An Evaluation of the Implementation and Impact of England's Mandated School-Based Mental Health Initiative.

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Abstract

We report on a large, randomized controlled trial of a nationally-mandated, school-based mental health program in England: Targeted Mental Health in Schools (TaMHS). TaMHS aimed to improve mental health for students with, or at risk of, behavioral and emotional difficulties, by provision of evidence-informed interventions relating to closer working 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 difficulties reported significant reductions in behavioral difficulties compared to 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.

Keywords: mental health; intervention; elementary school; implementation; strategic integration; evidence-based practice; behavioral difficulties; emotional difficulties.

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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/externalizing symptoms (e.g., conduct disorders) and emotional problems/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 disorder in adulthood (Belfer, 2008), with staggering associated costs estimated to be almost $250 billion annually in the USA (O'Connell, Boat, & Warner, 2009) and $80,000 *per child* in the UK, the focus of this report (Clark, O'Malley, Woodham, Barrett, & Byford, 2005).

Schools can play a central and highly effective role in early intervention and mental health promotion (Weare & Nind, 2011; Adi, Killoran, Janmohamed, Stewart-Brown, 2007), something 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 USA, including expanded counseling services in schools, closer integration between schools and community mental health service providers and social and emotional learning (SEL) interventions in early childhood (Daly et al., 2006).

In light of such efforts, schools have developed a range of approaches to supporting the mental health of their students (Vostanis et al., 2013). Evidence for the efficacy of school-based mental health services in elementary schools is promising (e.g., Shucksmith, Summerbell, Jones, & Whittaker, 2007; Wilson & Lipsey, 2007). The implementation of multi-faceted mental health interventions over a significant period of time, with adequate

whole school support, has been shown to lead to positive behavioral and emotional outcomes (Adi et al., 2007; Domitrovich et al., 2010). Durlak and associates' (2011) meta-analysis 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, 9%), social behavior (ES = 0.24, 9%), conduct problems (ES = 0.22, 9%), emotional distress (ES = 0.24, 9%), and academic performance (ES = 0.27, 11%).

Key elements of such multi-faceted approaches are direct and indirect interventions, comprising work with students to support social problem-solving and emotional regulation skill development (Adi et al., 2007; DCSF, 2008), education and support in parenting, and/or staff training and support (Humphrey, 2013; Reyes, Brackett, Rivers, Elbertson, & Salovey, 2012; Shectman & Leichtentritt, 2004). In addition, the success of schools working with other agencies such as specialist mental health providers in hospitals or clinics, 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 traditionally 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, a key focus for development is 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 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 tried and tested manualized programs and the impetus for schools to modify to 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 (TaMHS)

The English government launched the TaMHS initiative toward the end of the last decade (Department for Children Schools and Families [DCSF], 2008). It 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 [DfES], 2005) in order to develop innovative, locally-crafted models to provide early intervention and targeted support for at-risk children (aged 5 to 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 wellbeing of children, young people and their families. Selected schools in every local authority (LA) – akin to school districts – were involved in this $100 million program. Participating schools were chosen by LAs, with socio-economic deprivation used by most as the key factor for selection. Fourteen of the 25 initial 'pathfinder' programs were located in the most deprived English neighborhoods and by 2011, 50-60% of participating schools were selected on the basis of high proportions of Free School Meal [FSM] intake: a well-recognized indicator of deprivation.

While 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 to ensure 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 randomised controlled trials, single randomised controlled trial, other evaluations which use 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 support materials (DCSF, 2008). This included the recommended use of existing processes to support strategic integration, including the Common Assessment Framework (CAF; 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 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 US-based approaches such as Positive Behavioral Interventions and Supports (PBIS; 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 due to their 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 (the use of self-report data from pupils in schools, for example) 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.

Aims of the current study

The current study was designed to test the following five hypotheses that schools implementing TaMHS would show in relation to those which were not implementing TaMHS. The hypotheses were: 1) an increased strategic integration with other agencies, 2) an increased provision of evidence-informed practice, 3) improvement in the *emotional* functioning of children with or at-risk of difficulties at the outset of the study, 4) improvement in the *behavioral* functioning of children with or at-risk of difficulties at the outset of the study and 5) that changes in strategic integration and/or evidence-informed practice would be associated with improvements in emotional and/or behavioral difficulties.

