Evaluation of the Healthy Minds project

03/08/2018

AMENDMENTS

On 07/10/16, following analysis of interim data from the first three years of the efficacy trial, an amended protocol was published incorporating several changes. These changes are described in full below, under the heading 2016 amendments.

Further changes have now been made providing further clarity on research question 3 and the respective roles and responsibilities of NIESR and LSE Health. These changes are described in full below, under the heading 2018 amendments.

2018 Amendments

- The roles and responsibilities of the evaluators are further clarified. In 2019, the LSE will produce the impact evaluation for research question 2 based on the well-being outcomes. In 2020, NIESR will produce the impact evaluation for research question 1 and 4.

- Research question 3 will not be analysed. It was planned to be investigated by NIESR in the 2020 report focussing on academic outcomes. However, in discussions between NIESR, LSE and EEF it was concluded that such mediation analysis was not possible. First, wording in the parent letters explained that data shared by LSE would not identify pupils nor schools. Thus, there was no rightful basis to share that data with NIESR. Second, the possibility of re-informing pupils of further uses of their data was discarded as too burdensome and costly.

- The wording of research questions 4 is slightly amended. It is specified that it will be only conducted for academic outcomes because FSM data was not collected by LSE and matching both datasets was not possible.

- Description of the sample size and analysis plan is included for the well-being report authored by LSE.

- Changes in the personnel are reflected. Namely, Dr Matthew Bursnall will replace Cinzia Rienzo as the lead for the quantitative analysis of the academic outcomes; and, the roles of LSE Steering Board for the project are included.

- The expert advice by LSE Health on the quantitative evaluation of the academic outcomes will be provided by LSE Health commenting on the draft final report following the submission of the report to EEF by NIESR.

- LSE Health and NIESR will submit separate applications for the NPD data on academic outcomes.

2016 Amendments

- Page 2: Intervention. The protocol has been amended to reflect additional years of funding for the programme.

- Page 4: Attainment data will no longer be collected after at the end of Year 9 or 10. This is because of concerns about measurement burden and attrition that resulted from the testing in the first two years of the trial.

- Page 4: GCSEs will be the primary outcome measure to demonstrate the impact of the programme. This data is accessible for all pupils through the National Pupil Database.

- Page 4: In addition to GCSEs the final report will also analyse the impact on exclusion and absenteeism, well-being, and other non-academic outcomes such as change in the Child Health Questionnaire (CHQ-87), and changes in depression and anxiety.

- Page 4: The sub-group analysis by ethnic minority children compared to white children has been removed since ethnicity information is not available for such analysis. This is because opt-in consent is required by the Department for Education to access this data.

- Page 5: Heather Rolfe is identified as the new project leader to substitute David Wilkinson. Alistair McGuire, LSE, will lead on the collection and analysis of the well-being outcomes. Alistair McGuire and Grace Lordan, LSE, will also provide advice and guidance on the academic outcome analysis.

- Page 6: Timeline has been amended to include work required for second half of the revised evaluation.

- Page 6: Updated process evaluation that has been extended to include evaluation for the final two years of the programme.

- Page 6: Updated analysis and reporting timetable.

BACKGROUND

Significance

The project aims to test the effectiveness of the Healthy Minds curriculum. This curriculum aims to boost pupils' academic achievement though improving their non-cognitive skills, which include motivation, resilience and self-regulation. How to Thrive, a national charity, is working with academics at the LSE, led by Lord Richard Layard, who have identified 14 evidence-based programmes for trial in secondary schools. The programme uses the principles of cognitive behavioural therapy to help students focus on and apply themselves to their learning.

The approach is based on the findings of Heckman and other economists that non-cognitive skills are as important as cognitive skills in determining a range of outcomes in life, including academic results. The main evidence for the programme's effectiveness is from a 2011 meta-analysis conducted by Durlak and colleagues[1]. This review found that across 35 controlled studies of whole-class social and emotional learning programmes there was an average effect on academic attainment of 0.27 standard deviations. Children from poorer backgrounds tend to have weaker non-cognitive skills than their better-off peers and the programme is therefore believed to have the potential to improve the academic performance of pupils in EEF target schools.

The first two years of the programme were initially funded by the EEF in October 2012 and the project has been delivering in schools since September 2013. The Healthy Minds curriculum was designed to be delivered over four years and the EEF therefore made a decision to continue with the project funding to allow the impact of the full programme to be assessed. This decision was based on the continued high engagement of schools and the positive feedback received from a process evaluation of the first two years. The continued evaluation will allow the impact of the four year programme on GCSE outcomes to be assessed.

