

# Children, Research, and Public Policy

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## An Evaluation of the Implementation and Impact of England's Mandated School-Based Mental Health Initiative in Elementary Schools

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*Abstract.* We report on a randomized controlled trial of Targeted Mental Health in Schools (TaMHS), which is a nationally mandated school-based mental health program in England. TaMHS aimed to improve mental health for students with, or at risk of, behavioral and emotional difficulties by providing evidence-informed interventions relating to closer working relationships between health and education services. Our study involved 8,480 children (aged 8–9 years) from 266 elementary schools. Students in intervention schools with, or at risk of, behavioral

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difficulties reported significant reductions in behavioral difficulties compared with control school students, but no such difference was found for students with, or at risk of, emotional difficulties. Implementation of TaMHS was associated with increased school provision of a range of interventions and enhanced collaboration between schools and local specialist mental health providers. The implications of these findings are discussed, in addition to the strengths and limitations of the study.

Internationally, up to 20% of the youth population experiences clinically recognizable mental health difficulties (Belfer, 2008). At the broadest level, a distinction is typically drawn between behavioral problems or externalizing symptoms (e.g., conduct disorders) and emotional problems or internalizing symptoms (e.g., anxiety, depression). The long-term consequences of these difficulties can include poorer academic achievement (Colman et al., 2009), unemployment (Healey, Knapp, & Farrington, 2004), family and relationship instability (Colman et al., 2009), and an increased likelihood of disorders in adulthood (Belfer, 2008), with staggering associated costs estimated to be almost \$250 billion annually in the United States (O'Connell, Boat, & Warner, 2009) and \$80,000 per child in the United Kingdom (Clark, O'Malley, Woodham, Barrett, & Byford, 2005).

Schools can play a central and highly effective role in early intervention and mental health promotion (Adi, Killoran, Janmohamed, & Stewart-Brown, 2007a; 2007b; Weare & Nind, 2011), which has been increasingly acknowledged in education policy. For example, the No Child Left Behind Act of 2001 mandated a number of mental health-related provisions in the United States, including expanded counseling services in schools, closer integration between schools and community mental health service providers, and social and emotional learning interventions in early childhood (Daly et al., 2006).

In light of such efforts, schools have developed a range of approaches to support the mental health of their students (Vostanis, Humphrey, Fitzgerald, Deighton, & Wolpert, 2013). Evidence of the efficacy of school-based mental health services in elementary schools is promising (e.g., Shucksmith, Sum-

merbell, Jones, & Whittaker, 2007; Wilson & Lipsey, 2007). The implementation of multifaceted mental health interventions over a significant period, with adequate whole-school support, has been shown to lead to positive behavioral and emotional outcomes (Adi et al., 2007a and b; Domitrovich et al., 2010). The meta-analysis of Durlak et al. (2011) of 213 interventions published from 1970–2007 discerned moderate effects on social and emotional skills, with an average standardized mean difference effect size (ES) of 0.57 (equal to a 22-percentile-point improvement; Durlak, 2009) and small effects on attitudes (ES = 0.23, equal to a 9-percentile-point improvement), social behavior (ES = 0.24, equal to a 9-percentile-point improvement), conduct problems (ES = 0.22, equal to a 9-percentile-point improvement), emotional distress (ES = 0.24, equal to a 9-percentile-point improvement), and academic performance (ES = 0.27, equal to an 11-percentile-point improvement).

Key elements of multifaceted mental health interventions are direct and indirect interventions, comprising work with students to support social problem-solving and emotional regulation skill development (Adi et al., 2007a and b; Department for Children, Schools and Families [DCSF], 2008), education and support in parenting, or staff training and support (Humphrey, 2013; Reyes, Brackett, Rivers, Elbertson, & Salovey, 2012; Shectman & Leichtenritt, 2004). In addition, the success of schools working with other agencies such as specialist mental health providers in hospitals or clinics, as well as voluntary sector provision and social care specialists, has had a moderate impact on outcomes in child and adolescent mental health (Meyers & Swerdlik, 2003). Research has indicated that the tradi-

tionally poor collaboration between health and education services may have contributed to a lack of effective high-quality provision in schools for children with specific mental health difficulties (Pettit, 2003). Therefore, schools need a more collaborative working method and improved integration between school and education providers to facilitate high-quality provision that combines evidence-based practice with constant review of the impact in a local context (Fitzgerald, 2005).

A key area of challenge for evaluating the practice of mental health provision in schools is the ongoing tension between the requirement to implement well-researched manualized programs and the need for schools to modify programs to better suit locally determined circumstances and ensure local ownership (Greenhalgh, Robert, Macfarlane, Bate, & Kyriakidou, 2004; Groark & McCall, 2009). The growing field of implementation science (Greenhalgh et al., 2004; Proctor & Brownson, 2012; Proctor et al., 2011) highlights the need for researchers to be more mindful of the reality of an adaptation of approaches to local circumstances and to consider the impact of this on implementation and outcomes (e.g., Bickman, 1996; Blasé & Fixsen, 2013; Marshall, 2013; Social and Character Development Research Consortium, 2010).

## **TARGETED MENTAL HEALTH IN SCHOOLS**

The English government launched the Targeted Mental Health in Schools (TaMHS) initiative in 2008 (DCSF, 2008), which sought to build on previous national efforts focused on developing social and emotional competencies across the school population (Social and Emotional Aspects of Learning [SEAL]; Department for Education and Skills, 2005) to develop innovative, locally crafted models to provide early intervention and targeted support for at-risk children (aged 5–13 years) and their families. This was in line with key principles of evidence-based intervention and close strategic integration (DCSF, 2008).

TaMHS formed part of the government's wider efforts to improve the psychological well-being of children and young people, as well as their families. Selected schools in every local authority (LA), akin to school districts in the United States, were involved in this \$100 million program. Participating schools were chosen by LAs, with socioeconomic deprivation used by most as the key factor for selection. Of the 25 initial programs, 14 were located in the most deprived English neighborhoods, and by 2011, 50% to 60% of participating schools were selected on the basis of high proportions of free school meal (FSM) intake, which is a well-recognized indicator of economic deprivation.

