

# Methodological Challenges in Education RCTs

---

Anneka Dawson, Emily Yeomans and Elena Rosa Brown-IES and EEF



# Background to the EEF and UK RCTs

- EEF set up 2011 to help break the link between family income and educational achievement in England
- During the final year of mandatory education only 39% of disadvantaged children in England achieved 5 good grades compared to 67% of all other pupils.
- EEF funds and independently evaluates interventions in schools and communicates results to practitioners
- EEF has funded 130 trials, 15 quasi experimental designs and 23 pilot studies by July 2018

# Context of first EEF RCTs

- Before 2011 there were very few education RCTs in England
- 1017 education RCTs since 1980 of which 75% were in the last ten years (Connolly et al, 2018)
- EEF is responsible for approx. 25% of all education RCTs outside the US

# Challenge 1- Intervention readiness for trial

- Interventions tested before they were fully piloted led to large attrition in some early trials
- Evaluators were unable to conclude if an intervention did not work or it was not fully developed so could not be implemented effectively
- For example, Tutoring with Alphie- computer problems led to large attrition

## Solution 1- Three criteria for assessing interventions

- EEF uses three criteria for assessing readiness for trial EEF as follows:
  1. Has the intervention previously been delivered in schools?
  2. Are there clear expectations for what good delivery looks like?
  3. Are the training and resources manualised and are they intensive enough to help teachers implement the approach?

## Challenge 2- recruiting schools and retaining them in trials

Problems have included:

- Short timelines
- Low retention of schools
- Low returns of baseline tests and pupil details

## Solutions 2- include:

- Restructure recruitment periods
- Increase schools understanding of RCTs and encourage engagement to help with recruitment
- Collect school data and keep in touch to help retention

## Challenge 3- calculating appropriate sample sizes and ensuring cost effectiveness

- Previous research has shown that design is a strong predictor of the likely effect
- Effect sizes in small scale studies are  $\sim 2$  x the size of large scale multi- school studies
- Hattie (2008) talked about a 0.4 s.d hinge point
- EEF results showed average of 0.1 s.d by June 2017



## **Solution 3- consider intervention cost when powering studies**

- How secure is the evidence?
- Does the cost of the intervention justify the effect observed?
- How does the effect and the cost compare with other interventions trying to achieve the same thing?

## Challenge 4- carry out robust implementation and process evaluation

- Little guidance for how to conduct good quality IPE for educational RCTs was available in the early days of EEF
- Early EEF trials focused on how well teachers and pupils engaged with an intervention and not whether it had been delivered well
- For example, the peer tutoring project had variable implementation and did not identify what the control group was doing

## Solutions 4 include:

- Clearly define the intervention at the start using a Template for Intervention Description and Replication (TIDieR)
- Hold a Intervention Delivery and Evaluation Analysis (IDEA) workshop to dig into the details of the theory of change
- Use usual practice surveys with schools at the beginning and end of all EEF trials
- Establish what compliance to the intervention looks like and carry out compliance analysis

## Challenge 5 – choosing and delivering appropriate testing

- Reasons for measurement attrition include:
  - Schools finding testing too onerous
  - Problems with online/ computer testing
  - Schools being unaware of testing requirements
- Testing must also be timed correctly

## Solutions 5- include:

- Considering the most appropriate means of collecting data- use national test data where possible
- Reducing the amount of testing by focusing on key outcomes
- Judging the appropriate timing of testing

# Conclusions

- EEF believes improvements must be underpinned by two key approaches: (1) keeping schools central (2) early planning.
- Future research will focus on challenges in Early years and post 16 settings and using robust quasi- experimental methods when necessary

**Any questions?**