Strengthening Social-Emotional Learning in High Schools with Integrated Multi-Tiered Mindfulness Programming

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In partnership with the Education Policy Initiative at Carolina (EPIC), the Center for Health Promotion and Disease Prevention (HPDP) at the University of North Carolina at Chapel Hill (UNC-CH) is applying for the Early-Phase Education Innovation and Research grant program under **Absolute Priorities 1 (Demonstrates a Rationale)** and **4 (Field-Initiated Innovations Meeting Student Social, Emotional and Academic Needs***)* with designation as a rural applicant. With this funding, we will further refine, implement, and test the efficacy of a promising mindfulness-based social-emotional learning (SEL) program with an integrated multi-tiered implementation approach called **Multi-Tiered Be CALM (MTBC)** using a randomized controlled trial (RCT) meeting What Works Clearinghouse (WWC) criteria *without* reservations.

The Be CALM program was developed in rural North Carolina over the past 5 years to meet the social-emotional needs of *all* adolescents in rural contexts as they navigate academic and developmental challenges, including those associated with the pandemic's impact. This project focuses explicitly on addressing students' social-emotional needs that may interfere with college readiness including success in rigorous coursework and post-secondary education. We test the promise of Be CALM by targeting **Early College High Schools (ECHSs)**, a rapidly expanding, highly promising educational innovation designed to increase access to and completion of post-secondary education for those who have been traditionally underrepresented.[1]

A. <u>Significance and Need for Project</u>

A.1. Stress and Mental Health Needs in High Schools. Due to the pandemic, students currently entering high school experienced unprecedented stress and lost opportunities for developing social-emotional skills at a critical developmental period, which has ongoing impact on their health and well-being.[2–4] They continue to be exposed to societal stressors including gun violence, political conflict, and extreme climate events.[5–7] These cumulative stressors have

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contributed to a "public health crisis" in adolescent mental health,[8] reflecting alarming statistics: 44% of high school students reported persistent feelings of sadness or hopelessness during the past year and 20% seriously considered suicide.[9] These rates are even higher for students identifying as female and LGBTQ and reflect a 60% increase in suicides among Black males.[10]

Stress is exacerbated for high schoolers in accelerated academic programming, like dual enrollment in college classes, where elevated demands contribute to chronic fatigue and maladaptive coping.[11] One example of a dual-enrollment program where stress effects seem particularly likely is Early College High Schools (ECHSs), which serve students historically underrepresented in post-secondary education, including students of color and those from first-generation and low-income backgrounds.[1,12] Although ECHSs have demonstrated positive effects on postsecondary attainment, researchers have raised questions about potential challenges for these students, many of whom are also considered at-risk of dropping out.[1] Some students struggle to manage not only the higher-level coursework, but also the decreased accountability as well as social challenges related to being younger than other college students.[13,14]

This may lead to ECHS students feeling underprepared and overwhelmed, interfering with their academic success.[15] Moreover, students from disadvantaged backgrounds are more likely to experience adversity outside of school, further increasing risk for mental health difficulties.[16,17] Based on research linking stress and mental health difficulties to academic difficulties,[18–20] there is clearly cause for concern. Although we focus specifically on an ECHS population in this project, addressing unmet mental health needs for underserved high school students in advanced academic programming has broader equity implications related to longstanding disparities in higher education participation and employment wages for racially marginalized populations.[21]

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A.2. Gaps in Current Practices. Universal SEL interventions are a well-established approach for reducing emotional and behavioral difficulties and enhancing social-emotional skills within the K-12 context, as well as improving academic achievement and grades.[22–24] Moreover, youth who participate in SEL programs are less likely to have a diagnosed clinical mental health disorder and more likely to graduate high school and attend college.[25] However, research is needed to clarify if and how SEL programming can promote college readiness. In addition, mindfulness is considered a core component of SEL and may enhance outcomes, yet a recent review shows mindfulness was included in only 20% of SEL programs.[26]

Implementation of SEL programming in high schools is also lacking, with only 1/3rd of 2,000 educators reporting systematic implementation of evidence-based SEL programs.[27] Although many factors likely contribute to this gap, one potential reason is inadequate support for teachers who are themselves experiencing unprecedented rates of stress and burnout,[28,29] which interferes with their ability to effectively deliver SEL programming.[30] Indeed, only 23% of SEL programs specifically focus on teacher well-being and social-emotional competencies,[24] overlooking the value of teacher SEL competencies for creating supportive learning environments.[31]

Another reason that 88% of secondary school educators report that they are not adequately meeting the mental health needs of their students[32] may be that two-thirds focus only on universal or "Tier 1" supports such as classroom-based SEL instruction designed to *prevent* mental health concerns.[24] Students who are already struggling with such concerns will likely need Tier 2 *interventions* such as counseling groups or behavior check-ins,[33] yet there is a lack of mental health programs developed for the school context that address the relevant needs of students.[34,35] Even when schools offer Tier 2 interventions, they may not be integrated and coordinated with Tier 1 strategies, reducing their effectiveness.[36] A clear opportunity is for

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school counselors to assume a leadership and coordination role, which may help address this mental health gap and other issues impacting college readiness for marginalized youth.[37] Such an approach is recommended by the American School Counselor Association (ASCA), the national professional organization for school counselors, but is not common in practice.[38–40]

In sum, this project will advance understanding of how mindfulness-based SEL programs can promote college readiness in high school. It will also address knowledge gaps related to 1) evidence-based school counseling interventions, 2) strategies for strengthening high school educator well-being and SEL practices, and 3) multi-tier SEL/school mental health approaches.