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. DfES, 2004) and school inspection regimes (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* our 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

Design

A cluster-randomized, wait-list control design was implemented, assessing children and schools at baseline (autumn, 2009) and one year later (autumn, 2010). LAs were randomized to implement TaMHS (intervention) or continue practice as usual (control) over the course of one year, after which those serving as controls would implement the intervention. Randomization was stratified according to geographical region, attainment scores (standardized attainment scores $\leq$ 27.65, $\geq$28.15, or in between) and geographical size ($\leq$95 km^2, $\geq$350 or in between). This work is part of a larger evaluation that included a three-year longitudinal study and an RCT in secondary schools (full report; DfE, 2011).

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 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).

TaMHS implementation was based on guidance materials (e.g., DCSF, 2008) which were circulated to participating LAs approximately four 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 (NCSS; a government support agency) and a group of experienced CAMHS providers (including psychologists, social workers and nurses), who fulfilled a 'support and challenge' remit, helping 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 NCSS who supported

them throughout the project, offering advice on, and a constructive critique of, project plans and implementation.

Sample

Schools. A total of 437 elementary schools participated across the 75 LAs, of which 268 schools provided outcome data at baseline and post-test. All schools were state-maintained (i.e., "public"), with an average of 312.57 (SD=135.67) students, making them somewhat larger than the national average of 233.4 (DfE, 2010).

School respondents. 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 SES. School-level measures were completed by staff that were considered by the school to have the best understanding of its mental health provision: these was most frequently (65%) the special-educational-needs coordinator (SENCo) and/or the head teacher. Respondents from schools involved multiple respondents per school and included head teachers (baseline=45, follow-up=37), special educational needs coordinators (SENCo; baseline=65, follow-up=57), teacher (baseline=36, follow-up=50) 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, as 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; 70.6% 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, 2010). Socio-economic status (SES) was based on children's eligibility for FSM and the Income Deprivation Affecting Children Index (IDACI)[1]. FSM eligibility constituted 24.5% of the sample, somewhat higher than the national average of 18.5% (DfE, 2010).

The average IDACI score was 0.3, which was also higher than the national average of 0.24 (DfE, 2010). Average academic attainment was derived from the most recent national assessment scores for English, Mathematics and Science. The mean sample score of 15.02 was marginally lower than the national average of 15.3 (DfE, 2010). Children in the intervention and control schools did not differ significantly on any just-cited characteristics (Gender: TaMHS 49.6% female vs. Non-TaMHS 49.9%; FSM: 25% vs. 23.5%; IDACI: 0.3 vs. 0.29; Ethnicity: 75.3% vs. 74.3% White; Attainment: 15.03 vs. 15.01).

Analysis comparing students who participated at both baseline and post-test with those with only baseline data revealed no significant differences in proportions of females (48.5 vs. 49.7%, χ^2= 2.29, p=.13), proportions eligible for FSM (25.2 vs. 24.7%), and IDACI scores (M=.29, SD=.20, vs. M= .30, SD=.20). However, significant differences were found for attainment: children lacking post-test data (M=14.78, SD=3.62) had lower attainment 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). 16.5% (N=1,345) of the sample scored above the borderline-clinical threshold for behavioral difficulties and 20% (N=1,753) for emotional difficulties, proportions consistent with national trends of between 10-20% for borderline-clinical cases among elementary school-

[1] IDACI is a measure produced from a child's lower super output area designation that yields a score between 0 and 1, representing the proportion of income deprived families living in that area. Thus, a higher score is indicative of greater poverty.

age children (e.g., Green, McGinnity, Meltzer, Ford, & Goodman, 2005). Importantly, intervention group and control group children did not differ significantly at baseline.

Procedures

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 their 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. Additionally, the font size was large and the instructions and individual questions were presented slowly to allow less accomplished readers to participate.

School-Level Measures

Degree of strategic integration. Two measures of strategic integration were collected based on the school's staff report: firstly, the numbers of CAFs completed in the previous 12 months (never, 1-5, 6-10, 11-15, 16-20, >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 Child and Adolescent Mental Health Services (CAMHS). Responses were on a five-point scale, with higher scores reflecting better links (e.g., 'Do you feel you have good links with local child mental health services?' Yes, very much; yes, some; yes, a little; no, not much; no, not at all).

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 and summarised in Table 1, below. 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; very much).

