Development of a school-based intervention for ADHD

Postdoctoral fellowship proposal

Abby Russell

Senior Research Associate in Epidemiology

a.e.russell@bristol.ac.uk

bristol.ac.uk

Attention deficit/hyperactivity disorder (ADHD)

- Associated with poor outcomes

- Social, occupational, health, mental health, education

- Estimated £670 million annual cost (2010)

- Medication effective but adherence poor and long term outcomes not comparable to non-ADHD peers

- Parent training

School-based interventions

- Plenty of studies

- Systematic reviews

- Varied design

- Poor quality ratings

Current best evidence

Daily Report Card

Multiple strategies and flexibility

Individuality of ADHD

Contingency management

Multi-component

In classroom (academic)

Adapted based on theories of ADHD

Short-term

Self-regulation (academic)

Functional Behavioural Analysis

One to one delivery (academic)

Fellowship project

Develop a school-based intervention for ADHD

- Use intervention mapping to develop a theory- and evidence-based intervention

- Refine and adapt this prototype intervention in a multiple baseline case-series study

bristol.ac.uk

ADHD toolkit

- Online training module (teachers, parents)
- Child activity
- Functional behaviour analysis
- Link observed behaviour to ADHD-related outcome (each outcome has a module)
- Implement Daily Reward Card
- Choose strategies to implement from selected module
- Evaluate change in behaviour

Behaviour

Fidgets
Running around
Can't sit still
Can't stay in room
Rocking
In and out of seat
Always on the go

Module

Hyperactivity

...tions
Aggressive
Swearing
Bullied
Bullying
Problems with friendships
Incomplete work
Poor marks

Conduct

Social

Academic

bristol.ac.uk

Aims for stage 1

1. Identify and synthesise existing evidence for interventions that have targeted the toolkit outcomes

2. Refine theory and create logic models of change in order to select strategies for inclusion in the toolkit

3. Produce version 1 of the ADHD toolkit

bristol.ac.uk

Intervention mapping

1. Analysis of the problem (needs assessment)

2. Detailed mapping of current behaviour, ideal outcome behaviour and behaviour change needed to get from current to ideal