A.3. Focus on NC Early College High Schools (ECHSs). Given our interest in the impact of SEL interventions on college readiness for historically marginalized students, we have chosen to test the MTBC intervention in ECHSs. ECHSs have rapidly expanded across the U.S. in the last two decades, with estimates that there are currently over 1,000 currently serving almost 200,000 students (J. Edmunds, personal communication, July 25, 2023). ECHSs are much smaller than traditional high schools and offer a variety of academic supports to students as they take community college classes. Although this is a unique context, it is ideal for this project in that we can clearly assess the connection between SEL and college readiness. Results should inform understanding of SEL supports needed for underrepresented students in advanced placement programs more generally, where similar mental health challenges have been noted.[11]

Needs in target population. Our target sample is considered underserved, defined as *students of color* and *first-generation students*. Based on more than a dozen ECHSs expressing interest in this project, more than 50% of students served are students of color, predominantly Black (26%) and Hispanic (16%). In NC, **only 15% of Black students and 18% of Hispanic students are considered college and career ready** compared to 41% of White students; graduation rates are

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83% Black, 80% Hispanic and 90% white, respectively.[41] Data on ECHSs within NC also show a large percentage of **first generation students (40%),[42] who are significantly less likely to obtain post-secondary degrees and certificates -** 48% vs. 67% of those whose parents have a college degree.[43] We are also focusing specifically on rural high schools, where there is greater poverty, fewer resources, and more barriers to college enrollment and persistence [44,45]

To further assess local need for mental health supports in ECHSs in NC, we spoke with principals, district and state administrators including the NC Department of Public Instruction's (NCDPI) Coordinator of Cooperative Innovative High Schools (CIHS) overseeing ECHSs. They all identified significant challenges in addressing increased mental health needs in this setting. One veteran principal said she had never seen such extreme behaviors in so many students (J. Sharpe, personal communication, July 12, 2023) and a rural SEL coordinator reported similar concerns (J. Kerr, personal communication, July 12, 2023). In the most recent ECHS state report, district staff described students as facing a range of adversity challenging their academic success including poverty, immigration, geographic isolation, and food insecurity.[46] In our survey of 9th graders in three NC ECHSs in 2021, **70% scored in the "abnormal" range indicating significant risk of a mental health disorder,**[47] with mean scores comparable to youth referred for psychiatric care during the same time period.[48] In addition, higher **stress predicted lower academic efficacy** ($B = -.30, p = .005$) **and grades** ($B = -.28, p = .006$) in this sample.

B. <u>Quality of Services</u>

B.1. Description of the Innovation. The MTBC program extends promising practices to an important outcome that has been overlooked in SEL programming – college readiness for underserved students. The four key approaches used are 1) mindfulness to promote SEL, 2) supporting teachers to support student SEL, 3) school counselors as SEL implementation leaders,

and 4) application of a systematic SEL framework to integrate prevention and intervention strategies and promote whole-school SEL. Evidence for each of these approaches as relevant to the MTBC program is as follows, with further details in our **Evidence Form.**

Mindfulness to Promote SEL. Be CALM is a mindfulness-based SEL program that addresses the five SEL competencies identified by CASEL (self-awareness, self-management, social awareness, responsible decision-making, and relationship skills).[49] It includes all CASEL recommended program components,[50] such as inclusion of youth voice, practices integrated into daily activities, delivery within supportive environments, and school-family partnerships which are highly relevant to adolescents in a high-demand academic setting. The Be CALM curriculum includes lessons organized into 4 modules addressing stress management and emotion regulation, self-awareness and perspective taking, and mindful communication and conflict resolution (see **Appendix J.1**). Lessons are flexibly designed to be delivered once per week for 45 minutes or twice per week for 20 minutes (12 full lessons), and have been successfully delivered during Advisory, social studies, and elective classes. The curriculum utilizes inclusive language, videos and scenarios representing the diverse race/ethnicity of our target sample, and reflecting the specific cultural context of rural communities. There are separate versions for different grade levels, supporting continuity and a whole-school SEL approach. A teacher manual for the Tier 1 curriculum, student workbooks, and posters have been developed.

In Be CALM, mindfulness practices promote students' self-awareness so they can act in ways that align with their goals and needs, manage strong emotions, and respond to stressors like taking their first college course more intentionally. Mindfulness also promotes self-acceptance and appreciation of others, which increases persistence in the face of challenges, supports a sense of well-being, and broadens perspective.[51] These processes build SEL skills from the "inside

out" ,[52] promoting neuro-biological changes that create lasting impact.[53,54] Mindfulness-based interventions (MBIs) have shown considerable feasibility and acceptability in schools and colleges in the past two decades.[55] Several meta-analyses show positive impact on K-12 students' emotional well-being (including decreased stress), self-regulation, and prosocial behavior,[56–58] with promising evidence of impact on academic motivation for college students.[59]

Supporting Teachers to Support Students. In the Be CALM program, professional development (PD) for teachers is foundational for enhancing school climate and ensuring the student curricula is delivered with fidelity. PD is designed to promote personal mindfulness, mindful teaching, and "co-regulation practices"[60] defined as: 1) Co-creating a safe, supportive and inclusive learning environment, 2) Building responsive relationships with all students, and 3) Teaching SEL with compassion and curiosity (i.e., inquiry-based methods) to promote student application of skills in their daily lives. This approach is culturally-responsive and trauma-informed, reflecting a Transformative SEL approach,[61] and is responsive to the needs of youth who have been exposed to significant adversity. Through PD activities, teachers learn to recognize cultural biases and utilize strategies that focus on student strengths. We will further promote equity within SEL teams by providing implementation support for CASEL's School-Family Partnership Guide[62] that provides guidelines for specific actions to build trust and partnerships and shift power dynamics. See **Table 1** for an overview of all PD activities.

