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Prevention Science
Official Journal of the Society for Prevention Research

ISSN 1389-4986

Prev Sci
DOI 10.1007/s11121-020-01144-0

Springer

Prevention Science
https://doi.org/10.1007/s11121-020-01144-0

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Abstract

We know little about why school administrators choose to adopt preventive mental health interventions within the context of school-based prevention trials. This study used a qualitative multiple-case study design to identify factors that influenced the adoption of a trauma-informed universal intervention by urban public school administrators during an efficacy trial. Semi-structured interviews were conducted with 15 school administrators who adopted a trauma-informed mindfulness intervention called RAP (Relax, be Aware, and do a Personal Rating) Club as part of their participation in a school-based trial with eighth graders. Findings indicated that administrators adopted RAP Club to provide support for students affected by trauma and prevent students from engaging in unhealthy coping behaviors. Examples of contextual factors that contributed to adoption included a lack of trauma-informed mental health programs within schools, inadequate district funding for preventive school mental health services, and the perceived benefits of engaging in a university-community partnership. The study's findings suggest strategies to increase school program adoption in the context of research and, more broadly, for implementation science.

Keywords Program adoption · Trauma · Urban schools · Mental health intervention · Adolescents

Public schools are the main provider of mental health services for youth in the United States (U.S.). Public schools play a key role in increasing access to these services for children of color and children from low-income families, who are less likely to have access to mental health services and are also at greater risk of trauma exposure than children who are White and/or from higher-income families (Cummings et al. 2010; Eiraldi et al. 2015; Larson et al. 2017; Slopen et al. 2016). A growing literature indicates that school-based mental health interventions can prevent and reduce emotional and behavioral problems for youth (e.g., Fazel et al. 2014; Murphy et al. 2017).

Few of these interventions, however, have been successfully adopted or implemented in schools serving low-income children (Eiraldi et al. 2015). Limited knowledge exists regarding which factors lead schools to adopt such preventive interventions (Domitrovich et al. 2008; Eiraldi et al. 2015; Vona et al. 2018); this knowledge could improve strategies for promoting school adoption. Furthermore, implementation science experts have urged intervention developers to consider future implementation in the refinement and testing of interventions during efficacy and effectiveness trials (Lane-Fall et al. 2019). It is important to consider adoption in the context of intervention trials, as this is an important step on the pathway toward increasing the likelihood of wider program adoption. Additionally, such findings can inform implementation strategies to promote adoption within subsequent research trials.

Adoption, also referred to as uptake, is the intention or initial decision to try, or action of trying an innovation, i.e., new program, service, policy, or evidence-based practice (EBP) (Proctor et al. 2011). Adoption is often conceptualized as the first stage of a longer process of incorporating an intervention into practice that is followed by implementation and

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Published online: 24 July 2020

maintenance. Diverse factors have been identified as relevant to adoption of innovations; however, most work in this area has been focused on program adoption within healthcare settings (Allen et al. 2017; Wisdom et al. 2014; Greenhalgh et al. 2004; Panzano and Roth 2006). Regarding the school context, Domitrovich et al. (2008) developed a conceptual model based on social-ecological frameworks (Atkins et al. 1998; Bronfenbrenner 1979), which depicts factors that may directly or indirectly affect the implementation of school-based preventive interventions. The authors posited that contextual factors may have more or less importance depending on the stage of implementation (i.e., adoption, implementation, maintenance).

The model identifies *macro-level factors*—the broadest of the social-ecological levels—that may influence school adoption of innovations, including federal, state, and district policies, university-community partnerships, and human capital (e.g., availability of qualified individuals to implement programs) (Domitrovich et al. 2008). The model also highlights *school organizational factors*, such as mission/policy alignment, administrative leadership, resources, and school culture and climate. Finally, the model depicts *individual factors* of school leadership and other personnel who may be involved in program implementation, including professional characteristics (e.g., education), psychological characteristics (e.g., stress), and perceptions of the intervention (e.g., acceptability).

This study utilized the model by Domitrovich et al. (2008) to inform exploration of school-based adoption in the context of schools' participation in preventive intervention research. Using a descriptive multiple-case study design (Yin 2003), the study aimed to identify factors that influenced the adoption of a trauma-informed universal prevention program (RAP (Relax, be Aware, and do a Personal Rating) Club) in 20 urban public schools. These schools elected to participate for 1 year each in a randomized controlled trial (RCT) of RAP Club's efficacy, which involved delivery of RAP Club and an active control program (health education) to participating eighth graders. Informed by Domitrovich and colleagues' multilevel model (Domitrovich et al. 2008), this study identified macro-, school-, and individual-level factors that influenced school administrators' decision to deliver the RAP Club intervention within the context of the RCT testing RAP Club's efficacy. Study findings are intended to inform future adoption and implementation of school-based preventative mental health interventions in the context of research and, ultimately, more broadly by public school administrators.

Methods

Study Context

This study was conducted in the Baltimore City Public Schools (BCPS) district in Maryland, where student characteristics and outcomes suggest school-based mental health approaches could be beneficial. Baltimore City has a population of approximately 620,000 (63% Black/African American; 30% White; 5% Hispanic/Latinx; 2% Asian) (U.S. Census Bureau 2017). BCPS serves approximately 80,000 students from pre-Kindergarten through 12th grade. Most students (79%) are Black/African American, 11% are Hispanic/Latinx, and 8% are White (Baltimore City Public Schools 2019). Compared with the U.S. overall, Baltimore City has higher poverty rates (14.6% vs. 22.4%) and lower median income ($57,652 vs. $46,641) (U.S. Census 2017). Approximately 53% of BCPS students are estimated to be from low-income families based on eligibility for public assistance programs (e.g., Supplemental Nutrition Assistance Program). However, this figure likely underestimates low-income status because BCPS does not collect applications for free and reduced meals (FARMS); FARMS are provided for all students. In 2017–2018, fewer than one-in-five fifth-grade students were proficient in either English language arts or math, one-quarter of elementary and middle school students were chronically absent, and students were more likely to experience a suspension or expulsion from school relative to the state-level student average (5.1% vs. 4.5%) (Maryland State Department of Education 2019).