Child-level measures. Children's emotional and behavioral difficulties were assessed using the self-report 'Me and My School' (M&MS), (full validation details: Deighton et al., 2013; Patalay et al., 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 range of possible scores are 0-20 and 0-12 for emotional and behavioral difficulties respectively, with a score of 10 and above indicating potentially clinically significant problems on the emotional scale (10-11 borderline, 12+ clinical) and a score of 6 and above indicating potentially significant clinical problems on the behavioral scale (6 borderline, 7+ clinical). Cronbach's Alphas for the emotional and behavioral scales in the current sample were .76 and .79 at baseline, and .79 and .80 at post-test.

Results

Findings are presented in terms of each of the five hypotheses outlined above.

Impact of TaMHS on Strategic Integration with other Agencies

Nonparametric Mann-Whitney U-tests were used to analyze TaMHS-vs.-control-group differences (Table 2) as the responses were Likert-scale and not normally distributed (Siegel, 1956). There were no significant group differences in the reported quality of links with local mental health services at baseline. At post-test, however, TaMHS schools reported

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

Impact of TaMHS on Provision of Evidence-Informed Practice

Nonparametric Mann-Whitney U-tests were conducted to examine the difference between the TaMHS and control groups at baseline and at follow-up on each of the interventions (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). At post-test, 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 than control schools. Effect sizes (expressed as *r*) were small, ranging from 0.18-0.24.

The Impact of TaMHS on Children's Emotional Difficulties

To investigate the impact of TaMHS on children's emotional difficulties, 2x2x2 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. post-test). Child-level variables (i.e., gender, ethnicity, SES [FSM and IDACI], academic attainment) were included as covariates due to their established association with mental health difficulties (e.g. Green et al., 2005).

In regard to 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 TaHMS) was not statistically significant (see Table 4). However, the two-way interaction between at-risk status and time indicated that those in the at-risk group showed a greater reduction in emotional difficulties over time (irrespective of treatment group status).

The Impact of TaMHS on Children's Behavioral Difficulties

Using 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 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), while others (Black) were associated with greater difficulties. Overall, difficulties significantly decreased over the one-year of the study period (predictor- year).

Further to the main effects 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 interaction) between intervention allocation, risk-status and time ($p < .01$) (see Table 4). This was due to the fact that, 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 effect size of .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 and/or Evidence-informed Practice and Improvements in Emotional and/or Behavioral Difficulties

The MLM examining associations between the number of CAFs and/or the increased provision of interventions and study outcomes (emotional and behavioral difficulties) did not demonstrate any significant effects. These 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 effect size = 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 school's 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 multi-disciplinary teamwork, when coupled with support and guidance from national bodies, resulted in improved working relationships between the (TaMHS) schools and their health partners. While no statistically significant increase in the use of Common Assessment Frameworks 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/indicated), duration/intensity (e.g., providing information *and* group therapeutic approaches), and stakeholder reach (e.g., children, staff, *and* parents). This 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 and colleagues. 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 is 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., 2007).

Although the standardized effect size related to the reduction was a modest .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. This appears to be particularly true if teachers spend, as a result, less time managing children and more time teaching; and children spend more time enjoying themselves and less time being fearful of - or even imitating - children with behavior difficulties. Such "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 one 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 than 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 in the developmental age 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 and/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 also resulted in an increase in key interventions offered by schools and 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 investigatory teams evaluating the Fort Bragg children's mental health managed-care demonstration (Bickman, 1996) and a multi-site 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 (non-) findings could lie at the level of program theory (e.g., the program theory is unsound) or implementation (e.g., the program theory is sound but the implementation of it was not) and/or research methods (e.g., theory and implementation were sound, but our methods of capturing this were not).

Implications for Practice

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 that such interventions may be multi-modal and include those targeted at children (such as 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.

Effect sizes relating to an increased provision of evidence-informed interventions and reductions in behavioral difficulties noted in the current 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 Bickman's (1996) and other's findings suggesting increased levels of service provision do not inevitably lead to better outcomes for children. In the light of our findings a focus on attempts to address behavioural 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 the 'swampy lowlands' of real-world implementation (Marshall, 2013) 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 for 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 of time (e.g. 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, in which contexts, and so on. Doing so inevitably requires us to move beyond the standard intention-to-treat model used in randomised 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

multi-faceted 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 'in the swamp' can be assessed. While this may be true of heavily prescribed, manualised 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 a one-year period between the start of the project and the evaluation. The nature of the control condition means that some such schools may have been doing more 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 three years to 'bed down' 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 LA and 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 have been always accurate. School reports of programming may over-estimate actual implementation (Gottfredson & Gottfredson, 2001).