PD activities include a combination of in-person and virtual training and consultation, leveraging current technologies while maintaining active learning methods including self-reflection, role plays, and video modeling that have been tested in our work with over 100 educators.[63] Research shows positive impact of teacher PD on teacher well-being and SEL competencies, and reducing distress.[64] Our use of mindfulness may also enhance educators' self-

awareness, empathy, and emotion regulation[65,66] and has shown positive effects on reducing implicit bias.[67] Training teachers in a parallel process that they will use with students further strengthens impact.[68] Mindfulness also increases teacher use of SEL practices with students.[69,70]

Table 1: MTBC Professional Development

Professional Learning Structure	Content/Activities	Participants	Duration	Delivery Method
Mindfulness self-study (web-based)	Introduction to mindfulness and enhancing self-awareness through reading, videos, self-reflection, and mindfulness practices	All school staff invited; required for counselors and teachers delivering curriculum	5 hours total over 4-6 weeks	Web-based self-study
Foundational Training Workshop provided by Program Developers	Attunement to student needs; strategies to cultivate relationships, approach students with compassion, and build culturally responsive school climate with active learning methods	All school staff	1 full day	In-person
Curriculum Training provided by Program Developers with follow up counselor coaching	Content and methods for core and supplemental Tier 1 student curricula (Program developers provide); Coaching support provided by school counselors	Teachers delivering curriculum	1/2 day workshop then school counselors meet with teachers 2x monthly for 30 minutes	In-person
School Counselor Training and Consultation provided by Program Developers	Delivery of Be CALM Tier 2 programming within small groups and/or individually for higher need students	School counselors	½ day workshop followed by 8 x 45-minute consultations	In person Training; Virtual consultation
Implementation Team Consultation provided by Be CALM Program Specialist	CASEL schoolwide SEL Framework; identifying students for Tier 2 support; implementation rubric, road map and action planning	SEL team, i.e., administrator, counselor, teachers	6 x 45-minute meetings with SEL team leads	Virtual

School Counselors as SEL Implementation Leaders: The MTBC project will build upon our team's prior work engaging school counselors to both deliver curricula and support teachers. School counselors will be involved in 1) facilitating a series of trainings (4 x 30 minutes) with faculty including mindfulness practices and brief skills activities that all teachers can use with students, 2) providing coaching support to teachers delivering the curriculum, 3) providing

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individual and/or group counseling to Tier 2 students using Be CALM materials, and 4) participating on the school SEL team. They will receive ongoing consultation support from the Be CALM Program Specialist and a UNC School Counseling faculty member.

ASCA[38] provides national guidelines for school counselors to take leadership in planning, implementing, and coordinating SEL programs. This role also aligns with school counseling leadership theory and has been defined in the context of Multi-Tiered Systems of Support or MTSS.[71] Studies show that when school counselors consult with teachers, there are benefits for both students and teachers,[72,73] including increases in teachers' mindful awareness and decreased personal stress and conflict with students.[74] Programs delivered to students by counselors are also effective, although additional rigorous research is needed.[75] Most relevant to this proposal, a few studies have demonstrated that interventions delivered by school counselors can improve students' behavior, sense of school connectedness, and achievement.[76–78]

Systematic SEL Framework. In order to support schoolwide SEL and integration of Tier 1 and Tier 2 Be CALM programming, each school will create (or adapt) an SEL team that meets monthly, with support from the Be CALM Specialist. The team will include an administrator, counselor, and at least one teacher. Their work will be guided by CASEL's Systematic SEL Framework, which specifies the following practices: 1) Build foundational support and plan program delivery, 2) Strengthen adult SEL capacities through shared learning and collaboration activities, 3) Promote student SEL across classrooms, and 4) Practice continuous improvement using data (provided by the project evaluation team) to inform decision-making. The meeting agenda will be directed by CASEL's SEL Planning Guide, which includes tools like an Implementation Rubric, Road Map, and Action Plan that will be adapted for MTBC.

This SEL Framework is based on 25 years of action research conducted by CASEL's Collaborating District and States Initiatives[79,80] and is well-aligned with a comprehensive, evidence-based school counseling approach[81,82] and current implementation science.[83,84] Although experimental research is limited, there is some evidence that whole-school SEL may be more effective than targeted mental health prevention programs alone and that multi-tiered approaches may yield the strongest effects.[85,86]

Preliminary Be CALM work. Pilot work with the Be CALM program over the past 6 years demonstrates its feasibility and promise for both teachers and students. The program has been delivered by more than 30 middle and high school teachers and counselors to over 2,600 students in 6 rural NC school districts. We have also trained more than 100 educators including ECHS teachers, administrators and counselors. In a small pre-post evaluation at three ECHSs, students (*n* =95) reported significant change over a 5-month time period in emotion regulation, conflict resolution, and academic efficacy.[87] In addition, there was **evidence of greater benefit for students of color (predominantly Black and Hispanic) and females**, populations evidencing some of the greatest mental health needs. Teachers also demonstrated more mindful teaching practices over time with coaching support.[68]

B.2. Project Importance and Impact. This project contributes to understanding of SEL programming for disadvantaged high schoolers that extends beyond the ECHS context. **Dual-enrollment programs (that include ECHSs) are currently offered in 88% of U.S. high schools**,[88,89] but have typically been less accessible to and utilized by historically marginalized learners. Although ECHSs have the potential to address this opportunity gap and reduce longstanding inequities in employment and economic outcomes,[90] this potential may not be realized without adequate attention to student mental health needs. This project will not only

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evaluate the effectiveness of MTBC in a context designed to promote post-secondary education with specific structures and supports (i.e., ECHSs), but will identify implementation factors necessary for program success so that we can scale it to traditional high schools in the future.