Although individual sites were encouraged to develop local programs to suit their specific needs, all TaMHS programs had to adhere to two national core principles. The first was ensuring that the selection of interventions was informed by evidence of effectiveness as outlined in the support materials (DCSF, 2008). This included advice on evidence-based interventions, based on the latest findings from systematic reviews, in which a proportion of studies are randomized controlled trials; a single randomized controlled trial; other evaluations that used a control or comparison group; and large, well-reviewed cohort studies on school effectiveness in relation to supporting students and managing behavior. The second core principle was enabling strategic integration across agencies involved in supporting children with mental health issues, as outlined in the support materials (DCSF, 2008). This included the recommended use of existing processes to support strategic integration, including Common Assessment Frameworks (CAFs; Department for Education [DfE], 2013). CAFs require children with an identified specific need to be assessed in a standardized way, with the information shared across all relevant agencies.

This work adds to the growing international interest in the effectiveness of frameworks for intervention, as delivered in real-world settings (e.g., Horner et al., 2009), for which there is a clear need for further empirical enquiry (Lendrum & Wigelsworth, 2013).

Although the TaMHS framework has been implemented and evaluated in England, parallels between TaMHS and aspects of school mental health promotion in the United States highlight possible international applications of this framework. TaMHS represents a tiered approach to intervention, which is also seen in United States-based approaches such as Positive Behavioral Interventions and Supports (Horner et al., 2009). TaMHS also advocates the use of evidence-informed practices, a key feature of American education policy in this area (e.g., Weisz, Sandler, Durlak, & Anton, 2005). Moreover, fundamental questions regarding the role and effectiveness of schools in preventing mental health difficulties are universal.

The current study is of particular relevance to the school psychology community because of its routine involvement in training, supporting, and advising schools in their mental health promotion efforts. In particular, the study can inform school psychologists about how to evaluate the impact of their work (e.g., the use of self-reported data from pupils in schools) and may guide their efforts in terms of the attention paid to different forms of evidence-based practice and strategic integration, as will be discussed in detail below.

### **PURPOSE**

The current study was designed to test the following five hypotheses that schools implementing TaMHS would show in relation to those not implementing TaMHS. The hypotheses were (a) an increased strategic integration with other agencies, (b) an increased provision of evidence-informed practice, (c) improvement in the emotional functioning of children with or at risk of difficulties at the outset of the study, (d) improvement in the behavioral functioning of children with or at risk of difficulties at the outset of the study, and (e) an association between changes in strategic integration or evidence-informed practice and improvements in emotional or behavioral difficulties (or both).

It is important to note that this trial compared TaMHS with usual practice rather than a no-treatment control condition. Prior to the

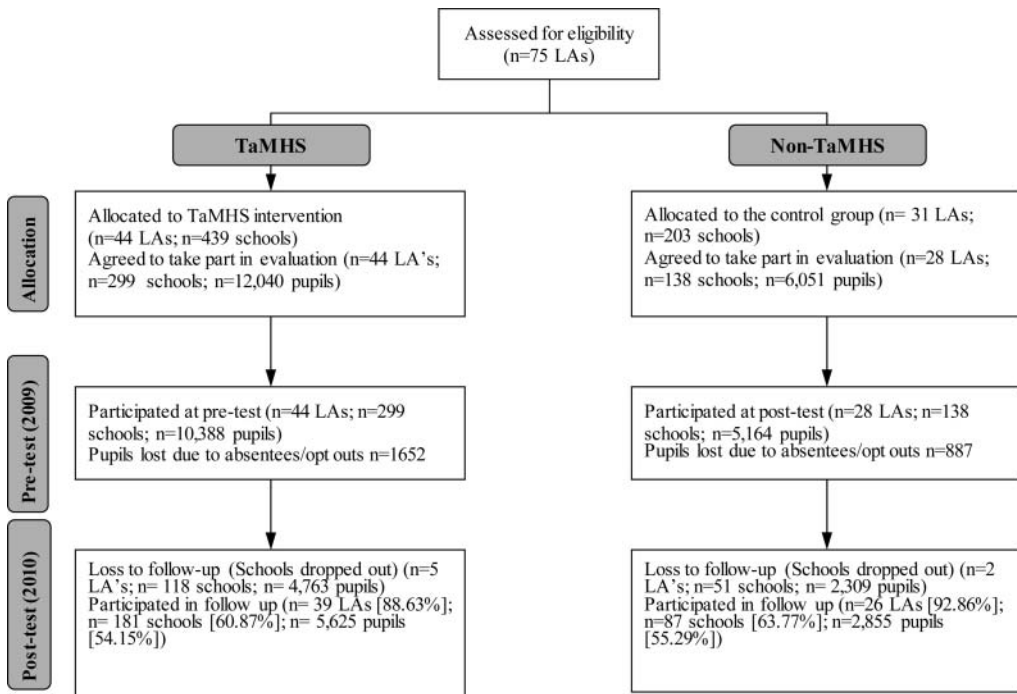
launch of TaMHS, schools in England were already involved in some efforts to promote student mental health. The aforementioned SEAL program provided a universal prevention platform, and national policies (e.g., Department for Education and Skills, 2004) and school inspection regimens (e.g., Office for Standards in Education) provided a clear message that emotional well-being was part of schools' overall remit. Therefore, those at-risk children attending schools not in receipt of TaMHS will likely have been exposed to some form of intervention through the resources typically available. By monitoring provision in both our intervention and usual-practice groups, our study is among the first in this area to actively report what usual practice entails: a vital consideration in interpreting intervention effects (Humphrey, 2013; Vostanis et al., 2013).

### **METHOD**

A cluster-randomized, wait-list control design was implemented that assessed children and schools at baseline (autumn 2009) and 1 year later (autumn 2010). This work is part of a larger evaluation that included a 3-year longitudinal study and a randomized controlled trial in secondary schools (DfE, 2011).

