ISRCTN69745606 https://doi.org/10.1186/ISRCTN69745606

A research trial to test the impact of The Orchestrating Numeracy and the Executive (The ONE) Programme to improve children's numeracy and executive functions

Submission date
04/01/2024

Recruitment status
No longer recruiting

Registration date
09/02/2024

Overall study status
Completed

Last Edited
30/12/2025

Condition category
Other

[_] Prospectively registered
[X] Protocol
[X] Statistical analysis plan
[X] Results
[_] Individual participant data

Plain English summary of protocol

Background and study aims

The ONE programme involves training for preschool staff, and guided play activities delivered by preschool staff. The ONE programme aims to support children's numeracy and thinking skills. The thinking skills that The ONE programme aims to support are sometimes called executive functions. Executive functions, such as focusing attention, ignoring distractions and thinking flexibly, are important for Early Years numeracy skills even before going to school. This study wants to find out if The ONE programme improves these skills.

What participation in the study involves

Children aged 3 and 4 years old in the academic year 2023/24, who will be starting school in the next academic year in early years settings (such as nurseries and pre-schools) enrolled in the trial can participate. These will include private, voluntary and independent early years settings and maintained settings. Settings will be in London, East of England, East Midlands, and Yorkshire and Humber.

What does the study involve?

Up to 150 early years settings will be recruited into the study. Half of the settings will implement The One programme in the academic year 2023/24 and half will implement it a year later and will continue to deliver their usual care and learning in the meantime. Maths attainment and executive function for children in the first group of settings will be compared to children in the second group (who will not yet have tried the programme) to find out whether The ONE programme can improve numeracy and thinking skills.

The ONE programme runs for 12 weeks and has two parts. The first involves training for early years staff to run activities designed to improve children's numeracy and thinking skills. The second part involves staff running these activities as part of their preschool's normal day-to-day routine. Staff will be asked to do at least three activities each week for 12 weeks, with each activity taking 5-10 minutes.

At the start of the study, and again at the end of the study, up to 15 children in each preschool will be asked to play some games to assess their maths and thinking skills. Maths skills will be measured using the Early Years Toolbox (EYT) Early Numeracy Assessment. Thinking skills (executive function) will be measured in two different ways. The first, Heads-Knees-Toes-Shoulders Revised (HKTS-R), measures several different thinking skills. The second, Corsi blocks, tests children's visual-spatial memory.

What are the possible benefits and risks of participating?
The evaluation of The ONE practitioner development and activities may help children and preschool practitioners in the future. There are no disadvantages or risks to children from taking part in The ONE programme activities or assessment games.

Where is the study run from?
The ONE programme is designed and run by a team comprising academics from the University of Oxford and the University of Sheffield. RAND Europe is responsible for the independent evaluation.

When is the study starting and how long is it expected to run for?
October 2022 to July 2024

Who is funding the study?
1. The Education Endowment Foundation (EEF)
2. Stronger Practice Hubs (SPH)

Who is the main contact?
Elena Rosa Speciani, erspeciani@randeurope.org

Contact information

Type(s)
Public, Scientific, Principal investigator

Contact name
Ms Elena Rosa Speciani

ORCID ID
https://orcid.org/0000-0003-4420-3320

Contact details
RAND Europe, Eastbrook, Shaftesbury Road
Cambridge
United Kingdom
CB2 8DR
+44 (0)1223 353 329
erspeciani@randeurope.org

Additional identifiers

Protocol serial number
022807.014

Study information

Scientific Title
Embedding executive challenge into early maths: A randomised controlled trial

Acronym
The ONE

Study objectives
There is a significant difference in maths attainment - as measured by the Early Numeracy Assessment from the Early Years Toolbox - of children in the year before entering Reception in early years settings receiving The ONE intervention in comparison to those in control settings receiving business-as-usual care and learning.

There is a significant difference in executive functioning, as measured by Heads-Toes-Knees-Shoulders (HTKS-R) and Corsi blocks, of children in the year before entering Reception in early years settings receiving The ONE intervention in comparison to those in control settings receiving business-as-usual care and learning.

Ethics approval required
Ethics approval required

Ethics approval(s)
1. Approved 14/03/2023, RAND U.S. Human Subjects Protection Committee (HSPC) (1776 Main Street, P.O. BOX 2138, Santa Monica, California, 90407-2138, United States of America; +1 (866) 697-5620; hspcinfo@rand.org), ref: 2023-N0001

2. Approved 14/03/2023, Medical Sciences Interdivisional Research Ethics Committee, University of Oxford (Research Services, Boundary Brook House, Churchill Drive, Headington, Oxford, OX3 7GB, United Kingdom; +44 (0)1865 616575; ethics@medsci.ox.ac.uk), ref: R85139/RE001

Primary study design
Interventional

Study design
Multi-centre interventional two-arm waitlisted cluster randomized controlled trial

Study type(s)
Efficacy

Health condition(s) or problem(s) studied
Early numeracy and executive function in children ages 3-4

Interventions
Random allocation into the intervention and control groups will take place at the level of early years settings (pupils aged 3-4).

