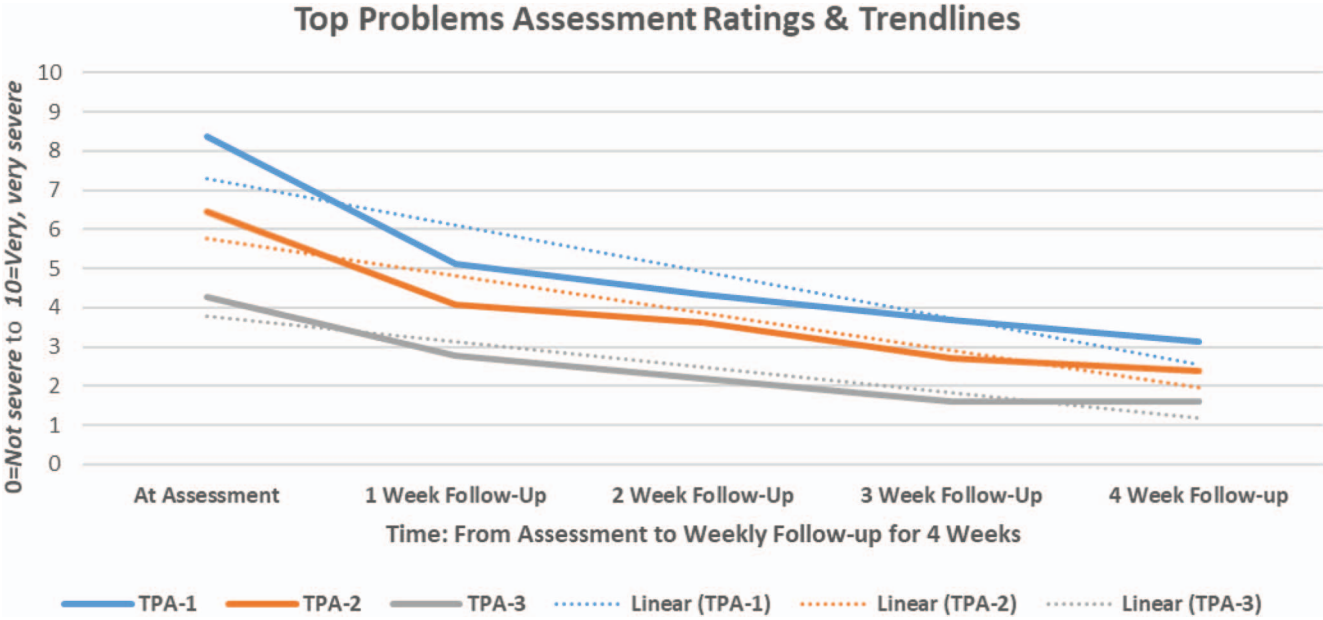

Figure 1. Top problems assessment from initial assessment to Week 4 follow-up. See the online article for the color version of this figure.

professional development and technical assistance to support use of the EIS model that includes training modules for using data to select, implement, and monitor contextually appropriate EBPs mapped onto identified problem areas. In a similar manner, we plan to disseminate online FACE tools and intervention modules for use by communities across the nation.

Multidisciplinary Contributions

The programs, practices, and outcomes of MPC would not be possible without an integrated multidisciplinary team. The universal, selective, and indicated interventions created by our team were developed through multidisciplinary collaboration. For instance, the CCU emerged from a collaboration between a school psychologist with expertise on critical and malleable classroom and teacher variables related to youth development and a counseling psychologist with expertise in motivational interviewing (Miller & Rollnick, 2012) and consultation communication skills. This school psychologist had received training from a clinical psychologist on the FCU (Dishion & Stormshak, 2007).

Additionally, the quality and impact of MPC developed interventions is enhanced by multidisciplinary interactions on our team and this is infused in the interventions, as they are evaluated, refined, and implemented in real world contexts with active involvement of the natural implementers and key stakeholders. For instance, the multidisciplinary nature of the day-to-day implementation of STARS intentionally spreads implementation tasks across school personnel (i.e., school counselor and classroom teachers). In addition, with the support of a computer programmer working with the project, techni-

Table 1
Top Problems Mean Scores From Initial Assessment to Week 4 Follow-Up

Time	TPA-1	TPA-2	TPA-3
At assessment, *M* (*n*) At follow-up	8.36 (245)	6.46 (222)	4.27 (183)
Week 1, *M* (*n*)	5.10 (197)	4.09 (182)	2.77 (162)
Week 2, *M* (*n*)	4.32 (186)	3.63 (172)	2.18 (141)
Week 3, *M* (*n*)	3.69 (167)	2.71 (151)	1.60 (131)
Week 4, *M* (*n*)	3.13 (160)	2.38 (146)	1.60 (126)
d from Assessment – Week 4, *M* (*SD*)	5.16 (3.83)	3.66 (4.06)	2.40 (2.40)
Paired *t* test, *df* (*p* value)*	159 (<.001)	145 (<.001)	124 (<.001)