In terms of impact in NC, we estimate that at least 4800 high schoolers across the state will benefit from the MTBC Program (based on an average enrollment of 200 students per school x 24 schools), which is the maximum we determined possible within project constraints given the rural context of this work. Approximately 240 educators will receive evidence-based SEL training that we expect will increase their capacity to support students' college readiness. Potential for sustainability through local capacity building is seen in two school districts that are entering their 3rd year of Tier 1 program delivery without grant funding. Impact of this project is enhanced by the large network of ECHSs in NC (considered a national leader) and planned collaboration with other interested, affected, and relevant groups including academic and non-academic partners. These include: 1) NCDPI's CIHS network supporting all 120 ECHSs in the state, 2) the Early College Network (ECN) at Research Triangle Institute which offers a community of practice to ECHSs, and 3) the Early College Research Center at the UNC Greensboro Serve Center (whose Director is a project consultant). MTBC also aligns with NC legislature aiming to increase the number of residents with post-secondary education, an effort supported by NCDPI's Office of Innovation and cross-sector organizations like Future NC and UNC's ncImpact Initiative which engages civic leaders across the state to advance related innovations.

B.3. Dissemination. Consistent with our team's strong publication record, we will disseminate findings in a variety of ways to support replication and use of effective strategies identified. To advance knowledge in the field, we will present at several state and/or national

professional conferences focused on post-secondary education, school counseling, and SEL programming and submit at least one peer-reviewed publication. For practitioners, we plan to create at least two briefs and present findings to state education leaders with the CIHS Network, School Counseling, and the Office of Innovation's Career and College Readiness team. We will also make products and findings available on our program website (www.becalmprogram.com).

C. Quality of the Project Design

C.1. Conceptual Framework. As seen in our Logic Model (**Appendix G**), the MTBC Program is designed to promote both teacher and student SEL competencies that will enhance students' college readiness, defined as academic behaviors (e.g., class participation and assignment completion), self-determination, and life skills like self-advocacy.[91] We start with our team's expertise and existing Be CALM implementation tools that we will adapt for the current project. We focus on rural ECHSs, where there is high interest in SEL, demonstrated feasibility for curriculum delivery, and academic support structures (**Inputs**). UNC Implementation staff will provide: 1) extensive PD to teachers and school counselors, and 2) implementation support to school SEL teams (**Activities**). These activities should build capacity for SEL in both teachers and counselors who are then able to provide Tier 1 and Tier 2 supports utilizing Be CALM curricula and resources and create schoolwide SEL supports (**Outputs**). With increased SEL capacity, we should see evidence of increased teacher well-being and SEL competencies including attunement and cultural responsivity, which should strengthen their relationships with students and build safe, supportive learning environments (**Mediators**). This should enhance teachers' abilities to deliver the Be CALM curriculum with fidelity (**School/Staff Outcomes**). As students feel validated and increased belonging at school, they may enhance their academic behaviors and self-determination. As they learn mindfulness and other SEL skills, they can better

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manage stress and navigate academic and other challenges (**Student Outcomes**). For students who need additional support, counselors will provide Tier 2 Be CALM interventions.

C.2. Implementation. During the first 18 months of the project (*Phase 1*), we will pilot the program in 4 schools who have committed to participate (see **Appendix H**) and refine our implementation model, measures, and tools (see **Goal 1.1**). To maximize opportunity for iteration, 2 schools will start 6 months before the next 2 schools. We will also pilot ways to enhance use of remote learning technologies for PD to retain efficacy while maximizing costs and establish CQI processes.

For *Phase 2* (Years 2-4), we will recruit 20 schools across two cohorts with assistance from NCDPI's Director of CIHS and the Early College Research Center, with whom we have already identified more than 12 interested schools. We are confident we can recruit our full sample given our team's history of successful recruitment (over 30 NC middle or high schools for RCTs in the last 6 years), which includes completion of a MOU to ensure understanding of program delivery requirements and documents commitment. The Implementation Team will provide training and consultation to intervention schools and to wait-list (WL) schools in the second year of their participation, making further iteration in delivery and implementation based upon lessons learned through CQI activities.

During *Phase 3* (last 18 months), impact analyses will be conducted and we will prepare dissemination products and engage in activities to prepare for scaling including obtaining input on findings from traditional high schools. See **Appendix J.2** for Project Timeline/Milestones.

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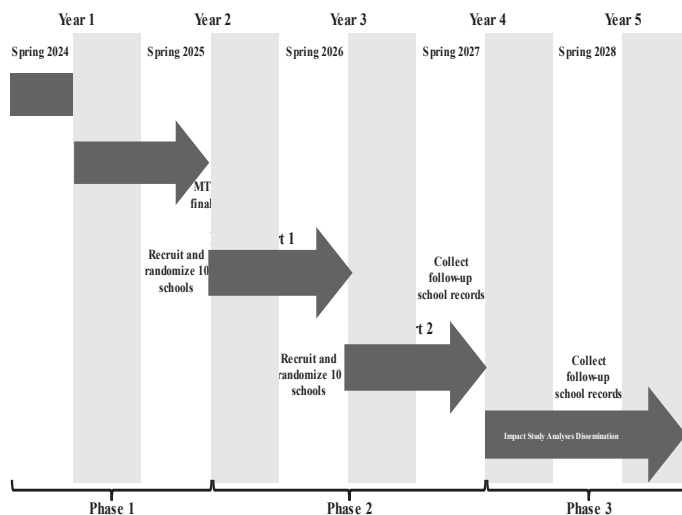
C.3. Goals and Objectives. Table 2 demonstrates the specific goals, objectives and outcomes for this project, with potential measures with which to evaluate our performance and the intervention's implementation and impact on both teachers and students.