3. Specify behaviour change techniques to use

4. Specify practical strategies and design intervention

5. Plan for adoption, implementation and sustainability of the intervention

6. Generate an evaluation plan
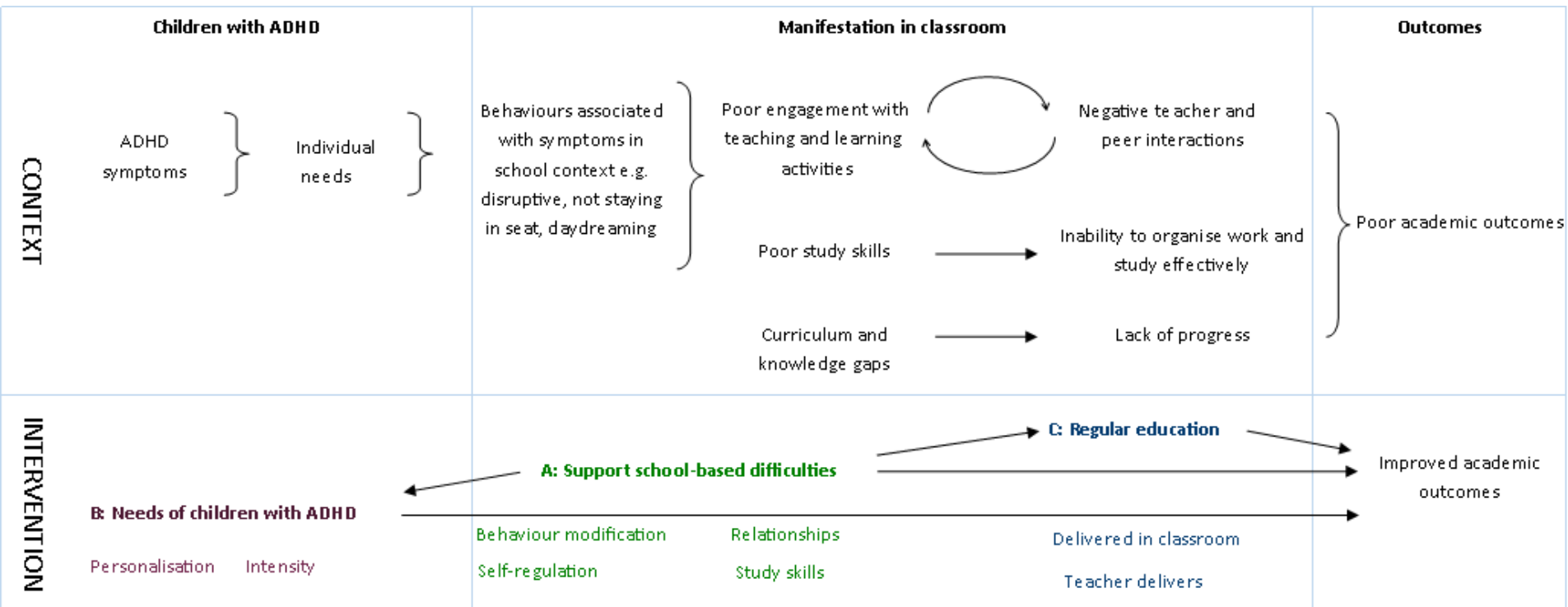
Stakeholder workshops

Logic models, co-created.

Informed by theories

Stakeholder workshops

Draw on existing literature for strategies where possible, co-create new strategies informed by steps 1-3 where needed
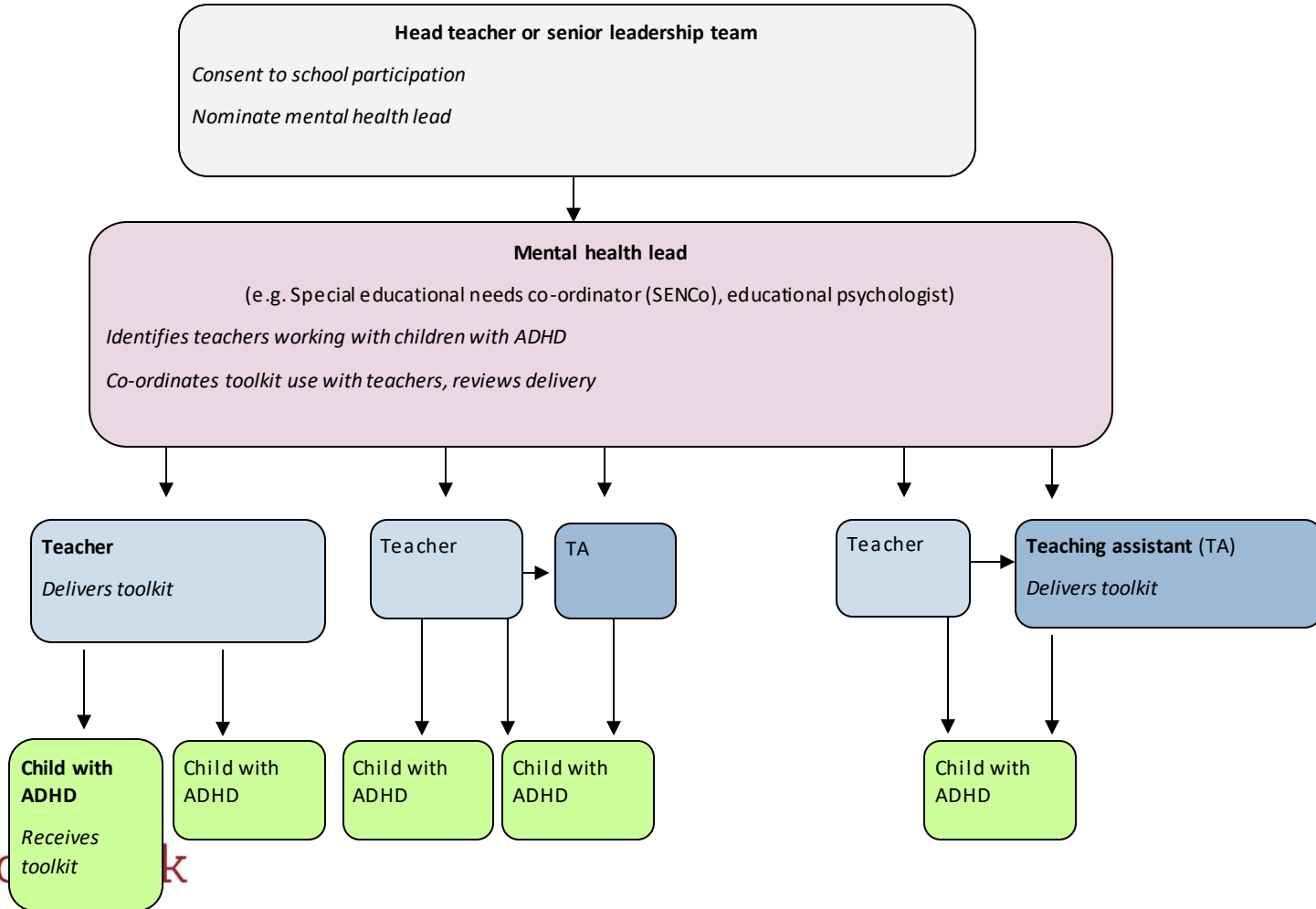
Case series study