Intervention

The RAP (Relax, be Aware, and do a Personal Rating) Club intervention was adapted for low-income urban upper middle school students from Structured Psychotherapy for Adolescents Responding to Chronic Stress (SPARCS; DeRosa et al. 2006; DeRosa and Pelcovitz 2009), one of the top three treatment programs disseminated through the National Child Traumatic Stress Network. RAP Club is a universal trauma-informed prevention program for eighth graders with core components that include mindfulness, cognitive behavioral therapy skills, and psychoeducation about the effects of stress and trauma, all of which are evidence-based strategies for mental health (Shepardson et al. 2016). Pilot research indicated RAP Club improved academic and social competence, emotion regulation, and classroom behavior, as compared with regular school programming (Mendelson et al. 2015).

When school administrators were approached by the research team during school recruitment for the efficacy trial, they were told that the purpose of the trial was to assess academic, emotional, and behavioral benefits of a preventive mental health intervention as compared with a health education program (Healthy Topics) and that eighth-grade students would be randomized to participate in one of the two 12-session programs, both of which would be offered during the fall. Administrators then decided whether or not to participate in the RCT. Thus, a school's enrollment in the research trial involved adopting RAP Club as part of study

participation. Administrators were essentially encouraged to "try out" the program within the RCT context; the study built the capacity of school personnel to deliver the intervention following the study should the school want to continue offering it.

RAP Club was delivered during school hours to participating eighth-grade students at each school in twelve 45-min group sessions twice per week over 6 weeks during the efficacy trial. A trained study team member facilitator and a community member co-facilitator (e.g., a local resident or graduate student) delivered each group session; the study team contained several such facilitators and co-facilitators. At each participating school, the principal selected one or two staff members (a school mental health clinician or a teacher) to receive RAP Club training and participate in intervention delivery and supervision in order to build school personnel capacity and thus promote program sustainability beyond the RCT. These school personnel in training received payment for their time. Administrators also provided space for program delivery and scheduled time during the school day for delivery of RAP Club and Healthy Topics such that students did not miss core academic classes. To ensure comparability across study arms, Healthy Topics was matched to RAP Club on session frequency, number, and duration and was delivered by a trained research staff member and community member pair from the research team. Students were randomized within schools to receive either RAP Club or Healthy Topics. (For additional details about the trial's design and rationale, please see Mendelson et al. 2020).

Participants

Twenty schools implemented RAP Club in 8th grade across the first 3 years of the efficacy trial: cohort 1 (2016–2017; n = 6 schools), cohort 2 (2017–2018; n = 7 schools), and cohort 3 (2018–2019; n = 7 schools). The largest participating school had a student body of 719 and the smallest school had 197 students; the average school size was 443. Four of the 20 schools were charter schools. Principals of schools that adopted RAP Club were invited to participate in the current adoption study via email, phone, and in-person. Those who agreed participated in an interview about factors that influenced their initial adoption of the intervention. Interviews were conducted within 1–2 years of initial program adoption. When principals were not available, another knowledgeable administrator, such as the vice principal or interim principal, was invited to participate. Up to 11 attempts were made to reach these key informants during recruitment.

Instruments and Procedures

A semi-structured interview guide for cohort 1 principals was developed by the study team and later expanded by the first author for principals of schools in cohorts 2 and 3. The expanded interview guide retained all the questions from the original guide and included additional questions and probes to gain deeper insight into contextual factors that could have influenced program adoption, based on the multi-level framework developed by Domitrovich et al. (2008). In addition to sharing the reasons why they decided to partner with the research team to deliver RAP Club, principals were also asked about the specific factors that influenced their decision to adopt the intervention. To examine individual-level factors, principals were asked about their perceptions and attitudes toward the intervention and how their professional experiences influenced their adoption decision (e.g., How did your professional background and experiences influence your decision to allow the RAP Club Program to be delivered in your school?). School-level questions addressed administrative leadership, mission/policy alignment (e.g., Based on what you know about RAP Club, how do you think it fits with your school's overall values and priorities?), decision structure, resources (e.g., student support team, programs to support students social and emotional development and mental health), personnel expertise (e.g., availability of school mental health personnel), and school climate (e.g., safety, engagement). To examine the macro-level, questions addressed policies and financing, university-community partnerships, and leadership and human capital (e.g., Describe any partnerships that your school has with local community mental health organizations). Participants provided oral consent and received $15 for their participation.

Data Analysis

Data were analyzed using Yin's 5-phase approach to qualitative data analysis (Yin 2011). Interviews were audio recorded and then transcribed by a professional transcription company; transcripts were coded using Atlas.ti (Hwang 2008). Using line-by-line coding, an initial set of codes were first developed from the data after reading through five transcripts. The first author and one of the co-authors refined the initial list of codes by removing duplicative codes and organizing codes into categories and sub-categories. The revised codebook was applied by the first author to the initial and remaining transcripts. Decisions were made to re-read and recode transcripts throughout the analytic process as additional interviews were completed and when new codes were added.