In addition, the EEF agreed to fund the final two years of an evaluation of the programme, which collects data on the self-esteem, self-awareness and feelings of children, with academics from LSE using, amongst other data, an adapted version of the Child Health Questionnaire. This additional study will consider the impact the programme has on emotional well-being and health.

Intervention

The trial is funded by the EEF to cover the Personal, Social, and Health Education (PSHE) curriculum form Year 7 to Year 10.

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[1] Durlak, J. A., Weissberg, R. P., Dymnicki, A. B., Taylor, R. D., & Schellinger, K. B. (2011). The impact of enhancing students' social and emotional learning: A meta-analysis of school-based universal interventions. *Child Development, 82*(1), 405-432.

The intervention is a new PSHE curriculum for Year 7 to Year 10 pupils based on the programmes identified above. PSHE lessons take roughly one hour per week, and the intervention would replace schools' current PSHE lessons or other lessons where PSHE is not usually timetabled.

The programme seeks to develop pupils' non-cognitive skills and improve their resilience. It is aiming to show pupils how to apply the principles and techniques of social and emotional learning to their academic study and through this improve their educational attainment. It is also aiming to show to have a positive impact on their health and well-being.

RESEARCH PLAN

Research questions

There are four research questions:

1. Whether the programme boosts pupil's academic achievement?
2. Whether the programme improves pupils' well-being, measured by the Child Health Questionnaire (CHQ-87)?
3. Whether any impact of the programme on academic attainment is moderated by its impact on well-being; and (This question will not be investigated due to data limitations and legal considerations that impeded sharing the data with NIESR)
4. Whether there is a differential impact on disadvantaged pupils (as defined by eligibility for free school meals, EverFSM in the National Pupil Database) with respect to academic achievement?

Note that this implies a change to the original wording of research question (4). It was added that this analysis will be undertaken only for academic achievement as these data was not collected for the well-being analysis and matching of both datasets was not possible.

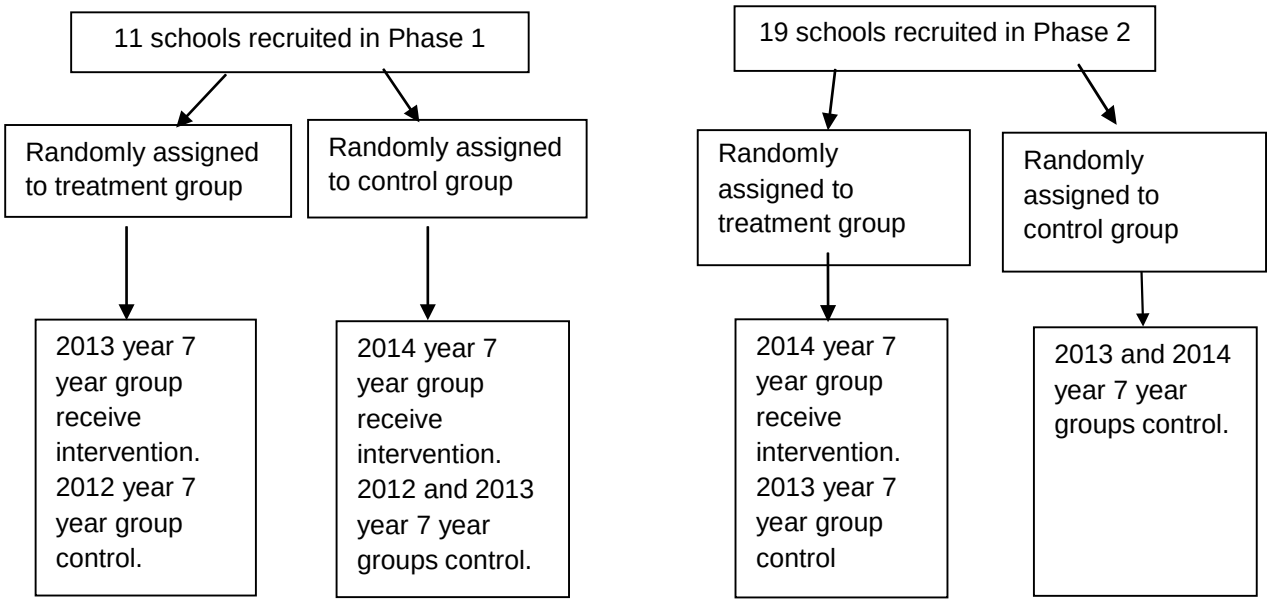
Design

Both the Academic Achievement study (Research questions 1, 3 and 4) and the Well-being study (question 3) rely on a cluster randomised trial, with school level randomisation. Randomisation is conducted using minimisation and schools are stratified according to whether the percentage of pupils eligible for Free School Meals (FSM) is less than 13 per cent, between 13 and 25 per cent or greater than 25%; whether the percentage of pupils with 5 GCSEs with grades A*-C is below 59 per cent or not; and whether the school is single sex or mixed.