TaMHS implementation was based on guidance materials (e.g., DCSF, 2008) that were circulated to participating LAs approximately 4 months in advance of implementation. School personnel also joined quarterly regional meetings provided by the national Child and Adolescent Mental Health Services (CAMHS). Support services such as the National Council of Social Service (a government support agency) and a group of experienced CAMHS providers (including psychologists, social workers, and nurses), who fulfilled a support-and-challenge remit, helped ensure that schools' implementation adhered to the core principles of the TaMHS approach while allowing local interpretation. Each TaMHS LA was assigned a designated lead person from within the National Council of Social Service who supported the LA throughout the project, offering advice on, as well as

**Figure 1. Consolidated Standards of Reporting Trials (CONSORT) Diagram of Trial Participation**



Note. The breakdown of Targeted Mental Health in Schools (TaMHS) and non-TaMHS allocations is shown. LA = local authority.

a constructive critique of, project plans and implementation.

### Sample

Figure 1 provides the Consolidated Standards of Reporting Trials (CONSORT) diagram for the study. Seventy-five LAs participated in the trial. Within each, the selection of schools was based on economic deprivation (based on LA judgment and informed by the proportion of students eligible for FSM) and the perceived need and capacity of schools to implement the program (as indicated by prior SEAL implementation).

### Schools

A total of 437 elementary schools participated across the 75 LAs, of which 268 schools provided outcome data at baseline and posttest. All schools were state maintained (i.e., public), with an average of 312.57 stu-

dents ( $SD = 135.67$ ), making them somewhat larger than the national average of 233.4 students (DfE, 2010b).

### School Respondents

A total of 136 schools (93 TaMHS and 43 control) provided school-level implementation data. The schools that responded on the implementation measures at both time points were not significantly different from the schools that did not respond on these measures in terms of school size or school socioeconomic status (SES). School-level measures were completed by staff who were considered by the school to have the best understanding of its mental health provision, which most frequently (65%) was the special educational needs coordinator (SENCo) or the head teacher. Respondents from schools comprised multiple respondents per school and included head teachers (45 at baseline, 37 at follow-up),

SENCOs (65 at baseline, 57 at follow-up), and teachers (36 at baseline, 50 at follow-up), with either the head teacher or SENCO involved in at least 60% of all responses. Other respondents included teaching assistants, administrators, and other school-based staff members.

### Students

The study cohort comprised all children in Year 4 (aged 8–9 years) at baseline. A total of 8,480 children from 268 schools provided complete outcome datasets. Individuals with missing demographic information ( $n = 308$ ) were excluded because this information was required in all the analyses, resulting in a sample of  $N = 8,172$  for the majority of the analysis. Of the sample, 53% were male. Regarding race or ethnicity, 70.6% of students were classified as White British and the remainder as Other White (4.4%), Asian (10.2%), Black (7.4%), Mixed (4.7%), Chinese (0.5%), any other ethnic group (1.9%), or unclassified (0.5%). These proportions closely mirror the composition of elementary schools in England (DfE, 2010b). SES was based on children's eligibility for FSM and the Income Deprivation Affecting Children Index (IDACI; DfE, 2010a), which yields a score between 0 and 1 and represents the proportion of income-deprived families living in an area. Thus, a higher score is indicative of greater poverty. The average IDACI score was 0.3, which was higher than the national average of 0.24 (DfE, 2010b). FSM eligibility constituted 24.5% of the sample, somewhat higher than the national average of 18.5% (DfE, 2010b).

Average academic attainment was derived from the most recent national assessment scores for English, mathematics, and science. The mean attainment score of 15.02 was marginally lower than the national average of 15.3 (DfE, 2010b). Children in the intervention and control schools did not differ significantly regarding any of the aforementioned characteristics (female gender: TaMHS 49.6% vs. non-TaMHS 49.9%; FSM eligibility: 25% vs. 23.5%; IDACI score: 0.3 vs. 0.29; White ethnicity: 75.3% vs. 74.3%; attainment score: 15.03 vs. 15.01).

Analyses comparing students who participated at both baseline and posttest with those with only baseline data showed no significant differences in proportions of female students (48.5% vs. 49.7%,  $\chi^2 = 2.29$ ,  $p = .13$ ), proportions eligible for FSM (25.2% vs. 24.7%), and IDACI scores ( $M = 0.29$ ,  $SD = 0.20$  vs.  $M = 0.30$ ,  $SD = 0.20$ ). However, significant differences were found for attainment: Children lacking posttest data had lower attainment scores ( $M = 14.78$ ,  $SD = 3.62$ ) than those with complete datasets ( $M = 15.01$ ,  $SD = 3.49$ ,  $t = 3.71$ ,  $p < .001$ ).

The at-risk subsample was established by applying the borderline–clinical thresholds (see Child-Level Measures below) for behavioral difficulties and emotional difficulties to baseline scores, an approach consistent with previous studies (e.g., Bierman et al., 2010). Of the sample, 16.5% ( $n = 1,345$ ) scored above the borderline–clinical threshold for behavioral difficulties and 20% ( $n = 1,753$ ) scored above the threshold for emotional difficulties, proportions consistent with national trends of between 10% and 20% for borderline–clinical cases among elementary school-aged children (e.g., Green, McGinnity, Meltzer, Ford, & Goodman, 2005). Importantly, intervention-group and control-group children did not differ significantly at baseline on any of the dimensions (behavioral difficulties  $\chi^2 = 0.05$ ,  $p = .82$ ; emotional difficulties  $\chi^2 = 0.43$ ,  $p = .51$ ).

### Measures

TaMHS was evaluated with four measures described below. Two of the measures assessed strategic integration, one assessed evidence-informed practice, and one assessed emotional and behavioral difficulties.

#### *Degree of Strategic Integration*

Two measures of strategic integration were collected based on the school staff's report. First, the number of CAFs completed in the previous 12 months was recorded (never, 1–5, 6–10, 11–15, 16–20, or >20). These were operationalized on a per-head-of-school-population basis for purpose of analysis. The

second measure was the strength and extent of relations with local specialist CAMHS (Ford, Mitrofan, & Wolpert, 2014). Responses were rated on a five-point scale, with higher scores reflecting better links (e.g., responses of *yes, very much; yes, some; yes, a little; no, not much; or no, not at all* to the question “Do you feel you have good links with local child mental health services?”).