Coding concluded when all relevant data were assigned a code (Glaser and Strauss 1967; Denzin 1989). Matrices of the key codes and associated quotations were created and organized by the school and cohort. Using an iterative process, the constant comparative method was used to identify patterns in the data (Glaser and Strauss 1967). Emerging themes were color coded and clustered into substantive categories based on the conceptual framework developed by Domitrovich et al.

(2008) (Bowen 2009; Yin 2011). Consistent with a multiple-case study design (which seeks to understand and analyze data within and across cases), similarities, differences, and general patterns were identified within and across schools (Yin 2003). Recurring concepts among participating administrators were elevated to the level of a theme. Outlying or deviant/negative concepts (e.g., mentioned by 1–3 principals) were also reported. Memo writing and debriefing among authors were used to develop and confirm emerging themes and to capture reflexivity in the analytic process (Merriam 1998; Creswell 2007; Baxter and Jack 2008).

Results

Sample

Semi-structured interviews were conducted with 15 administrators (13 principals, 1 interim principal, and 1 vice principal) from 14 of the 20 participating RCT schools. An additional principal declined a formal interview but provided an email with reasons for program adoption, which we included in analyses ($n = 15$ schools; 75% participation rate). The remaining 5 principals (25%) did not complete an interview or provide reasons for program adoption. Two of these 5 principals did not respond to recruitment attempts, one had left the school district, and the remaining two did not complete an interview due to scheduling conflicts. Interviews were conducted in person at the schools ($n = 8$) or by phone when preferred by participants ($n = 6$). The average interview length was 30–45 min. One in-person interview was conducted jointly with the principal and vice principal, as requested by the principal. Descriptive information about the sample is displayed in Table 1. No substantive differences in reasons for adoption were found across schools or cohorts; thus, results are grouped below based on individual-, school-, and macro-level factors (Table 2).

Individual-Level Factors

The primary individual-level factors that influenced adoption were as follows: (a) professional characteristics (e.g., principals' education and training, professional experience as an administrator in the district) and (b) perceptions of the intervention (e.g., positive attitudes, perceived benefits of RAP Club). Themes are described below.

Professional Characteristics Administrators frequently connected their decision to adopt RAP Club with their background and professional experiences. For example, some principals mentioned that prior training in the importance of meeting the social-emotional needs of students influenced their decision to adopt RAP Club.

> My master's program in teaching was… really deeply rooted in the mind, body, and spirit of the child and so always attending to the whole child in that way. And

Table 1 Background characteristics from $n = 15$ school administrators

School	Sex	Role	School configuration	Management type	School size*	Cohort
1	F	Principal	Pre-K–8th	Traditional	605	1, $n = 5$
2	F	Principal	Pre-K–8th	Traditional	749	
3	M	Principal	Pre-K–8th	Traditional	347	
4	F	Principal	Pre-K–8th	Traditional	470	
5	M	Interim principal	Pre-K–8th	Traditional	452	
6	F	Principal	6th–8th	Charter	347	2, $n = 4$**
7	F	Principal	K–8th	Traditional	415	
8	F	Principal	K–8th	Charter	719	
	M	Vice Principal				
9	F	Principal	K–8th	Charter	236	3
10	F	Principal	Pre-K–8th	Traditional	488	n = 6
11	M	Principal	Pre-K–8th	Traditional	439	
12	F	Principal	K–8th	Charter	197	
13	F	Principal	Pre-K–8th	Traditional	479	
14	M	Principal	Pre-K–8th	Traditional	263	

*School size is enrollment count at the time of adoption

**One principal from cohort 2 is not included in this table since she was not formally interviewed but provided responses via email that are included in the analysis

Table 2 Summary of factors that influenced adoption of RAP Club

Domains from conceptual framework	Key themes from data
Individual-level factors	
Professional characteristics	• Educational background in social-emotional learning, conflict resolution, and/or meeting the needs of the whole child • Professional experiences working in the field of education
Perceptions of and attitudes about the intervention	• Acceptability of intervention • Intervention may help address student needs • Intervention fills gaps in current school programming • Mental health education and promotion • Prevention of unhealthy behaviors • Provision of social and emotional skills • Perceived long-term positive impact of intervention on students
School-level factors	
Administrative leadership	• Administrators' commitment to using innovative programs and practices to support their students' mental health
Decision structure	• Decision to adopt made by solely by the principal • Decision to adopt made by principals and other school staff
Mission/policy alignment	• RAP Club aligned with the school's mission and/or priorities
Personnel expertise	• Shortage of school mental health personnel • Lack of staff with expertise in the prevention of mental health issues
Macro-level factors	
Policies and Financing	Policies • Intervention aligned with the school district's policies and priorities for promoting student wholeness Financing • Inadequate district funding for preventive mental health programs • Funding was provided to implement RAP Club
Leadership and human capital	• RAP Club provided additional support for students beyond school-based programs sponsored by community mental health agencies • Lack of access to mental health services in the broader community
University-community partnerships	• RAP Club connected with a reputable university • Previous positive experiences working with universities

> then in my doctoral program… I took a number of classes in conflict resolution… So naturally that's what I'm about. And so, I think that brought me there. (principal, school 9)

Administrators also shared how their extensive experience working in the BCPS district influenced their decision to adopt RAP Club. A few highlighted the needs of BCPS students related to trauma exposure.

> This is my 20th year in education, so I know what children need. I have a lot of experience dealing with Baltimore City students, urban students, and the different traumas that they go through, so it's always good to have something in place ahead of the problems that can occur. (principal, school 7)

Intervention Perceptions and Attitudes Every administrator expressed positive attitudes toward RAP Club. Common themes across schools included the potential of the intervention to address unmet student needs and fill gaps in school programming. Most administrators mentioned psychoeducation about stress and trauma and training in healthy coping skills as key program strengths.