Note. TPA = Top Problems Assessment; *d* = average change from TPA score at assessment to Week 4. Average score across Family Access Center of Excellence families from January 1 to December 31, 2017.
* Standard statistical test *p* value of .05 was adjusted to $p < .016$ using a Bonferroni correction to reduce the likelihood of detecting a significant finding in error.

cal developments have created easy-to-access data streams that facilitate communication about student performance between students, teachers, counselors, and others such as parents. For example, students are directly involved in STARS as an autonomy support where they develop classroom goals and monitor their own performance on that goal using a web-based application. Teachers not only electronically approve student goals using an app developed for this purpose, but they also rate student performance. Students are provided with the teacher feedback on a daily basis and also during weekly processing meetings with school counselors, who are responsible for directly training students.

Our research ideas and studies are all the product of multidisciplinary collaborations. Notably, these studies were all coauthored by teams of interdisciplinary scholars. School psychologists contributed to the innovative hypotheses regarding the influence of school contexts on youth symptoms, developmental psychologists shape ideas related to the timing and sequence of symptom patterns, clinical psychologists and psychiatrists influenced the teams' understanding of co-occurrence and symptom patterns in youth with serious mental health disorders, and collaborators with public health and prevention science backgrounds contextualized the findings and their broader preventive-intervention implications. Implementation fidelity tools were created by members of our team with training in school and clinical psychology and special education. The complex group randomized study designs and analyses were developed by members of our team with training in public health, prevention science, and advanced educational statistics and methodology.

Our partnerships with community members from diverse backgrounds and areas of expertise were also shaped by this multidisciplinary focus. Our social work colleague with knowledge of community resources and structures took lead on forging many of these initial connections across service sectors. The most effective strategies for building these partnerships include simply listening to others, distilling ongoing communication about needs and desired outcomes into actionable steps that reflect a scientific approach, encouraging leadership buy-in and involvement, and advocating for the need to set aside personal agendas in pursuit of a greater common goal. Not surprisingly, it takes much effort and persistence to create these connections among leaders in various service sectors, with the most productive conversations often taking place over coffee or lunch. In addition, community partners must also come to believe that multidisciplinary research teams are committed to assisting a community achieve higher goals. Researchers demonstrate their commitment through actions including by providing many hours of free training on topics requested by partners, genuinely listening to the needs of individual sectors and connecting these needs of that sector with expertise and services.

Lessons Learned and Future Directions

Impacting the population health of youth requires collaboration across many sectors and areas of specialization. Improving access to nurturing environments and high quality mental health supports is vital if we are to effectively reduce the population level prevalence and burden of youth mental health concerns. Our experiences have confirmed our belief that people will work together if a team clearly articulates its vision and mission in a way that empowers and inspires people to solve big world problems.

The Coalition and FACE are the culmination of the tireless work of members of MPC as well as many other community stakeholders over several years, including those who helped pass the tax funding initiative to support youth mental health and those who conceived of a program to help families and youth access high quality mental health care. As such, these programs hold the hopes and aspirations of an entire community for improving the social, emotional, and behavior health of all youth. Three years into their joint implementation, we now have two fully functional cross-sector implementation programs that provide a coordinated, transparent, and collaborative approach to improving access to quality social, emotional, and behavioral health services for all youth and their families in the county.

We built these programs with attention to the science base, some of it our own, regarding the challenges of impacting the population-level social, emotional, and behavioral health of youth. We now have initial evidence that our efforts are having the impact that our community hoped for when it invested in this effort. Schools are implementing sophisticated screening and intervention practices and youth are showing signs of improvement. Families are accessing FACE and, in turn, accessing available health and social services. Community providers are accessing trainings in EBPs that, in turn, increase their ability to provide the high quality care our youths and families need. Finally, families are also reporting significant improvement in the top problems that led them to seek care, suggesting that these efforts are making a difference for youth who come to FACE and seek other services in our community.

Much work remains toward building these programs into the world-class entities that we have envisioned, conducting rigorous studies of their effects, and sharing these models with other communities throughout the nation. Our multidisciplinary team of partners will certainly shape these evaluation and dissemination efforts and help ensure their success.

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