### **Degree of Evidence-Informed Practice**

Respondents completed information about the range of evidence-informed interventions available within their schools using 13 categories of intervention (Vostanis et al., 2013). These categories of intervention were derived in consultation with the participating schools to capture practice in their areas and to remain in line with the evidence-based practices required by the DCSF (DCSF, 2008) and summarized in Table 1. Responses for each of the 13 areas of intervention were rated on a five-point scale (*not at all, a little, somewhat, quite a lot, and very much*).

### **Child-Level Measures**

Children’s emotional and behavioral difficulties were assessed using the self-report Me and My School questionnaire (Deighton et al., 2013; Patalay, Deighton, Fonagy, Vostanis, & Wolpert, 2014). Children responded to 16 items: 10 for emotional difficulties (e.g., “I feel lonely,” “I worry a lot”) and 6 for behavioral difficulties (e.g., “I get very angry,” “I do things to hurt people”). Response options are *never, sometimes, and always*. The ranges of possible scores are 0 to 20 and 0 to 12 for emotional and behavioral difficulties, respectively, with scores of 10 or above indicating potentially clinically significant problems on the emotional scale (10–11 = borderline,  $\geq 12$  = clinical) and scores of 6 or above indicating potentially significant clinical problems on the behavioral scale (6 = borderline,  $\geq 7$  = clinical). Cronbach’s  $\alpha$  values for the emotional and behavioral scales in the current sample were .76 and .79 at baseline and .79 and .80 at posttest.

### **Procedures**

LAs were randomized to implement TaMHS (intervention) or continue practice as usual (control) over the course of 1 year, after which LAs serving as controls would implement the intervention. Randomization was stratified according to geographical region and attainment scores (standardized attainment scores  $\leq 27.65$ ,  $\geq 28.15$ , or in between).

School- and child-level measures were completed using a secure online survey website. Respondents rated how certain they were of the accuracy of the information being provided, with 75% or more reporting they were certain or very certain in both TaMHS and control schools, prior to and following the intervention.

Class teachers facilitated online, whole-class survey completion sessions for children and were given a standardized instruction sheet to read aloud that outlined what the questionnaire was about, the confidentiality of students’ answers, and the students’ right to decline participation. The online survey system was easy to read and child friendly. Headsets enabled all children to hear voice-recorded instructions, questionnaire items, and response options for each question. In addition, the font size was large and the instructions and individual questions were presented slowly to allow less accomplished readers to participate.

## **RESULTS**

The findings are presented in terms of each of the five hypotheses outlined above. The resulting data are found in Tables 2, 3, 4, and 5.

### **Impact of TaMHS on Strategic Integration With Other Agencies**

Nonparametric Mann-Whitney *U* tests were used to analyze differences between the TaMHS and control groups (Table 2) because the responses were rated on a Likert scale and were not normally distributed (Siegel, 1956). There were no significant group differences in the reported quality of links with local mental health services at baseline. However, TaMHS

**Table 1. Interventions by Schools to Support Mental Health of Students**

Intervention Category Based on Vostanis et al. (2013)	Examples of Specific Programs in Participating Schools	Key Features Identified by DCSF Evidence-Based Guide (DCSF, 2008)	Level of Intervention
Social and emotional skills development	SEAL, Silver SEAL, nurture groups, circle time, PATHS	Grounded in research and evidence Teach children to apply emotional and social skills and ethical values in daily life Build connection to school through classroom and school practices	Universal—students, staff, and parents
Creative and physical activity	Drama, music, art, cookery, circus skills, Outward Bound, breath works, mindfulness, yoga	Involve families to promote external modeling of emotional and social skills Students helped to develop a language around emotions and the modeling, practice, and reinforcement of new skills.	Universal—students
Information for students	Advice lines, leaflets, texting services, internet-based information	Materials and processes for providing information for children to help them access appropriate sources of support.	Universal—students
Peer support	Peer mentoring, peer listening, peer mediation, buddy schemes	One-to-one drop-in sessions to discuss specific issues, ongoing one-to-one work, and playground listening service	Targeted—students
Behavior for learning and structural individual therapy	Behavior support, restorative justice, sanctions CBT, PSST, PP, counseling	Classroom management techniques CBT takes a problem, event, or stressful situation as the starting point and explores the thoughts that arise from this and, in turn, the physical and emotional feelings that arise from these thoughts, as well as the behavioral response.	Universal—students Targeted—students

(Table 1 continues)



**Table 1. Continued**

Intervention Category Based on Vostanis et al. (2013)	Examples of Specific Programs in Participating Schools	Key Features Identified by DCSF Evidence-Based Guide (DCSF, 2008)	Level of Intervention
Group therapy Information for parents	CBT, PSST, PP, counseling Leaflets, advice lines, texting services, internet-based information	<p>The therapist works with the individual to consider whether these thoughts, feelings, and behaviors are unrealistic or unhelpful, as well as how they interact with each other. Then, the therapist helps the individual work out the best ways for the individual to change unhelpful thoughts and behavior. PSST trains in problem solving.</p> <p>For PP, a therapeutic relationship is central, develops through play or talk, and aims to provide an opportunity for children to understand themselves, their relationships, and their established patterns of behavior.</p>	Targeted—students Universal—parents
Training for parents	Structured parenting programs such as Webster Stratton and Triple P	<p>Psychoanalytically based treatments</p> <p>Counseling: talking through issues</p> <p>Group provision of above</p> <p>A range of materials and processes for providing information to parents to help them access appropriate sources of support</p> <p>Based on principles of social learning theory</p>	Targeted—parents
Counseling and support for parents	Individual work for parents, family therapy, family SEAL	<p>Offer enough sessions (usually 8–12)</p> <p>Include role-playing during sessions and homework between sessions so that parents can apply what they have learned to their own family's situation</p> <p>Provided by trained and skilled personnel</p> <p>Focus on improving family relationships</p> <p>Clarify parent goals</p>	Targeted—parents

(Table 1 continues)

**Table 1. Continued**

Intervention Category Based on Vostanis et al. (2013)	Examples of Specific Programs in Participating Schools	Key Features Identified by DCSF Evidence-Based Guide (DCSF, 2008)	Level of Intervention
Training for staff	Specific training from a mental health professional, training in interagency working	Training for staff to increase mental health awareness	Universal—staff
Counseling and support for staff	Provision to help staff deal with stress and any emotional difficulties	Provide staff development and support Focused support for staff working with children with emotional or behavioral difficulties	Targeted—staff

*Note.* CBT = cognitive or behavioral therapy; DCSF = Department for Children, Schools and Families; PP = psychodynamic psychotherapy; PSST = problem-solving skills training; SEAL = social and emotional aspects of learning; PATHS = promoting alternative thinking strategies.