Almost all administrators highlighted that their students witness and experience multiple forms of trauma in their home, school, and/or neighborhood, including parent death, incarceration, and substance use disorders; domestic and community violence and crime; fighting or bullying at school; poverty; food insecurity; and housing instability and homelessness. Several administrators reported that RAP Club could help students better cope with these life stressors.

> There are a lot of specific needs that our students have, and they need to be well informed to be able to make healthy choices down the road and for the future…. It goes from very, very basics of food choice and health to

> drugs, to how to talk [about] things, coping skills to deal with the trauma that a lot of them have to live with each day. There are a lot of things that our students need, and many of them need all of the above… [RAP Club] provides support for the students and gives them a coping mechanism and strategies that they can implement into their daily lives. (principal, school 4)

Many administrators noted limitations in the capacity of their current programming to address these student needs. They perceived RAP Club as a potential way to address these gaps and provide students with additional support.

> I needed something to help children deal with issues. As you know, it takes a village to raise a child and just felt like I didn't have enough things in place here at the school to help support children dealing with issues and things like that. (principal, school 3)

While only a couple administrators mentioned that RAP Club could provide a safe space for students to address trauma in a group setting with peers who might face similar situations, those who did emphasized the value of this unanticipated benefit. Some expressed that RAP Club may benefit students who had not been identified by school staff as needing help.

> I sort of look at [RAP Club] like another net that might catch a few students up in it and meet the needs that they have…there could be students who are going under the radar that we don't even know are struggling with stresses around them, because there're some that wear it on their sleeve and there are some that hide it under their cloth…So maybe it would meet the needs of some of those students that we're not even really aware of or haven't really tapped into. (principal, school 12)

Skill-building was described by many administrators as an appealing aspect of RAP Club, including training in communication and problem-solving. Several administrators noted they adopted the program to improve positive decision-making and prevent student involvement in antisocial behaviors (e.g., violence, crime) and unhealthy coping mechanisms (e.g., drugs).

> [RAP Club] was an opportunity to address some of the topics and concerns that we have for our outgoing eighth graders... We want to utilize every possible tool or program we can think of that's going to increase our chances of saving a young life…That's where the motivation and that's where the intention comes…to give our young people a fighting chance to save their lives. (interim principal, school 5)

A few administrators highlighted that RAP Club could provide students with stress management skills that would prepare them for high school and beyond.

> It's a proactive approach to seeing if we gave our eighth-grade students a mental health toolbox. If they had this toolbox of resources and strategies that they could use to exhibit healthy lifestyle practices, would this toolbox help change the outcomes and dynamics for them as they leave, go to high school and become adults…? (principal, school 14)

School-Level Factors

School-level factors that emerged as key to program adoption were as follows: (a) administrative leadership (e.g., principal's commitment to supporting students' mental health), (b) decision structure (e.g., top-down vs. collaborative decision-making process), (c) mission/policy alignment (e.g., alignment of RAP Club with school mission), and (d) personnel expertise (e.g., shortage of school mental health personnel).

Administrative Leadership Principals in all schools made the final decision to participate in the parent RCT and adopt the RAP Club intervention. Most administrators interviewed for this study expressed a commitment to using innovative programs and practices to support students' mental health. Several administrators illustrated this commitment by mentioning resources and programs relevant to mental health that are delivered in their school such as social and emotional development programs, yoga, and a student support team.

Decision Structure Administrators reported two different approaches to deciding on RCT participation and program adoption. At a couple of schools, the principal *first* decided to adopt RAP Club and then discussed the decision with staff members who would be involved. At other schools, the principal discussed program adoption with staff *before* making the decision to adopt the program. Overall, principals mentioned including some or all of the following staff in the decision-making process: other administrators (e.g., vice principal, director of culture and climate), school mental health providers, and/or middle school teachers.

Mission/Policy Alignment A few administrators mentioned that their decision to adopt RAP Club was influenced by alignment with their school's mission, for instance by addressing challenges that impact learning and providing supportive programs to promote academic achievement. One principal noted: "[RAP Club] fits in perfectly…How do we help them with the trauma; how do we help them cope—If the child can't cope, they're not going to learn, so we have to address all of

their needs. So, it fit in perfectly" (principal, school 7). A few administrators noted that RAP Club aligned with their school's current priorities of addressing trauma, promoting mental health, and fostering healthy relationships within the school.

Personnel Expertise Almost all administrators mentioned a shortage of school mental health personnel and an absence of prevention programming. BCPS funds at least one psychologist, social worker, and/or guidance counselor per school, but the number of staff members and time commitment of staff vary across schools based on how many students at the school have special needs. While schools generally had a full-time guidance counselor, psychologists and social workers were most often in part-time positions with heavy caseloads and limited capacity to address student needs. A few principals elevated their social worker's position to full-time. However, the role of school mental health personnel is usually to provide counseling or other types of mental health treatment; *prevention* of behavioral health disorders is generally not a priority. Thus, there was interest in prevention programming more broadly that school personnel (either mental health personnel or other school staff) could be trained to implement.

> These are skills we're wanting to build with the young people. And with the focus of wanting to develop these skills ourselves but not necessarily having all of the skills ourselves to teach it, a program like this is super helpful to help jump-start us as well. (principal, school 9)

Macro-Level Factors

At the macro-level, the following emerged as key factors influencing program adoption: (a) policies and financing (e.g., district's child wholeness policies, funding for intervention), (b) leadership and human capital (e.g., partnerships with local community mental health agencies), and (c) university-community partnerships (e.g., benefits of partnering with universities to deliver school-based mental health interventions).