School recruitment takes place in two phases. Phase 1 schools enter the project in academic year 2012/13. Schools assigned to the treatment group implement the intervention with the Year 7 year group in academic year 2013/14, whilst schools assigned to the control group implement the intervention with the Year 7 year group in academic year 2014/15.

Phase 2 schools enter the project in academic year 2013/14. Schools assigned to the treatment group implement the intervention with the Year 7 year group in academic year 2014/15, whilst schools assigned to the control group do not implement the intervention with their 2014/15 Year 7 year group.

Figure 1 The Intervention



Participants

All pupils in selected Phase 1 schools in year 7 in 2013/14 are eligible along with all pupils in selected Phase 2 schools in year 7 in 2014/15. Additional control groups are taken from 2012/13 year 7 year group in Phase 1 schools and 2013/14 year 7 year group in Phase 2 schools.

Outcome Measures

Both the health and educational assessments will be reported respectively by the LSE and NIESR teams. The primary outcome for the Academic Achievement study will be GCSE attainment. The primary outcome measure for the well-being study is the general health measure embedded in the Child Health Questionnaire (CHQ-87)

January 2019 report (authored by LSE)

The primary outcome for the report in January 2019 will be the character measure captured by the change in the General Health single item score embedded within the Child Health Questionnaire (CHQ-87), administered by LSE. Secondary measures assessing the overall impact of the intervention, as compared to the control, will be achieved through the inclusion of an 87-item instrument on the baseline questionnaire that has been designed and validated for children from 5- to-18 years of age. Overall, the instrument measures unique psychosocial concepts that will be analysed at the scale level and also combined, in different dimensions, to derive an overall soft skill score. The secondary measures for the character study will also examine changes in depression and anxiety. This report will be authored by LSE.

Sample size calculations for January 2019 report (Authored by LSE)

For the January 2019 Report relating to the Wellbeing study, sample size calculations were based on 100 students per year group, with conventional statistical significance of 0.05 and power of 0.80, and assuming an intra-class correlation (ICCs) to be 0.06. Based on these figures, and equal numbers of treatment and control schools, a sample size of 25 schools is required to detect an effect size of 0.3 standard deviations. To allow for drop-out of schools over the four-year period of follow-up, pupil attrition and parental consent withdrawal we aimed to recruit 30 schools, which would allow detection of an effect size of 0.28.

Analysis plan for January 2019 report (Authored by LSE)

The primary analysis will be carried out using difference-in-difference models. Adjustment of standard errors will allow for the clustered nature of the data. Analysis will be undertaken on an intent-to-treat basis.

Extensive secondary analysis will be undertaken as it is well-recognised that character and well-being cannot be assessed within a single measured outcome (Conti and Heckman, 2012; Decancq and Neuman, 2014; Khanemann and Krueger, 2006). The multiple comparison issues arising from the analysis of different dimensions of character and well-being will be addressed within the secondary analysis to ensure results are appropriately interpreted. A number of robustness checks will also be undertaken.

The LSE have developed a detailed statistical analysis plan prior to analysis takes place, which has been peer reviewed by members of EEF's Statistical Analysis Panel.

July 2020 report (authored by NIESR)

The primary outcome for the final report due in July 2020 will be the GCSE attainment level.

Secondary outcomes maths and English measured by the Hodder Education Access Reading Test and the Hodder Education Access Maths Test, exclusion and absenteeism for end of Year 7 and end of Year 8. Both tests will be paper based. Pupils are randomly assigned to take either the Reading or Maths Test, so half of each year group in each school will take each of the tests.

The analysis will not be blinded. Assessors and data analysts will know the intervention status of each school. However, schools will be required to deliver the tests under exam conditions and to protect against bias, will follow instructions from NIESR rather than the delivery team (How to Thrive).