**Table 2. Comparison of School Links With CAMHS**

Strategic Integration	2009			2010		
	Non-TaMHS	TaMHS	Mann-Whitney <i>U</i>	Non-TaMHS	TaMHS	Mann-Whitney <i>U</i>
Links with CAMHS	3.19 (1.05)	3.45 (1.06)	<i>U</i> = 1,729.0; <i>Z</i> = -1.31	3.49 (1.05)	4.02 (0.98)	<i>U</i> = 1,426.0; <i>Z</i> = -2.81*
Common Assessment Framework (per 100 students in school)	0.39 (0.37)	0.38 (0.34)	<i>U</i> = 1,427.5; <i>Z</i> = -0.15	0.47 (0.36)	0.56 (0.52)	<i>U</i> = 1,265.0; <i>Z</i> = -0.92

*Note.* CAMHS = Child and Adolescent Mental Health Services; TaMHS = Targeted Mental Health in Schools.  
\* *p* < .01.

Table 3. Comparison of Range of Interventions Offered by TaMHS and Control Schools

Evidence-Informed Practice	2009			2010		
	<i>M (SD)</i>			<i>M (SD)</i>		
	Non-TaMHS	TaMHS	Mann-Whitney <i>U</i>	Non-TaMHS	TaMHS	Mann-Whitney <i>U</i>
Social and emotional skills development	3.88 (1.06)	3.92 (0.92)	<i>U</i> = 1,946.5; <i>Z</i> = -0.03	4.07 (0.83)	4.12 (0.87)	<i>U</i> = 1,901.5; <i>Z</i> = -0.49
Creative and physical activities	3.55 (0.97)	3.56 (1.05)	<i>U</i> = 1,921.0; <i>Z</i> = -0.16	3.37 (1.07)	3.83 (0.92)	<i>U</i> = 1,526.5; <i>Z</i> = -2.35*
Information for students	2.48 (1.09)	2.69 (1.14)	<i>U</i> = 1,738.5; <i>Z</i> = -1.06	2.38 (0.96)	2.93 (1.10)	<i>U</i> = 1,380.5; <i>Z</i> = -2.66*
Peer support for students	3.17 (1.17)	3.28 (1.14)	<i>U</i> = 1,837.0; <i>Z</i> = -0.57	3.23 (1.23)	3.41 (1.15)	<i>U</i> = 1,812.0; <i>Z</i> = -0.81
Behavior for learning and structural support	4.12 (0.93)	4.11 (0.85)	<i>U</i> = 1,938.0; <i>Z</i> = -0.2	4.30 (0.67)	4.26 (0.80)	<i>U</i> = 1,944.5; <i>Z</i> = -0.06
Individual therapy for students	3.09 (1.15)	2.95 (1.35)	<i>U</i> = 1,863.0; <i>Z</i> = -0.56	3.37 (1.13)	3.66 (1.09)	<i>U</i> = 1,664.0; <i>Z</i> = -1.46
Group therapy for students	2.65 (1.29)	2.58 (1.29)	<i>U</i> = 1,915.0; <i>Z</i> = -0.2	2.79 (1.17)	3.21 (1.14)	<i>U</i> = 1,498.0; <i>Z</i> = -2.08*
Information for parents	2.98 (0.94)	3.24 (1.09)	<i>U</i> = 1,680.0; <i>Z</i> = -1.46	2.95 (0.96)	3.32 (0.97)	<i>U</i> = 1,509.5; <i>Z</i> = -2.12*
Training for parents	2.28 (1.30)	2.56 (1.22)	<i>U</i> = 1,646.0; <i>Z</i> = -1.33	2.62 (1.27)	2.86 (1.14)	<i>U</i> = 1,649.0; <i>Z</i> = -1.31
Counseling and support for parents	2.37 (1.42)	2.45 (1.11)	<i>U</i> = 1,784.5; <i>Z</i> = -0.85	2.48 (1.19)	2.84 (1.28)	<i>U</i> = 1,606.0; <i>Z</i> = -1.61
Training for staff	2.44 (1.12)	2.35 (1.06)	<i>U</i> = 1,880.5; <i>Z</i> = -0.38	2.58 (1.12)	3.00 (1.22)	<i>U</i> = 1,513.0; <i>Z</i> = -1.90
Supervision and consultation for staff	2.07 (1.10)	1.81 (0.94)	<i>U</i> = 1,703.0; <i>Z</i> = -1.29	2.29 (1.13)	2.22 (1.17)	<i>U</i> = 1,767.0; <i>Z</i> = -0.42
Counseling and support for staff	2.26 (1.05)	2.35 (0.96)	<i>U</i> = 1,816.5; <i>Z</i> = -0.70	2.72 (0.85)	3.08 (1.21)	<i>U</i> = 1,556.5; <i>Z</i> = -1.61

Note. TaMHS = Targeted Mental Health in Schools.

\*  $p < .05$ .