Our preferred approach would have been the use of independent observational data, especially given that such data is 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-report data in this study may be seen as a further limitation. It should, however, be noted that parents can bring biases relating to their own mental health status. They may lack of awareness of internalizing difficulties (Verhulst & Van der Ende, 2008) and can furthermore present particular difficulties with regards to recruitment and retention. Given the scale of the TaMHS project (questionnaires about child mental health and well-being were administered to over 1,500 schools) an intensive follow-up of missing data and drop out was unfeasible and so issues of representation were likely to have been exacerbated if parents were 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 this self-report data is 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 eight and results indicate that this tool is a valid and reliable measure for this age group (Deighton et al., 2013).

Finally, due to the scale of the project and the number of schools involved, it was not possible to identify exactly the other support strategies which 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. While the underlying mechanisms explaining this impact remain unclear, the current study demonstrates that multi-component models that allow local flexibility can enhance children's mental health and, of equal importance, are detectable in the context of an RCT. Our findings add to a growing body of evidence (e.g. Horner et al., 2009) which indicates that there are grounds for using approaches other than single, highly-prescriptive manualized interventions and that adopting a range of approaches which can be adapted to local needs can have positive effects that benefit vulnerable children.

These results potentially have major implications for school psychology practice. They suggest that school psychologists should encourage schools to embed multi-faceted 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 between schools and external mental health provisions.

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Table 1
Interventions being undertaken by schools to support mental health of students

	Intervention category as agreed with participating schools (Vostanis et al., 2013) • **Examples of specific programs**	**Key features identified by DCSF evidence-based guide (2008)**	**Level of intervention** • **Target group**
1	Social and emotional skills development • Includes: 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 the school through classroom and school practices Involve families to promote external modelling of emotional and social skills	Universal • Students • Staff • Parents
2	Creative and physical activity • drama, music, art, cookery, circus skills, outward bounds, breath-works, mindfulness, yoga	Students helped to develop a language around emotions and the modelling, practice and reinforcement of new skills.	Universal • Students
3	Information for students	Materials and processes for providing information for children to help them access appropriate sources	Universal

	• Advice lines, leaflets, texting services, internet-based information	of support.	• Students
4	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 • playground listening service	Targeted • Students
5	Behavior for learning and structural • Behavior support, restorative justice, sanctions	Classroom management techniques	Universal • Students
6	Individual therapy • Cognitive and/or behavioral therapy (CBT), Problem solving skills training (PSST) psychodynamic psychotherapy (PP), counseling.	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. The therapist works with the individual to consider if these thoughts, feelings and behavior are unrealistic or unhelpful; and how they interact with each other. Then the therapist helps the individual work out the best ways for them to change unhelpful thoughts and behavior. PSST: trains in problem solving PP: therapeutic relationship is central, develops through play or talk, and aims to provide an opportunity for the child to understand themselves, their relationships and their established patterns of	Targeted • Students

		behavior. Psychoanalytically-based treatments Counseling: talking through issues	
7	Group therapy • Cognitive and/or behavioral therapy (CBT), Problem solving skills training (PSST) psychodynamic psychotherapy (PP), counseling.	Group provision of above	Targeted • Students
8	Information for parents • Leaflets, advice lines, texting services, internet based information	A range of materials and processes for providing information for parents to help them access appropriate sources of support.	Universal • Parents
9	Training for parents • Structured parenting programs such as Webster Stratton and Triple P	Based on principles of social learning theory Offer enough sessions (usually 8-12) Include role play during sessions and homework between sessions so that parents can apply what they have learnt to their own family's situation Provided by trained and skilled personnel	Targeted • Parents
10	Counseling/ support for parents • Individual work for parents, family therapy, family SEAL	Focus on improving family relationships Clarify parent goals	Targeted • Parents

11	Training for staff • Specific training from a mental health professional, training in inter-agency working	Training for staff to increase mental health awareness Provide staff development and support	Universal • Staff
12	Supervision and consultation for staff • On-going supervision or advice from a mental health professional	Specialist support for key staff working with targeted mental health provision	Targeted • Staff
13	Counseling/ support for staff • Provision to help staff deal with stress and any emotional difficulties	Focused support for staff working with children with emotional or behavioral difficulties.	Targeted • Staff

Acronyms: CBT (cognitive behavioral therapy), DCSF (Department for children, schools and families), PP (psychodynamic psychotherapy), PSST (problem solving skills training), SEAL (social and emotional aspects of learning).