The report will cover the whole seven year programme, incorporating findings from each point of testing. It will also include implementation and process evaluation findings from the first and second stages of the project. As well as presenting data collected and analysed by NIESR, it will include information provided by How to Thrive, for example on training and on activities of control schools.

In addition, NIESR will undertake a mediation analysis using aggregate statistics from the well-being data, including school level pre and post intervention aggregate scores for the well-being measure.

Sample size calculations for July 2020 report (Authored by NIESR)

Our power calculations assume 160 pupils per year group per school (based on analysis of year group size in preceding year in selected schools). This means that 80 pupils per school will take the Reading test and 80 pupils will take the Maths test. We also assume an intra-class correlation of 0.13, significance level of 0.05 and power of 0.8. Based on these figures, the required number of schools to detect an effect size of 0.3 standard deviations is 23, whilst to detect an effect size of 0.25 standard deviations requires 32 schools. Meta analysis of similar programmes (Durlak et al. op. cit.) indicates an average effect size of 0.27 standard deviations.

Analysis plan for July 2020 report (Authored by NIESR)

The analysis will be carried out using multilevel regression models to reflect the clustered nature of randomisation. The model will be specified in order to allow comparison of pupil outcomes for those attending intervention or treatment group schools.

We will consider in particular outcomes for children receiving free school meals (FSM) compared to non-FSM children.

NIESR will develop a detailed statistical analysis plan at least 3 months before analysis takes place, and do so jointly with LSE. The plan will be peer reviewed by members of EEF's Statistical Analysis Panel (SAP).

Process evaluation methods

NIESR is carrying out an independent process evaluation of the intervention to identify the factors which affect impact and which may explain the findings of the quantitative evaluation. The evaluation is using a range of qualitative approaches to assess evidence in relation to:

- the introduction of the programme in participating schools, including commitment of senior leadership
- contextual factors, including previous delivery of PSHE, other activities and initiatives with a resilience component and resource issues of relevance to the programme
- training of teachers in the programme, their understanding of the approach and commitment, their preparation for the emotional impact on pupils
- the application of the programme within the PSHE slot, size of groups and who it is delivered by
- views on the curriculum materials
- collaborative partnerships relevant to the operation and implementation of the programme

Interviews are being conducted with senior staff and teachers in schools as well as focus groups with pupils. The first round of interviews took place in Spring 2015 with findings forming part of the interim evaluation report. At that stage, schools had been delivering the programme for around 18 months and pupils were in year 8, the second in the 4 year programme. In the second stage of the evaluation NIESR will visit 10 schools, a mix of phase 1 and phase 2. These visits will include interviews with senior staff and teachers, as in 2015. They will also include focus groups with pupils. The 10 schools will include 4 or 5 of the 7 schools visited. In addition, we will visit 5 or 6 schools that joined the programme's second phase. These schools will be selected to include a range of school by location and context, in particular level of deprivation and under-attainment. The fieldwork will take

place in February 2017. At that point, phase 1 schools will be in the final year of the programme and teachers and pupils will be able to reflect on all years; phase 2 schools will be in the penultimate year and will have a better recollection of the latter part of year 2 and year 3 of the programme which was not covered by phase 1 of the evaluation.

PERSONNEL

Lord Richard Layard, of the LSE Centre for Economic Performance and his LSE colleagues will oversee the project through a steering group that will be chaired by Lord Layard.

The Steering Group has met 4 times a year since 2012. Membership has been updated as roles have changed. James O'Shaughnessy left in late 2016 to take up his role as Parliamentary Under Secretary of State at the Department of Health and a Government Whip (Lord in Waiting) in December 2016.

Healthy Minds Project - Roles and Responsibilities

How to Thrive
Lead and direct the project, support the schools, coordinate the data collection arrangements and design and deliver all the necessary training elements.

Name	Steering Group Role	Project Responsibility
Lucy Bailey	Project Director	Project management, direction and oversight. Grant holder. Contractor.
Emma Judge	Psychological Lead to Curriculum Design and Training Lead	Curriculum design. Training design and lead trainer.
Julie Newbury	Administrator	Project support officer. Day to day support to schools. Data collection administration and coordination.

London School Economics (LSE)
Joint project lead, academic research design, lead research, lead health evaluation and analysis. Report on the findings.