Table 2: Project Goals, Objectives, and Outcomes	
Goal 1. Further develop, refine, and implement core components of the MTBC Program (Phase 1 and 2; **Activities** in Logic Model)	
Objectives	Outcomes (*Sample Measures*)
1.1 Develop materials to support multi-tiered implementation of Be CALM and revise based on piloting	By summer 2025 prior to RCT (*measured by finalized products*): • Tier 2 Counseling resources • Counselor Coaching protocol • Adaptation of Schoolwide SEL materials to MTBC • Student progress monitoring tools
1.2 Provide PD with enhanced remote technologies: (Foundational, Curriculum, and Counselor) and SEL implementation support	For 20 schools in RCT (*measured by project implementation records*): • At least 10 ECHS staff per school will participate in Foundation training • At least 3 teachers per school will participate in Curriculum training • At least one school mental health staff (i.e., counselor) per school will participate in Counselor training • School staff will participate in virtual SEL implementation consultation (target at least 6 meetings per school)
1.3 Engage in iterative CQI processes to support successful program implementation	• Develop/revise implementation measures (*Counselor and SEL Team Tracking Logs*) • At least 4 times per year, CQI data will be summarized and shared with school-based SEL teams (*Implementation records*) • At least annually, actionable implementation data will be shared with other relevant groups and feedback obtained (*Implementation records*)
Goal 2. ECHS staff implement the MTBC program with fidelity (Phases 1 and 2; **Outputs** in Logic Model)	
2.1 Build school counselor capacity to support schoolwide MTBC	• At 80% of schools, at least one student support staff (school counselor) will obtain certification as a Be CALM coach (*Certification Checklist*) • At 80% of schools, counselors will facilitate at least 4 whole-school mindfulness practices and meet with teachers delivering skills activities at least twice monthly (*Counselor Log*) • At 80% of school counselors will provide individual or group counseling to Tier 2 students using Be CALM materials (*Counselor Log*)
2.2 Build teacher capacity for mindful teaching and delivering the Tier 1 student curriculum with fidelity	• 80% teachers delivering curricula will complete self-study mindfulness training (*record review*) • 80% of teachers participating in Foundation Training will report .20 SD increase in their application of mindfulness (*Mindfulness in Teaching*) • Teachers delivering curricula will provide at least 80% of core skills instruction and activities to their classes (*Lesson Checklists*)
2.3 Build and/or strengthen implementation supports for schoolwide SEL according to CASEL guidelines	• 90% of SEL teams will convene at least 6 monthly meetings in accordance with CASEL guidelines (*record review*) • 90% of SEL teams will develop a Be CALM implementation rubric, road map, and action plan aligned with CASEL guidelines (*record review*)

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	90% of schools, core components of schoolwide SEL will be implemented (*CASEL Schoolwide SEL Implementation Tool*)
Goal 3. Demonstrate the effectiveness of MTBC for enhancing teacher well-being, SEL competencies and school climate in intervention vs. comparison schools (**Teacher/School Outcomes** in Logic Model)	
3.1 Teachers will experience enhanced well-being	• Teachers who participate in Foundational trainings will improve well-being by .20 SD units relative to comparison teachers (*Maslach Burnout Scale for Educators, Resilience Scale*)
3.2 Teachers will increase SEL competencies	• Teachers who participate in Foundational trainings will improve SEL skills and competencies by .20 SD units relative to comparison teachers (*Teacher Social and Emotional Competencies, Part B*) • Teachers delivering the curriculum will increase use of mindful teaching practices by 20% from baseline (*Mindful Teaching Checklist*)
3.3 Students will experience more positive school climate	• Students in intervention schools will report .20 SD units greater increase in relationships with their teachers, peer connectedness, and an equitable learning environment (*Panorama Student Survey Teacher-Student Relationship, Diversity and Inclusion, Sense of Belonging*)
Goal 4. Demonstrate effectiveness of MTBC for promoting student SEL competencies, and college readiness over time in intervention schools relative to comparison schools (**Student Outcomes** in Logic Model**)**	
4.1 Students will increase emotional well-being and SEL competencies	• Students in intervention schools will improve at least .20 SD relative to comparison students on measures of well-being, stress, and resilience relative to students (*Warwick Mental Wellbeing, Perceived Stress Scale*) • Students in intervention schools will improve at least .20 SD more in SEL competencies than students in comparison schools (*Difficulties in Emotion Regulation Scale; Social-Emotional Learning Scale*) • Students in intervention schools will decrease risk for mental health disorders by at least .20 SD more than students in comparison schools (*Strengths and Difficulties Questionnaire*)
4.2 Students will increase college and career readiness	• Students in intervention schools will have .10 SD higher grades and fewer absences than comparison students (administrative records) • Students in intervention schools will increase college readiness (i.e., academic behaviors and self-determination) by at least .10 SD more than comparison students (*College Readiness self-report scales; Perception of College Readiness instructor rating*)
Goal 5. Prepare for scaling the MTBC program into traditional high schools to support college readiness among underserved students in academic advancement programs	
5.1 Identify anticipated challenges and facilitators to implement MTBC in traditional high schools	• Elicit feedback on findings from traditional high school principals and counselors (*Y/N*) • Elicit feedback on findings from interested, affected and relevant groups, including those supporting dual-enrollment programs (*Y/N*)
5.2 Disseminate findings at state and national level	• Create and disseminate at least two practitioner briefs *(# briefs)* • Present findings at 3 or more state and/or national academic and practitioner conferences *(# presentations*)

D. **Quality of Project Personnel**

As seen in **Table 3** and detailed in **Appendix B**, this project brings together a highly-

qualified interdisciplinary team with complementary expertise from HPDP's Implementation

Team (program developers/mental health clinicians, education faculty, early colleges, school-based RCTs) and the EPIC Evaluation Team (education policy, mixed method evaluations).