Policies Almost all the administrators mentioned that addressing trauma and promoting mental health are current BCPS priorities as articulated in BCPS' Blueprint for Success (also referred to as the Blueprint; Baltimore City Public Schools 2017). BCPS's previous mental health efforts were focused on special education students. The four administrators of charter schools did not report participation in BCPS professional development activities; however, they mentioned being aware of the district's priorities relevant to mental health. As one non-charter school administrator noted:

> It's a big push this year. It was last year, also, with the Blueprint…So, at every meeting I go to, a portion of the meeting is focused on social/emotional health and what are you doing, giving us ideas. So, since [district CEO] has been with us, we are focusing on it more. We weren't doing it at all in the past. (principal, school 7)

The Blueprint's student wholeness policies encourage schools to provide social and emotional development programs; three of the four charter school administrators said they were already implementing such programs before adopting RAP Club.

Financing Principals must decide whether funds from the school budget should be allocated to extend the hours worked by school mental health personnel and/or to bring in external mental health programs.

> Principals have a lot of autonomy to budget their schools. There are certain guidance documents that go along with how you staff and budget your school. So, within that guidance document, principals and teams should provide mental health or things that promote student wholeness…It still depends on the funding that you have in order to do that...That costs the school. It is not a free service. (principal, school 13)

Programs that are beneficial to students and free to schools were reported as the optimal choice for principals with tight budgets. Many administrators mentioned adopting RAP Club because it was both free and potentially helpful to students, as noted below:

> Well, the fact that I didn't have to pay for it, one. Finances are tight, and that was a bonus because I'm always looking for something to help them out, period…. So, I would say I just want everything I can get for my kids because they have a lot of issues. Not having to worry about that financial burden was a big help. (principal, school 7)

A few administrators mentioned that stipends provided by the research team to school staff who were trained to deliver RAP Club were also helpful: "Well, one thing is that the teachers who chose to participate are compensated. That's really helpful because especially being a small charter school teachers do way beyond what teachers in larger schools do… they wear many, many hats..." (principal, school 9).

Leadership and Human Capital Several administrators discussed establishing partnerships with local community mental health agencies to provide school mental health

programming (e.g., counseling, mindfulness programs) as a result of the shortage of school mental health clinicians.

> If you're asking how much does the district provide to me, I have a mental health clinician a day a week. Uno. One day. Seven hours…Uno person, seven hours. If you ask me do my families have access to mental health services outside of what's provided by the district, yes. Because we go out and develop all of these partnerships. (principal, school 14)

Interestingly, only one administrator mentioned lack of access to mental health services in the community:

> I think probably 85% of the things we experience within city schools that we will say are harmful… go back to the lack of access to mental healthcare in the minority community and the stigmas attached to it. (principal, school 14)

Our data suggest that administrators' willingness to adopt RAP Club may be shaped in part by their experiences in establishing external partnerships to increase their capacity to offer school programming. Actions to leverage human capital in the community to increase students' access to mental health services in schools is how the majority of administrators in this study described doing business.

University-Community Partnerships Some administrators indicated they decided to adopt RAP Club because they had a prior positive experience working with the university partner. Some wanted to partner with the research team because the university has a reputation for rigorous research, as highlighted below:

> I think the research makes a difference, or the quality of the program makes a difference. I'm not going to just partner with anyone. Knowing that Hopkins… is going to be research-based, is going to have some theory behind it, that helps me make some decisions on… who I partner with. I'm not going to just partner with anyone and… we all know Hopkins. (principal, school 13)

Several administrators said that they value working with universities to deliver programs like RAP Club that are part of an academic research study because of increased access to additional resources (e.g., program materials, financial incentives, staff), high level of expertise of university partners, and the opportunity to introduce students to research studies. They also mentioned the benefits of engaging external facilitators—including the young adult community members who served as co-facilitators in this RCT—to work with students, rather than school personnel.

Discussion

This study extends the prevention and implementation science literature by examining individual-, school-, and macro-level factors that influenced school administrators in a large urban school district to adopt a trauma-informed universal mental health intervention as part of participation in a RCT. Our data suggest that factors at each level were relevant for program adoption.

At the individual level, positive perception of the intervention as a potentially useful way to address student stress and trauma exposure was the most commonly cited factor influencing RAP Club adoption. This finding is consistent with previous studies describing the importance of program acceptability and the association between acceptability and adoption across a broad range of settings (Domitrovich et al. 2008; Wisdom et al. 2014; Sekhon et al. 2017). For example, Wisdom et al. (2014) found that attitudes/motivation regarding innovations was mentioned in at least half of the 20 theoretical frameworks they reviewed and identified as relevant to adoption. Prior research suggests the perception that an intervention may both be useful for addressing a local problem and better than the current practice is associated with adoption (Ringwalt et al. 2003; Domitrovich et al. 2008; Wisdom et al. 2014).

At the school level, administrative leadership, decision structure, and personnel expertise influenced program adoption. By adopting RAP Club, administrators demonstrated a commitment to using an innovative program to support students' mental health, a characteristic of strong administrative leadership per Domitrovich and colleagues' framework. Researchers have noted that school administrators can help transform schools into settings that are dedicated to using innovative programs and practices (Domitrovich et al. 2008). Administrators make the final decision to adopt interventions, allocate time for program implementation, and identify staff to implement program activities. Over 10 previous studies have shown positive associations between leadership variables (e.g., CEO influence, managerial support for innovation, prior adoption experience) and adoption (Wisdom et al. 2014).

Several types of decision structures led to program adoption in this study. Most principals described a relatively democratic process in which they discussed program adoption with other school personnel before making a final decision. However, in a few schools, the principal used a top-down leadership approach by not consulting staff about program adoption. While top-down leadership has been negatively associated with adoption (Backer et al. 1986; Wisdom et al.