**Table 4. Multilevel Model of Impact of TaMHS on Children’s Emotional and Behavioral Difficulties**

Parameter Estimates	Behavioral Difficulties, Estimate (SE)			Emotional Difficulties, Estimate (SE)		
	Baseline Model	Second Model	Final Model	Baseline Model	Second Model	Final Model
Fixed effects						
Intercept	3.08*** (0.04)	2.41*** (0.15)	1.62*** (0.14)	6.54*** (0.05)	8.26*** (0.18)	6.67*** (0.15)
Gender (male)		1.20*** (0.04)	0.75*** (0.03)		1.18*** (0.06)	0.68*** (0.05)
Free school meals (yes)		0.34*** (0.06)	0.19*** (0.04)		0.05 (0.08)	-0.01 (0.06)
IDACI score		0.80*** (0.15)	0.45*** (0.11)		0.38 (0.21)	0.03 (0.17)
Ethnicity						
Asian		-0.43*** (0.09)	-0.18** (0.06)		-0.06 (0.12)	0.11 (0.09)
Black		0.41*** (0.10)	0.35*** (0.07)		-0.10 (0.14)	-0.05 (0.11)
Mixed		0.11 (0.11)	0.10 (0.09)		-0.07 (0.15)	-0.10 (0.12)
Other or not known		-0.45** (0.15)	-0.18 (0.12)		-0.22 (0.22)	-0.08 (0.17)
Academic attainment score		-0.10*** (0.01)	-0.05*** (0.01)		-0.16*** (0.01)	-0.10*** (0.01)
Condition (TaMHS)			-0.11 (0.10)			-0.04 (0.10)
Year (2010)			0.22*** (0.05)			0.05 (0.07)
Threshold (above)			7.07*** (0.19)			5.97*** (0.17)
Condition × Threshold			0.49* (0.24)			0.02 (0.16)
Condition × Year			0.05 (0.06)			0.04 (0.09)
Year × Threshold			-2.25*** (0.12)			-3.25*** (0.15)
Condition × Year × Threshold			-0.39** (0.14)			0.05 (0.19)
Variance components						
Residual variance	3.02 (0.05)	3.02 (0.05)	2.57 (0.04)	6.72 (0.10)	6.69 (0.10)	5.56 (0.09)
Pupil level	3.03 (0.08)	2.45 (0.07)	1.05 (0.04)	5.28 (0.14)	4.70 (0.14)	2.15 (0.09)
School level	0.31 (0.04)	0.22 (0.03)	0.08 (0.01)	0.43 (0.06)	0.42 (0.06)	0.20 (0.03)

Note. IDACI = Income Deprivation Affecting Children Index; TaMHS = Targeted Mental Health in Schools.  
 \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

**Table 5. Multilevel Model of Impact of Improved CAMHS Links and TaMHS on At-Risk Children's Behavioral Difficulties**

Parameter Estimates	Model Estimate ( <i>SE</i> )
Fixed effects	
Intercept	4.00*** (0.29)
Gender (female)	-0.77*** (0.05)
Free school meals (yes)	0.13* (0.06)
IDACI score	0.49** (0.16)
Ethnicity	
Asian	-0.22** (0.09)
Black	0.28** (0.10)
Mixed	0.15 (0.11)
Other or not known	-0.32* (0.15)
Academic attainment score	-0.06*** (0.01)
RCT condition (TaMHS)	-0.48 (0.34)
Year (2010)	0.28 (0.26)
Threshold (above)	3.98*** (0.58)
Links with CAMHS	-0.14* (0.07)
RCT condition × Threshold	1.54* (0.74)
RCT condition × Year	0.28 (0.34)
Year × Threshold	-2.09*** (0.69)
CAMHS links × RCT condition	0.10 (0.09)
CAMHS links × Threshold	0.21 (0.15)
CAMHS links × Year	-0.01 (0.07)
CAMHS links × Year × Threshold	0.00 (0.18)
RCT condition × Year × Threshold	-0.75 (0.89)
RCT condition × CAMHS links × Threshold	-0.34 (0.19)
RCT condition × CAMHS links × Year	-0.04 (0.08)
RCT condition × CAMHS links × Threshold × Year	-0.01 (0.22)
Variance components	
Residual variance	1.60 (0.02)
Pupil level	0.99 (0.03)
School level	0.26 (0.04)

Note. CAMHS = Child and Adolescent Mental Health Services; IDACI = Income Deprivation Affecting Children Index; RCT = randomized controlled trial; TaMHS = Targeted Mental Health in Schools.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

schools reported significantly better links at posttest than control schools. There were no significant group differences in the reported number of CAFs at baseline and posttest.

### Impact of TaMHS on Provision of Evidence-Informed Practice

Nonparametric Mann-Whitney  $U$  tests were conducted to examine differences between the TaMHS and control groups at baseline and at follow-up on each of the interven-

tions (again, the variables were not normally distributed). There were no significant group differences in the extent to which any of the 13 interventions were offered at baseline (Table 3). However, TaMHS schools reported offering significantly more creative and physical activities, information for students, group therapy for students, information for parents, and training for staff at posttest than control schools. ESs (expressed as  $r$ ) were small to moderate, ranging from .18 to .24.

### **Impact of TaMHS on Children's Emotional Difficulties**

To investigate the impact of TaMHS on children's emotional difficulties,  $2 \times 2 \times 2$  multilevel models (MLMs) were fitted with effects for random allocation (TaMHS vs. control), risk status at baseline (at risk vs. not), and time of measurement (baseline vs. posttest). Child-level variables (i.e., gender, ethnicity, SES [FSM and IDACI], academic attainment) were included as covariates because of their established association with mental health difficulties (e.g., Green et al., 2005).

Regarding the main effects, being female and having low academic achievement were each associated with higher levels of emotional difficulties. The three-way interaction used as the core test of the hypothesis (that the at-risk group would show greater reductions in emotional difficulties when allocated to TaMHS) was not statistically significant (see Table 4). However, the two-way interaction between at-risk status and time indicated that students in the at-risk group showed a greater reduction in emotional difficulties over time (irrespective of treatment group status).

### **Impact of TaMHS on Children's Behavioral Difficulties**

By use of the same analytic approach, results for behavioral difficulties were computed using MLMs (Table 4). For the main effects, being male predicted significantly greater behavioral difficulties, as did economic deprivation (according to both IDACI and FSM) and low academic achievement. Some ethnic categories (Asian and Other) were associated with fewer behavioral difficulties in relation to the reference group (White), whereas others (Black) were associated with greater difficulties. Overall, difficulties significantly decreased over the 1-year study period.