Table 3. Training, Experience, and Responsibilities of Key Personnel	
Implementation Team	
████████████ PhD, Principal Investigator and Project Director	Senior Research Scientist and Associate Research Professor; co-developed Be CALM; 25 years of experience developing and implementing SEL interventions in schools; PI on numerous RCTs; management of 14 million grant dollars *Responsibilities:* Provide project oversight including budget management and reporting; co-lead CQI activities lead school recruitment and engagement; co-lead program PD activities; oversee adaptation of program materials
████████ PhD, Co-Director	Associate Professor in School Counseling in the School of Education; research on marginalized students and school-family-community partnerships *Responsibilities*: Inform program adaptations to ensure equity lens and support community engagement; Co-lead PD activities with counselors; advise on school implementation activities
█████████ PhD., Early College Advisor	Director, Early College Research Center, UNC Greensboro. *Responsibilities*: Provide guidance on ECHS context to assist in designing and problem-solving implementation challenges; support dissemination activities
█████████ PhD; Program Manager	Post-doctoral Research Associate with experience developing youth programs for minoritized youth and project management. *Responsibilities*: Lead teacher and student recruitment, coordinate program delivery in schools, oversee implementation data collection, supervise RA
███████████████ MSW Mindfulness Advisor	Be CALM Program Director; Clinical social worker with mindfulness expertise and 15+ years of experience training/coaching teachers in SEL programs. *Responsibilities*: Contribute mindfulness expertise to program design and delivery; supervise Be CALM Program Specialist; rate counselor videos
Other Staff	Research Assistant (1.0 FTE); Be CALM Program Specialist (.75+ FTE) with at least 10 years of experience in mindfulness and SEL implementation in schools
EPIC Evaluation Team	
████████ PhD, Co-Director	Director, EPIC Program Evaluation. Mixed methods public health and education policy researcher with 20+ years of experience leading multi-million dollar federal and state-level program evaluations *Responsibilities*: Oversee evaluation including CQI activities; lead qualitative analysis; supervise qualitative team; prepare final evaluation report
███████ PhD, Quantitative Advisor	Research Associate Professor with 10+ years of quantitative research in education policy including projects on Early College outcomes *Responsibilities*: Provide expertise in advanced quantitative methods
████████ MSW, PhD., Quantitative Analyst	Post-doctoral Research Associate with 6 years of experience in public policy conducting evaluations of educational and social service programs *Responsibilities:* Primary statistician for impact evaluation; oversee the data manager and collection of administrative school data
Other Staff	Data Manager, Qualitative Research Assistant, Qualitative Research Specialist, Research Coordinator (.50+FTE Total)

D.1. Recruitment of Underrepresented Staff. Our Implementation Team includes two

Black scholars with lived experience in rural schools in the southeast. Using resources to

promote diversity in alignment with HPDP and EPIC Strategic Plans, we will recruit additional

project staff (including the Be CALM Program Specialist) using diversity recruitment resources,

which includes paid advertising in listservs and virtual postings that target underrepresented

groups such as Historically Black Colleges and Universities (5 of which are within one hour of

our Center), the National Latina/o Psychological Association (NLPA) and IMDiversity. With

guidance from ██ █████ we will create job descriptions and develop interview questions that

prioritize lived experience and diverse perspectives, especially those represented in our schools.

E. Adequacy of Resources

      UNC-CH is the leading public research university in NC, ranking fifth nationally with

more than 1.15 billion dollars in extramural research funding annually. **HPDP** is a CDC-funded

research center established 30+ years ago with over 100 staff and affiliated faculty who translate

research into programs and practices that promote health and well-being for underserved

communities. Research infrastructure includes 1) Grant and financial management including an

assigned budget analyst who provides monthly project reports, 2) Information Technology

support and data security technologies 3) Communications specialists to support a variety of

dissemination activities and products. The **School of Education** (where ██ █████ is core

faculty and ██ █████ and █████ are affiliated) is ranked in the top 15% nationally and the

School Counseling program (accredited by the Council for Accreditation of Counseling and

approved by NCDPI) trains 24 students per year, many of whom go on to work in NC schools.

For almost 20 years, **EPIC** has led research and evaluation projects examining programs to

improve educator quality and student achievement. EPIC houses longitudinal datasets that

include variables on every student, teacher, school, and school district in NC and has well-

established relationships with K-12 schools, NC DPI, the NC Board of Education, and post-

secondary institutions across the state. EPIC includes 15 faculty, research scientists and staff with expertise in quantitative and qualitative evaluation methods and training backgrounds in education, public policy, and public health.

F. Quality of the Management Plan

This project brings together administratively separate groups at UNC-Chapel Hill that will work together collaboratively with a clear management structure according to the organizational structure in **Appendix J.3**. The Implementation Team led by ▮▮ ▮▮▮ will be responsible for 1) recruiting schools and participants, 2) adapting intervention resources, 3) providing Be CALM PD and implementation support, and 4) overall grant management including ensuring objectives are completed on time and within budget. Bimonthly implementation meetings will ensure detailed work plans are executed and that program delivery occurs as planned. The **EPIC Team** led by ▮▮ ▮▮▮ will meet at least monthly to ensure coding, analysis, and report preparation are completed as planned. A **Project Leadership Team** (▮▮▮ ▮▮▮ ▮▮▮ and ▮▮▮ will meet every two weeks to ensure implementation and evaluation tasks are coordinated and to monitor project objectives. Together, they have committed **over 1.0 FTE** for this purpose. At least once per month, additional implementation staff (▮▮▮ ▮▮ ▮▮▮▮ the Be CALM Program Specialist) will join these meeting to engage in CQI processes and activities described below. Beyond CQI, ▮▮ ▮▮▮ will manage day-to-day project activities including tracking implementation data and activities. The Implementation Team will not participate directly in any evaluation activities (randomization, analysis, or interpretation) and will not have access to impact data.

G. Quality of the Project Evaluation

The EPIC Evaluation Team will utilize a mixed methods approach integrating qualitative and quantitative data for performance feedback and monitoring and to understand how well the program is implemented, how it impacts teachers and students, and how it might be scaled. In addition to CQI processes, these data will address specific research questions defined in Implementation and Impact studies. Impact questions will be addressed with rigorous evaluation using a cluster RCT designed to meet WWC Evidence Standards *without* reservation. **Appendix J.4** presents a crosswalk of our evaluation questions, measures, and data sources.