Table 2
Comparison of School Links with CAMHS

Strategic integration	**Treatment group**	**2009**		**2010**	
		Mean (SD)	*Mann-Whitney U test*	*Mean (SD)*	*Mann-Whitney U test*
Links with CAMHS	Non-TaMHS	3.19 (1.05)	U= 1729 Z= -1.31, p= .19	3.49 (1.05)	U= 1426 Z= -2.81, p=.005
	TaMHS	3.45(1.06)		4.02 (.98)	
CAF(per 100 students in school)	Non-TaMHS	.39 (.37)	U= 1427.5 Z= -.15, p= .88	.47 (.36)	U= 1265 Z=-.92, p= .36.
	TaMHS	.38 (.34)		.56 (.52)	

Table 3
Comparison of Range of Interventions Offered by Schools

Evidence-informed practice	**Intervention group**	**2009**		**2010**	
		Mean (SD)	*Mann-Whitney U test*	*Mean (SD)*	*Mann-Whitney U test*
Social and emotional skills development	Non-TaMHS	3.88(1.06)	U=1946.5 Z= -0.03, p=.97	4.07 (.83)	U=1901.5 Z= -0.49, p=.62
	TaMHS	3.92(.92)		4.12 (.87)	
Creative and physical activities	Non-TaMHS	3.55 (.97)	U=1921 Z= -0.16,p=.87	3.37 (1.07)	U=1526.5 Z= -2.35, p=.02
	TaMHS	3.56 (1.05)		3.83 (.92)	
Information for students	Non-TaMHS	2.48 (1.09)	U= 1738.5 Z=-1.06, p=.29	2.38 (.96)	U= 1380.5 Z=-2.66, p=.01
	TaMHS	2.69 (1.14)		2.93 (1.10)	
Peer support for students	Non-TaMHS	3.17 (1.17)	U=1837 Z=-.57,p=.57	3.23 (1.23)	U=1812 Z=-0.81, p=.42
	TaMHS	3.28 (1.14)		3.41 (1.15)	
Behavior for learning and structural support	Non-TaMHS	4.12 (0.93)	U=1938 Z=-0.2, p=.84	4.30 (.67)	U=1944.5 Z=-0.06, p=.95
	TaMHS	4.11 (0.85)		4.26 (.80)	
Individual therapy for students	Non-TaMHS	3.09 (1.15)	U=1863 Z=-0.56, p=.58	3.37 (1.13)	U=1664 Z=-1.46, p=.15
	TaMHS	2.95 (1.35)		3.66 (1.09)	
Group therapy for students	Non-TaMHS	2.65 (1.29)	U=1915 Z=-0.2, p=.84	2.79 (1.17)	U=1498 Z=-2.08, p=.04
	TaMHS	2.58 (1.29)		3.21 (1.14)	
Information for Parents	Non-TaMHS	2.98 (.94)	U=1680 Z=-1.46, p=.14	2.95 (.96)	U=1509.5 Z=-2.12, p=.03
	TaMHS	3.24 (1.09)		3.32 (.97)	
Training for parents	Non-TaMHS	2.28 (1.30)	U=1646 Z=-1.33, p=.18	2.62 (1.27)	U=1649 Z=-1.31, p=.19
	TaMHS	2.56 (1.22)		2.86 (1.14)	
Counseling/support for Parents	Non-TaMHS	2.37 (1.42)	U=1784.5 Z=-0.85, p=.4	2.48 (1.19)	U=1606 Z=-1.61, p=.11
	TaMHS	2.45 (1.11)		2.84 (1.28)	
Training for staff	Non-TaMHS	2.44 (1.12)	U=1880.5 Z=-0.38, p=.71	2.58 (1.12)	U=1513 Z=-1.9, p=.056
	TaMHS	2.35 (1.06)		3.00 (1.22)	
Supervision and consultation for staff	Non-TaMHS	2.07 (1.10)	U=1703 Z=-1.29, p=.2	2.29 (1.13)	U=1767 Z=-0.42, p=.68
	TaMHS	1.81 (.94)		2.22 (1.17)	
Counseling/support for staff	Non-TaMHS	2.26 (1.05)	U=1816.5 Z= -0.7,p=.48	2.72 (.85)	U=1556.5 Z= -1.61, p=.11
	TaMHS	2.35 (.96)		3.08 (1.21)	