No statistically significant interaction was found between time and intervention group, and the significant two-way interaction between at-risk status and time was qualified by a significant core test (three-way interac-

tion) among intervention allocation, risk status, and time ( $p < .01$ ; see Table 4). This was because, as predicted, children in the at-risk group in TaMHS schools averaged a 0.39 point greater reduction in behavioral difficulties over time than their counterparts in control schools. Dividing the slope by the standard deviation for the at-risk subsample provides a standardized ES of 0.24 for this three-way interaction, equating to a 9-percentile-point improvement using Cohen's  $U_3$  index (Durlak, 2009).

### **Association Between Changes in Strategic Integration or Evidence-Informed Practice and Improvements in Emotional or Behavioral Difficulties (or Both)**

The MLM examining associations between the number of CAFs or the increased provision of interventions and study outcomes (emotional and behavioral difficulties) did not show any significant effects. These data are not included to conserve space but are available on request.

## **DISCUSSION**

The present evaluation is the first and only large-scale experimental assessment of the TaMHS initiative. The study found that TaMHS reduced (self-reported) behavioral, though not emotional, difficulties of at-risk children (standardized ES = 0.24). TaMHS increased the range of interventions offered in relation to creative and physical activities, information for students, group therapy for students, information for parents, and training for staff. TaMHS also enhanced the quality of schools' links with local specialist mental health provision. However, no statistically discernible causal pathway could be established between these increases in provision and strategic integration. Below, each set of results is discussed in relation to our five hypotheses outlined earlier.

### **Improved Strategic Integration**

Evidence indicates that the promotion of multidisciplinary teamwork, when coupled

with support and guidance from national bodies, resulted in improved working relationships between the TaMHS schools and their health partners. Although no statistically significant increase in the use of CAFs was detected, the schools reported greater facility in their links with specialist CAMHS and greater collaborative working.

### **Increased Provision of Evidence-Informed Interventions**

The documented increases in school-level intervention activities indicate that TaMHS stimulated a more comprehensive approach to mental health provision in terms of level (e.g., universal and targeted or indicated), duration and intensity (e.g., providing information and group therapeutic approaches), and stakeholder reach (e.g., children, staff, and parents). This finding is consistent with earlier findings (e.g., Shucksmith et al., 2007) and consistent with the theory and logic of Domitrovich et al. (2010) and their integrated provision model. Indeed, there was also emergent evidence to support the five-point rationale promoted by Domitrovich et al. (2010). For example, the allowance for adaptation to context and need at the local level appeared to result in a greater sense of acceptance and ownership among participating schools (Vostanis et al., 2013). Promoting and, thereby, enhancing acceptability are likely crucial for fostering high-quality implementation and, as a result, efficacy of school-based interventions (Domitrovich, Moore, & Greenberg, 2012).

### **Impact of TaMHS on Emotional and Behavioral Difficulties**

The reduction in behavioral difficulties facilitated by TaMHS among at-risk children must be regarded as promising, especially given the likelihood of later escalation of such problems and the huge societal costs that can accrue as a result if they are not effectively addressed at an early stage (e.g., Scott, Knapp, Henderson, & Maughan, 2001). It is also in line with earlier findings (e.g., Adi et al., 2007a and b).

Although the standardized ES related to the reduction was a modest 0.24, this too is in line with earlier findings. It is important not to lose sight of the fact that even modest decreases in behavioral difficulties of at-risk children can have consequences for the broader school environment. Ripple effects merit consideration in future school-based intervention evaluations. In any event, reflection is called for when thinking about how small effects measured at the level of the single child play out in larger social systems, be it the classroom, the playground, the school, or the community.

The study did not detect significant effects on emotional difficulties. However, it may be that treatment effects for emotional difficulties take longer than 1 year to materialize and prove detectable (Groark & McCall, 2009). In addition, it may be that most of the interventions were focused on addressing behavioral problems and thus the results reflected the focus of the interventions themselves. Alternatively, teachers may be less skilled at appraising and responding to children's emotional difficulties than their behavioral difficulties (Atzaba-Poria, Pike, & Barrett, 2004; Papandrea & Winefield, 2011).

Given the high salience of behavioral difficulties in relation to classroom management, it is also possible that interventions implemented within the TaMHS framework were more closely aligned with such problems. Furthermore, youths at the developmental ages reported herein may be more self-aware of their behavioral as opposed to their emotional difficulties. These speculations might suggest that greater efforts may be required to sensitize teachers to the manifestation of emotional problems (Beaver, 2008; Bryer & Signorini, 2011).

### **No Association Between Changes in Strategic Integration or Provision of Mental Health Support and Child-Level Outcomes**

Even though TaMHS led to significant reductions in behavioral difficulties for at-risk children and resulted in an increase in key interventions offered by schools, as well as an

increase in the quality of schools' links with local mental health services, our analysis failed to establish a statistical—and thus mediational—link between these documented changes. That is, we were unable to establish a clear pathway by which TaMHS reduced children's behavioral difficulties. Other investigators evaluating the Fort Bragg children's mental health managed-care demonstration (Bickman, 1996) and a multisite social-emotional learning trial (Social and Character Development Research Consortium, 2010) have found themselves in a similar situation, with measured implementation variability proving unrelated to intervention effects. The explanation for their and our findings (or non-findings) could lie at the level of the program theory (e.g., the program theory was unsound), implementation (e.g., the program theory was sound but the implementation of it was not), or research methods (e.g., the theory and implementation were sound but our methods of capturing these were not).

### **Implications for Practice and Policy**

These results suggest that school psychologists can be confident in their efforts to encourage schools to embed targeted mental health interventions. They support previous research showing that such interventions may be multimodal and include those targeted at children (e.g., creative and group activities), as well as those targeted at parents and teachers. The findings also suggest that school psychologists may have a role to play in aiding close work between schools and external mental health provision to support more closely integrated practice that was found to be more prevalent in TaMHS schools.

ESs relating to an increased provision of evidence-informed interventions and reductions in behavioral difficulties noted in our study were modest. We therefore wonder whether a refined model in which school psychologists and other professionals are more actively involved in providing technical support and assistance could yield more substantial improvements in provision and greater efficacy vis-à-vis child functioning. School

psychologists can play a key role in the integration of research into practice (Kratochwill & Shernoff, 2003). The nature of their role means that they are ideally placed to create a bridge between the “high hard ground” and the “swampy lowlands” described by Marshall (2013).