2014), in our study, the top-down approach may have worked because the intervention was deemed as acceptable to principals who had the power to make the adoption decision. In the context of schools, a top-down approach could lead to a successful adoption because the principal is often recognized and accepted as the primary decision-maker who has the power to accept or decline their school's participation in programs. Regardless of the decision-making structure that exists in a given school, it is important for researchers to gain buy-in and support for interventions that are part of research studies from principals *and* school staff to optimize program implementation. The extent to which program adoption, implementation, and sustainability may differ based on schools' decision structures is a valuable question for future research.

Regarding personnel expertise, the lack of expertise in schools about trauma-informed approaches and the shortage of school mental health personnel were cited by participating school administrators as influential in the decision to adopt RAP Club. This is consistent with prior literature that highlights the shortage of mental health staff in under-resourced schools as an incentive to adopting mental health interventions (Eiraldi et al. 2015). Additionally, one principal mentioned lack of access to mental health services and associated stigma as problems faced by people of color in the broader community. Preventive mental health interventions that are delivered in schools with high populations of students of color have the potential to increase access to mental health services and reduce stigma. Preventive interventions and evidence-based practices for mental health that are appropriate and feasible should be promoted to under-resourced schools to reduce disparities in access to mental health services.

The primary macro-level factors that influenced program adoption were policies, financing, and university-community partnerships. Most administrators explained that RAP Club was aligned with the BCPS's priorities of addressing trauma and providing school mental health programs. Consistent with their comments, the BCPS Blueprint proposes a set of guidelines to promote young people's educational and career success (BCPS 2017). Professional development activities highlighting trauma and mental health may have enhanced administrators' knowledge of the connections between mental health promotion and academic success, potentially facilitating administrator willingness to adopt RAP Club.

Although BCPS does not generally provide broad funding for preventive mental health programs, the Blueprint encourages principals to offer such programs by allocating their budget funds or partnering with a university or community agency. Several administrators noted free programming to address stress and trauma among students was one of the main reasons why they chose to participate in the RCT. This aligns with prior work showing innovations are more likely to be adopted if they have a clear cost advantage over current strategies (Damanpour and Schneider 2006, 2009; Frambach and Schillewaert 2002; Graham and Logan 2004; Wisdom et al. 2014). University-community partnership (i.e., participation in RCT) was another macro-level factor that influenced program adoption. Many administrators mentioned trusting the partner university due to its expertise, reputation for rigorous research, and/or previous positive collaborations with BCPS.

Implementation science experts have urged intervention developers to design for implementation (Lane-Fall et al. 2019), which means preparing for future broader and longer-term school implementation by measuring implementation outcomes and identifying potential implementation barriers and facilitators during efficacy testing. Thus, it is important to consider adoption within the context of an RCT to increase the likelihood of program adoption in future effectiveness, hybrid effectiveness-implementation, and implementation studies. Findings can be used to design and test implementation strategies to promote adoption within these future research study contexts and may also have implications for promoting adoption more broadly outside the research context.

School administrators in this study pointed out that principals are often approached by universities, agencies, and organizations to deliver various programs within and outside of the research context. Some of them expressed that they often prefer adopting programs within the context of a research study because of the benefits that come with participating in a research study, including additional staff in the form of external facilitators, funding and resources (e.g., stipends, supplies), and expertise of partners. To bridge the research-to-practice gap, it is important for academic researchers to seek partnerships with schools to increase uptake of school mental health innovations (Domitrovich et al. 2008) and to advocate for the types of implementation supports that participants in this study identified as incentives to participate.

Limitations

Data for this study were gathered from administrators at schools participating in an efficacy trial. Of the 20 schools that adopted RAP Club during the first 3 years of the trial, we were unable to conduct formal interviews with six principals (although one of them provided some data via email). Most non-adopters did not reply; however, some non-adopters ($n = 6$) replied to the Program Coordinator with reasons why they decided not to participate in the trial including competing programs or interventions (e.g., some schools already agreed to participate in a prevention program and did not want to take on additional programming); staffing issues (e.g., not enough staff); lack of fit (e.g., one school declined because the program does not offer support for students with special needs); and a small population of students served during RCT (i.e., one school declined because all 8th graders would not receive the intervention during the trial). Future research should obtain more detailed perspectives from

administrators who declined RCT participation to better compare schools that adopted the intervention with those that did not. Similarly, it would be important to examine whether the same reasons for adoption that were identified in this study emerge outside of the research context.

Another potential limitation is that administrators from cohorts 2 and 3 were interviewed using an expanded semi-structured interview guided by the Domitrovich et al. (2008) conceptual framework. Although all questions from the original guide were preserved in the expanded guide, cohort 1 administrators were not asked the additional questions in the expanded guide. Additionally, administrators in cohorts 1 and 2 were interviewed after RAP Club was delivered (post-implementation), while most interviews with cohort 3 administrators were conducted before RAP Club started (pre-implementation) or during delivery. Ideally, interviews about adoption should occur during the pre-implementation phase to mitigate the potential for recall bias. Last, positive bias in reporting from principals to the interviewers could have occurred because the interviewers were members of the research team conducting the RAP Club trial. However, research members who interviewed principals were selected on the basis of having had had little to no contact with principals prior to the interviews.