Table 4

Multi-Level Model of the Impact of TaMHS on Children's Emotional and Behavioral Difficulties

Parameter Estimates	**Behavioral Difficulties**			**Emotional Difficulties**		
	Baseline Model	**Second Model**	**Final Model**	**Baseline Model**	**Second Model**	**Final Model**
	Estimate (SE)	*Estimate (SE)*	*Estimate(SE)*	*Estimate (SE)*	*Estimate (SE)*	*Estimate (SE)*
Fixed Effects						
1. Intercept	3.08*** (.04)	2.41***(.15)	1.62***(.14)	6.54*** (.05)	8.26***(.18)	6.67***(.15)
2. Gender (Male)		1.20*** (.04)	.75*** (.03)		1.18*** (.06)	.68*** (.05)
3. FSM (Yes)		.34*** (.06)	.19*** (.04)		.05 (.08)	-.01 (.06)
4. IDACI		.80*** (.15)	.45*** (.11)		.38 (.21)	.03 (.17)
5. Ethnicity (Asian)		-.43***(.09)	-.18**(.06)		-.06(.12)	.11(.09)
6. Ethnicity (Black)		.41***(.10)	.35***(.07)		-.1(.14)	-.05(.11)
7. Ethnicity (Mixed)		.11(.11)	.10(.09)		-.07(.15)	-.10(.12)
8. Ethnicity (Other/not known)		-.45**(.15)	-.18(.12)		-.22(.22)	-.08(.17)
9. Academic attainment		-.10*** (.01)	-.05*** (.01)		-.16*** (.01)	-.10*** (.01)
10. RCT condition (TaMHS)			-.11 (.10)			-.04 (.10)
11. Year (2010)			.22***(.05)			.05(.07)
12. Threshold (above)			7.07***(.19)			5.97***(.17)
13. RCT condition X Threshold			.49* (.24)			.02 (.16)
14. RCT condition X Year			.05 (.06)			.04 (.09)
15. Year X threshold			-2.25*** (.12)			-3.25*** (.15)
16. RCT condition X Year X Threshold			-.39**(.14)			.05(.19)
Variance Components						
Residual variance	3.02 (.05)	3.02 (.05)	2.57 (.04)	6.72 (.10)	6.69 (.10)	5.56 (.09)
Pupil-level	3.03(.08)	2.45(.07)	1.05(.04)	5.28(.14)	4.70(.14)	2.15(.09)
School-level	0.31(.04)	0.22 (.03)	0.08(.01)	0.43(.06)	0.42(.06)	0.20(.03)

Note: * significant at 0.05, ** significant at 0.01 & *** significant at 0.001. Acronyms: CAMHS (child and adolescent mental health services), FSM (free school meals), IDACI (income deprivation affecting children), RCT (randomized control trial), TaMHS (targeted mental health in schools).

Table 5
Multi-Level Model of the Impact of Improved CAMHS Links and TaMHS on At-Risk Children's Behavioral Difficulties

Parameter Estimates	**Model Estimate (SE)**
Fixed Effects	
1. Intercept	4 *** (.29)
2. Gender (Female)	-.77 *** (.05)
3. FSM (Yes)	.13* (.06)
4. IDACI	.49** (.16)
5. Ethnicity (Asian)	-.22** (.09)
Ethnicity (Black)	.28**(.1)
Ethnicity (Mixed)	.15 (.11)
Ethnicity (Other/not known)	-.32 * (.15)
6. Academic attainment	-.06*** (.01)
7. RCT condition (TaMHS)	-.48 (.34)
8. Year (2010)	.28 (.26)
9. Threshold (above)	3.98***(.58)
10. Links with CAMHS	-.14* (.07)
11. RCT condition X Threshold	1.54 * (.74)
12. RCT condition X Year	.28(.34)
13. Year X threshold	-2.09 ***(.69)
14. CAMHS links X RCT condition	.1 (.09)
15. CAMHS links X threshold	.21 (.15)
16. CAMHS links X Year	-.01 (.07)
17. CAMHS links X Year X Threshold	0(.18)
18. RCT condition X Year X Threshold	-.75 (.89)
19. RCT condition X CAMHS links X Threshold	-.34 (.19)
20. RCT condition X CAMHS links X Year	-.04 (.08)
21. RCT condition X CAMHS links X Threshold X Year	-.01 (.22)
Variance Components	
Residual variance	1.6 (.02)
Pupil-level	.99 (.03)
School-level	.26 (.04)