Control settings will deliver instruction as usual whilst treatment settings will deliver instruction using The ONE programme.

Treatment settings will deliver The ONE programme, a 12-week intervention consisting of professional development for practitioners to run fun, short, play-based activities designed to support children's early thinking and numeracy skills. Practitioners in participating early years settings receive a four-week training course consisting of weekly 30-minute face-to-face training sessions with the delivery team at the start of the programme. Practitioners in each setting are also asked to deliver a minimum of three numeracy activities per week for the 12-week duration of the programme. These activities are drawn from a set of 25 activity cards developed by the delivery team, which describe maths activities and highlight how to gradually increase executive function demands within maths learning. The activities last five to ten minutes each and can be embedded into pre-school routines such as group activities, free play or outdoor play. Staff have the flexibility to choose how to implement the activities (big groups, small groups, one-to-one, or a combination) and which children to involve, as long as children in the year preceding the move into Reception are included in these activities (3-4 year-olds).

Intervention Type
Behavioural

Primary outcome(s)
Maths attainment will be measured using the Early Years Toolbox (EYT) Numeracy measure, 0 – 120 scale at baseline and endline

Key secondary outcome(s)
1. Executive functioning (composite measure) will be measured using Heads, Toes, Knees and Shoulders (HTKS-R) 0-118 scale at baseline and endline
2. Executive functioning (visual-spatial) will be measured using Corsi blocks, 0-15 scale, at baseline and endline

Completion date
31/07/2024

Eligibility

Key inclusion criteria
1. Children aged 3 and 4 years old in the academic year 2023-24 who are due to start school in the following academic year
2. Children attending enrolled early years settings
3. Private, voluntary and independent (PVI) settings and maintained early years settings in the following regions: London; East of England; East Midlands; and Yorkshire and Humber
4. Settings hosting 15 or more children due to enter Reception in September 2024

Participant type(s)
Learner/student

Healthy volunteers allowed
No

Age group
Child

Lower age limit

3 Years

Upper age limit
4 Years

Sex
All

Total final enrolment
1859

Key exclusion criteria
1. Children in enrolled settings who are not aged 3 and 4 in the academic year 2023-24
2. Children who do not attend one of the enrolled early years settings
3. Children whose parents choose to withdraw them from the study
4. Settings outside of the regions of London, East of England, East Midlands, and Yorkshire and Humber

Date of first enrolment
15/03/2023

Date of final enrolment
31/10/2023

Locations

Countries of recruitment
United Kingdom

England

Study participating centre
Up to 150 early years settings in England
-
- NO COUNTRY SPECIFIED, assuming England
England
-

Sponsor information

Organisation
Education Endowment Foundation

ROR
https://ror.org/03bhd6288

Funder(s)

Funder type
Charity

Funder Name
Education Endowment Foundation

Alternative Name(s)
EducEndowFoundn, The Education Endowment Foundation (EEF), Education Endowment Foundation | London, EEF

Funding Body Type
Private sector organisation

Funding Body Subtype
Trusts, charities, foundations (both public and private)

Location
United Kingdom

Funder Name
Stronger Practice Hubs

Results and Publications

Individual participant data (IPD) sharing plan
The datasets generated and analysed during the current study will be stored in a publicly available repository (Office for National Statistics). This data will not be personally identifiable. The EEF's webpage on the project is here: https://educationendowmentfoundation.org.uk /projects-and-evaluation/projects/the-one-project-2022-23-trial. The type of data stored are demographic information such as gender and eligibility for free school meals, child assessment scores, school attended. SRS-accredited researchers can apply to the EEF for access, setting out why they wish to use the data. The final report is due to be published in Autumn 2024. Data will be available in the SRS around 6 months – 1 year after this. The basis for RAND Europe's use of children's data is legitimate interest. Parents are given the option to withdraw their child from study. Participant data will be linked to NPD (National Pupil Database) data in the ONS SRS using pupil-matching references (thereby removing participant identifying information). There are no ethical or legal restrictions.

IPD sharing plan summary
Stored in publicly available repository

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Funder report results			18/11/2025	No	No
Participant information sheet	Information for Settings version 2.0	30/04/2023	29/01/2024	No	Yes
Participant information sheet		11/11/2025	11/11/2025	No	Yes
Protocol (other)			18/11/2025	No	No
Protocol file		12/10/2023	29/01/2024	No	No
Statistical Analysis Plan	version 1.0		28/07/2025	No	No
Statistical Analysis Plan			18/11/2025	No	No
Study website		11/11/2025	11/11/2025	No	Yes