Conclusion

Study findings indicate individual-, school-, and macro-level factors each influenced administrators' decisions to adopt a trauma-informed school mental health intervention within the context of a school-based prevention trial. Identifying factors associated with adoption has the potential to shape the development of strategies to increase the uptake of school mental health innovations (Fixsen et al. 2005; Wisdom et al. 2014). Prevention scientists seeking to improve program adoption—both in the context of research trials and more generally—should become familiar with school- and district-level policies and priorities, maximize program alignment with these policies, and clearly highlight this synergy to key stakeholders. Provision of free or low-cost programs and supports (e.g., training, ongoing consultation) are likely to facilitate adoption, as well as strategically proposing interventions that fill gaps in available expertise or programming. Partnering with schools whose leadership has been educated about the importance of addressing youth social-emotional needs and emphasizing the positive impact that mental health interventions could have on students' academic outcomes are also strategies that may enhance the likelihood of adoption. State and local education policymakers can also promote program adoption. For instance, BCPS district leadership appears to have facilitated the adoption of mental health innovations by highlighting the whole child supports as a priority in the BCPS Blueprint. District provision of resources could also potentially boost adoption, for example, through disseminating a resource guide of EBPs and university and community partners who could assist with implementation of the EBPs.

For school mental health interventions being delivered through a multi-year efficacy trial, researchers should assess factors that influenced program adoption during the first project year to refine recruitment strategies and increase adoption in future years. More broadly, the field of implementation science should systematically evaluate the effects of modifying the selection of partner organizations and communication strategies with potential partners based on relevant individual-, school-, and macro-level factors to examine variations in program adoption. Ultimately, it is important to increase the adoption of preventive school mental health interventions in under-resourced schools to reduce racial/ethnic disparities in access to mental health promotion and maximize students' academic and mental health outcomes.

Acknowledgments We would like to thank the school administrators in Baltimore City who participated in this study, and the school staff, families, and students who participated in the Project POWER Trial. We appreciate your support!

Funding Information This study was funded by the National Institute of Mental Health (grant numbers T32 MH109436 02, Barry; T32 MH109433, Mandell), the National Institute of Child Health and Human Development (grant number 1R01HD090022, Mendelson), and the Institute of Education Sciences (grant number R305A160082, Mendelson).

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee (Johns Hopkins Bloomberg School of Public Health Institutional Review Board, protocol #00007165) and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors.

Informed Consent Informed consent was obtained from all individual participants included in the study.

References

Allen, J. D., Towne, S. D., Maxwell, A. E., DiMartino, L., Leyva, B., Bowen, D. J., Linnan, L., & Weiner, B. J. (2017). Measures of organizational characteristics associated with adoption and/or implementation of innovations: A systematic review. *BMC Health Services Research, 17*, 591.

Atkins, M. S., McKay, M. M., Arvanitis, P., London, L., Madison, S., Costigan, C., et al. (1998). An ecological model for school-based mental health services for urban low-income aggressive children.

The Journal of Behavioral Health Services & Research, 25(1), 64–75. https://doi.org/10.1007/BF02287501

Backer, T. E., Liberman, R. P., & Kuehnel, T. G. (1986). Dissemination and adoption of innovative psychosocial interventions. *Journal of Consulting and Clinical Psychology, 54*, 111–118.

Baltimore City Public Schools. (2017). Building a generation: City schools' blueprint for success. **Resource document**. https://www.baltimorecityschools.org/sites/default/files/2019-01/Blueprint-complete.pdf. Accessed 28 November 2018.

Baltimore City Public Schools. (2019). District overview: City schools at a glance. https://www.baltimorecityschools.org/district-overview. Accessed 1 September 2019.

Baxter, P., & Jack, S. (2008). Qualitative case study methodology: Study design and implementation for novice researchers. *The Qualitative Report, 13*, 544–559.

Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal, 9*, 27–40.

Bronfenbrenner, U. (1979). *Ecology of human development: Experiments by nature and design*. Cambridge: Harvard University Press.

Creswell, J. W. (2007). Standards of validation and evaluation. In Qualitative inquiry and research design: Choosing among five approaches (pp. 201–222). Thousand Oaks: Sage.

Cummings, J. R., Ponce, N. A., & Mays, V. M. (2010). Comparing racial/ethnic differences in mental health service use among high-need subpopulations across clinical and school-based settings. *The Journal of Adolescent Health: Official Publication of the Society for Adolescent Medicine, 46*, 603–606.

Damanpour, F., & Schneider, M. (2006). Phases of the adoption of innovation in organizations: Effects of environment, organization and top managers. *British Journal of Management, 17*, 215–236.

Damanpour, F., & Schneider, M. (2009). Characteristics of innovation and innovation adoption in public organizations: Assessing the role of managers. *Journal of Public Administration Research and Theory, 19*, 495–522.

Denzin, N. K. (1989). *The research act: A theoretical introduction to sociological methods* (3rd ed.). Englewood Cliffs: Prentice Hall.

DeRosa, R., & Pelcovitz, D. (2009). Group treatment for traumatized adolescents. In D. Brom, R. Pat-Horenczyk, & J. D. Ford (Eds.), *Treating traumatized children: Risk, resilience, and recovery* (pp. 225–239). New York: Routledge.

DeRosa, R., Habib, M., Pelcovitz, D., Rathus, J., Sonnenkler, J., Ford, J., et al. (2006). *Structured psychotherapy for adolescents responding to chronic stress (SPARCS): A trauma-focused guide*. Manhasset: North Shore University Hospital.

Domitrovich, C. E., Bradshaw, C. P., Poduska, J. M., Hoagwood, K., Buckley, J. A., Olin, S., et al. (2008). Maximizing the implementation quality of evidence-based preventive interventions in schools: A conceptual framework. *Advances in School Mental Health Promotion, 1*, 6–28.