The implications of the lack of impact on emotional difficulties are not easy to determine. They would seem to bear out the findings of Bickman (1996) and other investigators suggesting that increased levels of service provision do not inevitably lead to better outcomes for children. In light of our findings, a focus on attempts to address behavioral problems in this age group would appear to be warranted.

### **Implications for Future Research**

The first implication to be drawn is that the work reported herein indicates that research conducted in applied settings can strike a balance between rigor and relevance. However, as our findings have shown, reliable identification of mechanisms of change in such contexts can be challenging and further research is clearly needed (Blasé & Fixsen, 2013).

The second implication is that future iterations may benefit from preliminary periods in which LAs and schools first scope and determine intervention typologies (Vostanis et al., 2013). Preliminary investigation could enable more focused work, encouraging the use of evidence-informed practices that fit local need and context while also addressing the barriers to uptake and successful implementation (Langley, Nadeem, Kataoka, Stein, & Jaycox, 2010). As already noted, there is a role for school psychologists in supporting this process (Kratochwill & Shernoff, 2003). Further to the necessary parameters of the current study, we would also recommend longer periods (e.g.,  $\geq 3$  years) to allow schools to embed implementation.

A third implication is that evaluations should incorporate repeated follow-ups as the program continues. Consistent with the nature of TaMHS, these may also include adaptive



treatment designs, wherein the specific intervention model is altered in response to routinely collected outcome data (Fabiano, Chafouleas, Weist, Carl Sumi, & Humphrey, 2014; Oetting, Levy, Weiss, & Murphy, 2010; Pelham et al., 2010).

A fourth implication is the need to develop more refined analyses to determine, in more detail, what works, for whom, and why. Our group is already starting to consider methodologies that will allow us to determine the factors affecting trajectories of different groups of children, which subgroups are helped by which interventions and in which contexts, and so on. Doing so inevitably requires us to move beyond the standard intention-to-treat model used in randomized trial designs.

### Limitations

Whatever its strengths, this evaluation study was not without its limitations. One was the lack of manualization of the intervention. This situation is inherent to evaluations of multifaceted programs delivered in field settings. Indeed, what is gained by diverse programming and fitted to local need may be lost in measurable parameters and manuals (e.g., Domitrovich et al., 2010). As noted above, it may be that schools emphasized interventions that focused on behavioral issues rather than emotional issues, leading to the finding that the impact was on these types of problems only.

A significant related challenge was defining and subsequently measuring implementation fidelity. The concept of fidelity assumes that there is a single model against which practice can be assessed. Although this may be true of heavily prescribed, manualized interventions, the same cannot be said of the more comprehensive, flexible approach embodied herein. Hence, we attempted to document changes in provision associated with TaMHS and explore subsequent connections to outcomes rather than making value judgments about the extent to which schools' practice mirrored a hypothesized ideal.

Further limitations were brought about by the fact that it was not possible to blind schools to their assigned status (i.e., TaMHS vs. control) and to the 1-year period between the start of the project and the evaluation. The nature of the control condition means that some schools may have been providing more mental health support than TaMHS schools, thereby affecting measured outcomes, as has happened in other studies (Groark & McCall, 2009). Furthermore, existing literature suggests that projects often need at least 3 years before an impact can be expected (Belsky, Barnes, & Melhuish, 2007; Belsky et al., 2006; Groark & McCall, 2009).

Documenting the wide range of interventions both at the LA level and at the school level was recognized as a major challenge from the outset. Information about this was sought from school staff (in relation to what was offered) and children (in the cases of those who had received support), but responses may not always have been accurate. School reports of programming may overestimate actual implementation (Gottfredson & Gottfredson, 2001). Our preferred approach would have been the use of independent observational data, especially given that such data are more likely to correlate with intervention outcomes (Domitrovich et al., 2010). However, this was infeasible given the scale of the study.

The reliance on child self-reported data in this study may be seen as a further limitation. It should be noted, however, that parents can bring biases relating to their own mental health status. They may lack awareness of internalizing difficulties (Verhulst & Van der Ende, 2008) and can furthermore present particular difficulties regarding recruitment and retention. Given the scale of the TaMHS project (questionnaires about child mental health and well-being were administered to >1,500 schools), an intensive follow-up of missing data and dropouts was infeasible and so issues of representation were likely to have been exacerbated had parents been the main focus.

Furthermore, there is evidence that when efforts are made to ensure that measures are child friendly (in terms of presentation and

reading age), young children can be accurate reporters of their own mental health (Sharp, Goodyer, & Croudace, 2006; Truman et al., 2003) and these self-reported data are increasingly seen as a key source of information on well-being, particularly in the school context (Levitt, Saka, Romanelli, & Hoagwood, 2007). The measure used in the current study was specifically designed (in terms of language and presentation) to be accessible for children as young as 8 years of age, and results indicate that this tool is a valid and reliable measure for this age group (Deighton et al., 2013).

Finally, given the scale of the project and the number of schools involved, it was not possible to identify exactly the other support strategies that schools were implementing in parallel and that were not part of the TaMHS intervention. These support strategies may have had some effect on the emotional and behavioral difficulties of children involved in the evaluation.

## CONCLUSION

The fact that this school-based mental health intervention program, which allowed for considerable local-level adaptation in implementation, exerted a measurable impact on high-cost at-risk children's behavioral difficulties is very exciting. Although the underlying mechanisms explaining this impact remain unclear, the current study shows that multi-component models that allow local flexibility can enhance children's mental health and, of equal importance, are detectable in the context of a randomized controlled trial. Our findings add to a growing body of evidence (e.g., Horner et al., 2009) that indicates that there are grounds for using approaches other than single, highly prescriptive manualized interventions and that adopting a range of approaches that can be adapted to local needs can have positive effects that benefit vulnerable children.

These results potentially have major implications for school psychology policy and practice. They suggest that school psychologists should encourage schools to embed mul-

tifaceted, targeted mental health interventions (including child-, parent-, and teacher-focused work) to improve the lives of children with behavioral difficulties and that they should use their role to foster closer working relationships between schools and external mental health provision.

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