Data collection. As noted, implementation data will be collected from control schools during their WL year. Impact data will be collected in both groups on a similar schedule. All survey and log data will be collected using Qualtrics and other secure web-based platforms and tracked in real time to ensure records are complete and accurate. Student surveys will be administered remotely by research staff during non-core instructional class time using a protocol we have used successfully in prior studies.[87] All data will be collected in accordance with IRB and FERPA guidelines to ensure participant privacy and maintain data integrity, and will be maintained on UNC-managed servers that are not accessible to the Implementation Team.

G.1. Performance Feedback and Monitoring. EPIC will utilize a structured CQI process to monitor project performance and provide feedback to the Implementation team and school partners, supporting high quality products and services. Throughout program delivery, they will review, analyze, and synthesize performance metrics that will be reviewed monthly in project Leadership meetings to inform program decision-making on a timely basis. CQI data will include implementation records completed by the Be CALM Specialist, tracking logs completed by school staff, SEL team records, and teacher lesson checklists. In addition, feedback obtained through interviews and focus groups with school staff at the end of each school year will provide

additional insight into challenges and opportunities for improvement. During the pilot year, this process will assist in our revision of implementation tools and measures and will ensure that there are clear roles and responsibilities for ongoing fidelity monitoring and reporting.

CQI activities will include: a) identifying and prioritizing implementation challenges from the data; b) creating actionable and measurable strategies for improvement; and c) creating a follow-up plan for continued progress monitoring. In particular, this process will help identify the extent to which the MTBC program is being implemented as intended and assist us in developing and utilizing improvement strategies through SMART (Specific, Measurable, Achievable, Relevant, and Time-bound) goals and Plan-Do-Study-Act cycles.[92] In addition, EPIC will create quarterly implementation data reports that will be shared with school SEL team teams to support their own CQI processes. The Be CALM Specialist will work with any teams where implementation fidelity is low to support improvement with CQI strategies. Finally, EPIC will create an annual implementation report that will be shared with partner schools and families/communities as well as relevant education groups at the state level.

G.2. Implementation Evaluation. Our implementation evaluation assesses the Activities and Outputs of our logic model and addresses specific implementation research questions (see **Table 4**) that allow us to identify the extent to which key MTBC components are implemented and for whom and under what conditions it may have greatest impact. Given that these questions cannot be addressed in schools assigned to WL control during the RCT, we will collect implementation data from those schools during the following year. This doubles our sample size for these critical questions and greatly expands our learning from this project.

Table 4. Implementation Evaluation Questions
Impl. Q1. To what extent do teachers and school counselors deliver Be CALM programming with fidelity?
Impl. Q2. To what extent are schoolwide SEL supports implemented as intended?
Impl. Q3. What thresholds of fidelity are indicated for each program element and for the integration of elements within MTBC?

Impl. Q4. How do program perceptions and experiences differ for students and teachers who demonstrate the most and least benefit?
Impl. Q5. What implementation and contextual factors are associated with program impact?

Impl.Q1 will assess teacher and counselor fidelity (both dosage and quality) in delivering Tier 1 and Tier 2 Be CALM programming based on 1) lessons teachers facilitate with students (*lesson checklists*), 2) the quality with which teachers interact with students (*Mindful Teaching checklist*) completed by counselors based on observing teachers, 3) the number and duration of coaching meetings counselors hold with teachers delivering the program (*Coaching Logs*), and 4) the expertise that counselors demonstrate in the program (*Certification Checklist* completed by program developers). As seen in **Appendix J6,** several of these measures were developed in prior work and will be adapted; others will be developed in this project (e.g., Coaching Logs).**Impl.Q2** will assess schoolwide SEL supports based on: 1) percent of core SEL components present based on average school staff survey responses to the *SchoolWide SEL Implementation Tool*,[93] 2) implementation documents created by each school's SEL team (e.g., road map, action plan) and rated by EPIC as low, adequate or ideal, and 3) number of SEL team meetings held at each school (*SEL team records*). The first indicator will also be collected in control schools to define "business as usual.

Impl.Q3 involves defining levels of fidelity (no, low, adequate, and ideal) within each MTBC program element (e.g., # of Tier 1 student lessons and Tier 2 counseling meetings, average school rating of CASEL SEL supports). Specific criteria for each fidelity indicator will be created by the CQI team, informed by a conceptual framework for SEL implementation[23] and piloted to ensure that EPIC can rate them reliably. These separate indicators will be combined to create an overall *Implementation Index* guided by specific steps outlined and validated in a recent IES-funded high school intervention study.[94]

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Impl.Q4 will help identify who the program may be beneficial for using a Sequential Explanatory Mixed Method approach.[95] EPIC will interview students and teachers who demonstrate the most and least benefit based upon change scores on the *College Readiness Scale* and *Mindfulness in Teaching* scale ($n = 20$ to 24 each in highest and lowest quartile). Interviews will be transcribed and coded in Dedoose utilizing the Framework Method.[96] Initial transcripts will be used to achieve conceptual convergence of codes that will be applied to the remaining transcripts. Two team members (blind to high/low status of transcripts) will independently code 20% of the transcripts to calculate interrater reliability.[97] Codes will be synthesized into themes based on patterns in the data. The percentage of students/teachers in each group demonstrating each theme will be compared and tested for significant differences using Chi-square.[98]

Impl.Q5 will identify other factors important to implementation and context that are not otherwise captured in quantitative data which are critical to scaling the MTBC program beyond ECHSs. EPIC will conduct focus groups with SEL team members at each school at the end of the RCT school year and at one year follow up (for RCT intervention schools). Initial codes will be developed based upon hypotheses regarding implementation generated through the CQI process, with additional open coding to capture any emergent topics. Coders will be blind to randomization status. Quantitative data (implementation index, student/teacher change scores) will be examined in relation to these themes using joint display matrices to facilitate synthesis.[99]