Eiraldi, R., Wolk, C. B., Locke, J., & Beidas, R. (2015). Clearing hurdles: The challenges of implementation of mental health evidence-based practices in under-resourced schools. *Advances in School Mental Health Promotion, 8*, 124–140.

Fazel, M., Hoagwood, K., Stephan, S., & Ford, T. (2014). Mental health interventions in schools in high-income countries. *Lancet Psychiatry, 1*, 377–387.

Fixsen, D. L., Naoom, S. F., Blase, K. A., & Friedman, R. M. (2005). Implementation research: A synthesis of the literature. Resource document. University of South Florida. https://nirn.fpg.unc.edu/sites/nirn.fpg.unc.edu/files/resources/NIRN-MonographFull-01-2005.pdf. Accessed 8 May 2018.

Frambach, R. T., & Schillewaert, N. (2002). Organizational innovation adoption: A multi-level framework of determinants and opportunities for future research. *Journal of Business Research, 55*, 163–176.

Glaser, B. G., & Strauss, A. L. (1967). The constant comparative method of qualitative analysis. In *The discovery of grounded theory: Strategies for qualitative research* (pp. 101–158). Chicago: Aldine Publishing.

Graham, I. D., & Logan, J. (2004). Innovations in knowledge transfer and continuity of care. *Canadian Journal of Nursing Research, 36*, 89–103.

Greenhalgh, T., Robert, G., Macfarlane, F., Bate, P., & Kyriakidou, O. (2004). Diffusion of innovations in service organizations: Systematic review and recommendations. *Milbank Quarterly., 82*, 581–629. https://doi.org/10.1111/j.0887-378X.2004.00325.x.

Hwang, S. (2008). Utilizing qualitative data analysis software: A review of atlas.ti. *Social Science Computer Review, 26*, 519–527.

Lane-Fall, M. B., Curran, G. M., & Beidas, R. S. (2019). Scoping implementation science for the beginner: Locating yourself on the "subway line" of translational research. *BMC Medical Research Methodology, 19*, 133.

Larson, S., Chapman, S., Spetz, J., & Brindis, C. D. (2017). Chronic childhood trauma, mental health, academic achievement, and school-based health center mental health services. *The Journal of School Health, 87*, 675–686.

Maryland State Department of Education. (2019). Maryland Report Card, Baltimore City. https://reportcard.msde.maryland.gov/. Accessed 21 August 2019.

Mendelson, T., Tandon, S. D., O'Brennan, L., Leaf, P. J., & Ialongo, N. S. (2015). Brief report: Moving prevention into schools: The impact of a trauma-informed school-based intervention. *Journal of Adolescence, 43*, 142–147.

Mendelson, T., Clary, L. K., Sibinga, E., Tandon, D., Musci, R., Mmari, K., Salkever, D., Stuart, E. A., & Ialongo, N. (2020). A randomized controlled trial of a trauma-informed school prevention program for urban youth: Rationale, design, and methods. *Contemporary Clinical Trials, 90*, 105895.

Merriam, S. B. (1998). *Qualitative research and case study applications in education*. San Francisco: Jossey-Bass Publishers.

Murphy, J. M., Abel, M. R., Hoover, S., Jellinek, M., & Fazel, M. (2017). Scope, scale, and dose of the world's largest school-based mental health programs. *Harvard Review of Psychiatry, 25*, 218–228.

Panzano, P. C., & Roth, D. (2006). The decision to adopt evidence-based and other innovative mental health practices: Risky business? *Psychiatric Services, 57*, 1153–1161.

Proctor, E., Silmere, H., Raghavan, R., Hovmand, P., Aarons, G., Bunger, A., et al. (2011). Outcomes for implementation research: Conceptual distinctions, measurement challenges, and research agenda. *Administration and Policy in Mental Health, 38*, 65–76.

Ringwalt, C. L., Ennett, S., Johnson, R., Rohrbach, L. A., Simons-Rudolph, A., Vincus, A., & Thorne, J. (2003). Factors associated with fidelity to substance use prevention curriculum guides in the nation's middle schools. *Health Education & Behavior: The Official Publication of the Society for Public Health Education, 30*, 375–391.

Sekhon, M., Cartwright, M., & Francis, J. J. (2017). Acceptability of healthcare interventions: An overview of reviews and development of a theoretical framework. *BMC Health Services Research, 17*, 88.

Shepardson, R. L., Funderburk, J. S., & Weisberg, R. B. (2016). Adapting evidence-based, cognitive-behavioral interventions for anxiety for use with adults in integrated primary care settings. *Families, Systems & Health, 34*, 114–127.

Slopen, N., Shonkoff, J. P., Albert, M. A., Yoshikawa, H., Jacobs, A., Stoltz, R., et al. (2016). Racial disparities in child adversity in the U.S.: Interactions with family immigration history and income. *American Journal of Preventive Medicine, 50*, 47–56.

United States Census Bureau (2017). QuickFacts Baltimore City, Maryland. https://www.census.gov/quickfacts/fact/table/baltimorecitymaryland,US/AGE295216#viewtop. Accessed 14 September 2019.

Vona, P., Baweja, S., Santiago, C. D., Pears, G., Langley, A., & Kataoka, S. (2018). A cross-site partnership to examine implementation and

sustainability of a school-based trauma program. *Ethnicity & Disease, 28*, 427–436.

Wisdom, J. P., Chor, K. H. B., Hoagwood, K. E., & Horwitz, S. M. (2014). Innovation adoption: A review of theories and constructs. *Administration and Policy in Mental Health, 41*, 480–502.

Yin, R. K. (2003). *Case study research: Design and methods*. Thousand Oaks: Sage.

Yin, R. K. (2011). *Qualitative research from start to finish*. New York: The Guilford Press.