Name	Steering Group Role	Project Responsibility
Richard Layard	Chair	Figurehead to the project
Ali McQuire	Research Lead for Academic and Health Evaluation	Lead for research, analyse and report the findings
Grace Lordan	Research Analysis Lead	Project researcher, data store and analyser, evaluation report

National Institute of Economic and Social Research (NIESR)
Commissioned by EEF to provide evaluation of the academic research and impact on academic attainment. Independent evaluation of the project process. From July 2018 NIESR only attend the Steering Group when academic research is on the agenda.

Name	Steering Group Role	Project Responsibility
Matthew Bursnall/ Heather Rolfe Attend alternately	Academic Evaluation Lead	Lead for academic research design. Lead for academic data collection, store and analysis.
Heather Rolfe	N/A	Lead for project process evaluation.

Project Consultants

Provide support to the project outcomes.

Name	Steering Group Role	Project Responsibility
John Coleman	Academic Lead to Curriculum Design	Academic support to the curriculum design. Support steer and direction of research.

PSHE Association

Supporting the project to ensure it meets latest guidance and delivers targets set out by the CMO

Name	Steering Group Role	Project Responsibility
Jonathan Baggaley	Professional Lead	Professional support to ensure the curriculum is in-line with latest national PSHE Guidance. Establishing links and sharing project at national level.

Lucy Bailey July 2018

'How to Thrive' will be responsible for directing the project, delivering training and ongoing support to participating schools. How to Thrive was originally a unit housed in Hertfordshire County Council , but in 2016 moved to be an independent charity, number 1170591. Lucy Bailey, CEO of How to Thrive will be leading the implementation of the project in schools.

NIESR is conducting an external evaluation of the project. Matthew Burnsall will conduct the quantitative analysis of the academic measures. The project leader Heather Rolfe will lead a

qualitative process evaluation of the programme. Other key members of the NIESR team are Nathan Hudson-Sharp. Alistair McGuire and Grace Lordan, LSE Health, will provide expert advice on the quantitative evaluation of the academic outcomes. Moreover, they will also be responsible for the quantitative analysis of the well-being outcomes. Along with NIESR, they will have access to the NPD.

TIMELINE

Phase 1	Jan-May 2013	May-Jun 2013	Sep 2013	Oct 2013 – Mar 2014	April 2014	June 2014	Sep 2014	June 2015	Sept 2015	July 2016	Feb 2017
Recruit Schools											
Assign Schools											
Teacher training											
Test 2012/13 year 7 cohort											
Curriculum starts in Treatment schools											
Test 2013/14 year 7 cohort											
Curriculum starts in Control schools											
Phase 2											
Recruit Schools											
Assign Schools											
Teacher training											
Test 2013/14 year 7 cohort											
Curriculum starts in Treatment schools											
Test 2014/15 year 7 cohort											
School visits											

PLANNED ANALYSIS AND REPORTING TIMETABLE.

	June 2015	Sept 2015	Jan 2016	Nov 2016	Jan 2019	Jan 2020	May 2020
Analysis Phase 1 and Phase 2 (end of Year 1)							
Analysis of Year 2 (end of Y8)							
Report on character measures (LSE)							
Report on attainment, implementation and process evaluation (NIESR)							
Final report approved and data submitted to archive							

RISKS

- Risks to the evaluation and how they might be addressed.

The following table summarises the main risks to the evaluation and how they might be addressed

Issue/risk	How risk might be addressed
Contamination of the random assignment design	Complications arise when the real-life behaviour of subjects in randomised control trials is at odds with the conceptual design of the experiment. Pupils may not receive all of the treatment. To achieve anything other than the effect of intention to treat will be difficult. However, to help understand the nature of the estimated impact better, monitoring information should be collected on programme attendance.
Confusion in evaluation tasks undertaken by LSE, How to Thrive and NIESR	Tasks and roles for each organisation have been agreed at the outset of the project.
Unexpected absence of team members	The team will substitute for each other during any short-term absence. In the event of longer periods of unplanned absence, NIESR will involve other NIESR experts in evaluation and education if necessary.
Low impact report	Our reporting will be aimed at ensuring maximum impact of findings through summaries and guidance for EEF schools. Reporting will focus on best practice and implications for policy and practice.

Data protection statement.

NIESR has established systems which comply with the stringent requirements of data protection legislation and best practice in data security and research ethics. This compliance includes the use of encryption, secure passwords, lockable paper files and secure entry to the office building (which does not have any public access). Computing facilities include secure data transfer through a VPN system and the use of stand-alone computers for data use. Through training, staff are made aware of the importance of ensuring that data security is not compromised.