Note: * significant at 0.05, ** significant at 0.01 & *** significant at 0.001. Acronyms: CAMHS (child and adolescent mental health services), FSM (free school meals), IDACI (income deprivation affecting children), RCT (randomized control trial).

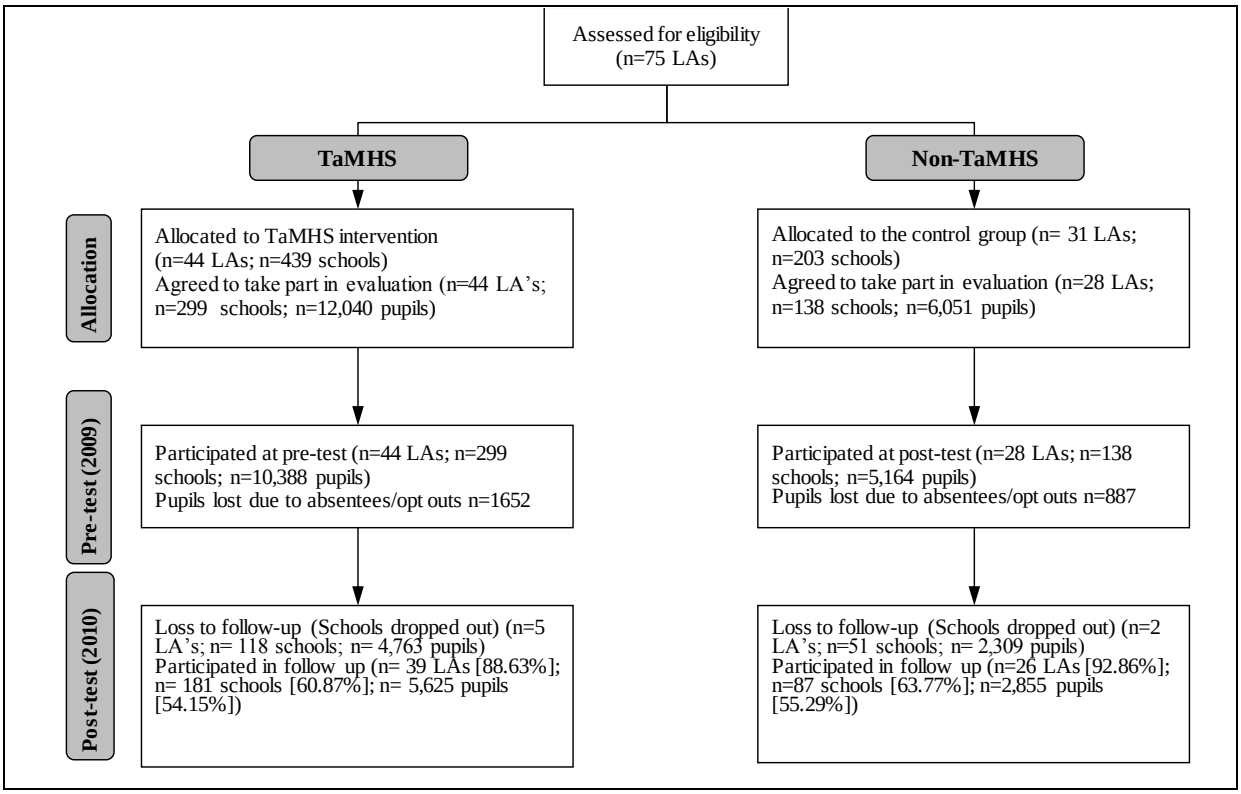

Figure 1. CONSORT Diagram of Trial Participation. This chart demonstrates the breakdown of TaMHS/non-TaMHS allocations. *LA (local authority).