G.3. Impact Evaluation. During Phase 2**,** EPIC will match and randomize two cohorts of 10 schools each into intervention and WL control groups. This sample draws from multiple school districts and eligible measures in alignment with WWC standards.[100] Because we will pilot and refine our intervention in Phase 1, we do not anticipate differences in the intervention between the two RCT cohorts but will test for this with sensitivity analyses. Randomization will

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be conducted independently by EPIC, who will first match schools on student demographics, attendance and grades obtained from NCDPI administrative data. They will examine differences in teacher and student outcomes in change over time (pre to post) between intervention and control schools. Although our WL design precludes analysis of controlled differences at follow up (e.g., both groups will have received the intervention), these data will help generate insight regarding sustainability of academic effects of great importance to stakeholders.

The Impact Evaluation addresses project Goals 3 and 4 with specific research questions (**Table 5**). **Impact Q1-2** will be assessed with teacher self-report measures validated for this purpose as well as by school counselor rating of teachers. For **Impact Q3**, we will utilize student-report measures reflecting school climate. Student self-report data for **Impact Qs 4-5** will be collected in a similar manner. For our key outcome of college readiness, we will also obtain ratings from both high school and college instructors. Student administrative data on grades and attendance before, during, and 1 year after the RCT will be obtained through EPIC's data sharing agreement with NCDPI.

Table 5. Teacher/School Impact Evaluation Questions
Impact Q1. What is the impact of MTBC on teacher well-being?
Impact Q2. What is the impact of MTBC on teacher SEL competencies?
Impact Q3. What is the impact of MTBC on school climate?
Student Impact Evaluation Questions
Impact Q4. What is the impact of MTBC on student well-being and social emotional competencies?
Impact Q5. What is the impact of MTBC on college readiness do these maintain at 1 year?
Impact Q6. To what extent are student outcomes associated with changes in teacher practices?
Impact Q7. To what extent does impact vary by student characteristics?

Sample size and power. We expect to recruit 10 teachers in each of the 20 randomized schools (200 total) to address Impact Q's 1-3. The analytic sample for Impact Q's 4-7 is estimated at 75 consented students per school (1500total). Using standard assumptions for a 3-level cluster RCT shown in **Appendix J.5**, a power calculation conducted in Power Up![101] with an alpha level of .05 and power of 0.8 yields a minimum detectable effect size (MDES) of 0.201.

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Based on prior research for MBIs, we expect effect sizes on social emotion outcomes and college readiness indicators in the range of .24-.32, more than adequate power. For teacher level outcomes, our MDES for a 2-level cluster RCT is .463, more than adequate power to detect MBI effects found on teacher well-being and SEL behaviors (.5-.75).[102]

Risk of Bias is minimized with an independent evaluator and pre-registration. Differential attrition of schools by condition is possible given our WL design; however, we are working with ECHS organizations that support school participation and plan to provide data reports to WL schools as an incentive to WL schools. Individual student-level attrition is expected to be low given dropout rates of less than 1% in our target schools. In our prior work in ECHS schools, nonresponse rates (i.e., failure to complete post-surveys) were low (5-6%). If differential attrition between treatment and control groups occurs, we will again consider weights. If missing student data are significant, multiple imputation will be conducted,[103] separately imputing data from treatment and comparison groups.[100] Students are not able to join ECHSs after the beginning of the year, so this will not be an additional source of bias.

Analytic Approach. EPIC will examine the baseline equivalence of the intervention and control groups on demographics and pre-test measures, separately for each analytic group. If significant differences are found, statistical adjustment with weights or covariates will be conducted. Psychometric analyses will examine reliability of key outcome measures in our sample. For outcomes with multiple measures (e.g., social-emotional competencies, college readiness), factor analytic methods will be considered to create composites. If not indicated, we will consider the false discovery rate[104] to reduce risk of a Type 2 error. Otherwise, statistical significance will be assessed at alpha<.05 level with a two-tailed test and effect sizes generated.

Teacher outcomes (**Impact Q1-2**) will be analyzed in a two-level hierarchical linear model (HLM) with teachers nested within schools. Student-level outcome analyses (**Impact Q3-5**) will use a three-level HLM with students (Level 1) clustered within teachers delivering curricula (Level 2) clustered within schools (Level 3). If intraclass correlations (ICCs) reflecting classroom-level variation are low ($\leq.05$), which is possible given our whole-school intervention, we will consider a more parsimonious 2 level model (student within school) model.[105] All models will include baseline scores as covariates (i.e., pre-test scores and grades/attendance from prior year).[106] Other variables such as gender and grade that cannot be influenced by group status will be included as covariates if correlated with post-test scores. To address **Impact Q6**, we will conduct mediation analyses with multilevel structural equation modeling[107,108] to evaluate whether changes in teacher SEL competencies lead to improved student outcomes, specifically college readiness. For **Impact Q7,** we will prioritize student subgroups of greatest interest (i.e., students of color, those receiving free/reduced lunch, and first-generation students) given power limitations. We will utilize HLM identical to that described above with additional interaction terms to explore potential differences in impact.

G.4. Potential for Future Scaling. If the MTBC intervention proves effective, this project will provide tools, resources, and guidelines for replication, implementation and scaling into traditional high schools, with particular application to underserved students in academic acceleration programs. We will also have systems and structures in place to scale for a Mid-Tier EIR project, leveraging collaborations with relevant education groups engaged in this project. ███████ Be CALM team already contracts with school districts across NC to provide training and implementation support for the Tier 1 Be CALM program, and we can expand capacity by training School Counseling graduate students in collaboration with ██ ████

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