	Children with ADHD	Manifestation in classroom	Outcomes

CONTEXT

ADHD symptoms — Individual needs

Behaviours associated with symptoms in school context e.g. disruptive, not staying in seat, daydreaming

Poor engagement with teaching and learning activities ⟷ Negative teacher and peer interactions

Poor study skills → Inability to organise work and study effectively

Curriculum and knowledge gaps → Lack of progress

Poor academic outcomes

INTERVENTION

B: Needs of children with ADHD

Personalisation   Intensity

A: Support school-based difficulties

Behaviour modification   Relationships
Self-regulation   Study skills

C: Regular education

Delivered in classroom
Teacher delivers

Improved academic outcomes

bristol.ac.uk

Skill building

Aims for stage 2

- Develop a toolkit that is feasible and acceptable to implement in the school setting

- Assess whether the toolkit is perceived as useful by intended users

- Develop methods to evaluate the toolkit

- Assess whether ADHD symptoms show evidence of change in response to the toolkit interventions (is it likely to be effective?)
- Identify suitable outcome measures to assess core symptoms, child and teacher wellbeing
- Develop and test a framework for costing the toolkit, and for assessing cost-effectiveness in a future definitive trial

Head teacher or senior leadership team

Consent to school participation

Nominate mental health lead

↓

Mental health lead

(e.g. Special educational needs co-ordinator (SENCo), educational psychologist)

Identifies teachers working with children with ADHD

Co-ordinates toolkit use with teachers, reviews delivery

Teacher

Delivers toolkit

Teacher

TA

Teacher

Teaching assistant (TA)

Delivers toolkit

Child with ADHD

Receives toolkit

Child with ADHD

Child with ADHD

Child with ADHD

Child with ADHD

School	Child Participant	Spring 2022	Summer 2022	Autumn 2022	Spring 2023	Summer 2023	Autumn 2023	Spring 2024
		School term						
1	1							
	2							
	n							
2	1							
	2							
	n							
3	1							
	2							
	n							
4	1							
	2							
	n							
5	1							
	2							
	n							
n	n							

Key
Baseline
Intervention
Follow-up

Time period (school terms)	2020-2021	Baseline (begins Spring 2022)					Term prior to intervention					Intervention term					Follow-up term				
Weeks		1-5		Half term	6'10		1-5		Half term	6'10		1-5		Half term	6'10		1-5		Half term	6'10	
Activity																					
Recruitment and consent - schools, teachers	X																				
Recruitment and consent - children, parents	X																				
Randomisation	X																				
ADHD symptom measure		X	X		X		X	X		X	X	X	X		X	X	X	X		X	X
Preparatory stages											X										
Implement digital Daily Report Card												X									
Implement module 1												X									
Implement module 2															X						
Module outcome measures												X	X		X	X		X			X
Questionnaire measures (acceptability, feasibility)													X				X				
Interviews, focus groups (acceptability, feasibility)													X			X					

Notes: Baseline may be multiple terms so term shown would be repeated until the term prior to intervention start. Each school term will vary in length so these are approximate data collection points. Preparatory stages include the online training module, child strengths activity, functional behaviour analysis to identify two core behaviours that will be the target of the toolkit, and operationalise Daily Report Card goals.

School	Approximate number of participants by participant type				
	Teacher/Teaching Assistant interviews	Mental Health Lead interviews	School focus group	Child paired interviews	Parent phone interviews
1	3	1		1	1
2			5	2	1
3	2	1		1	1
4			5	2	1
5	3	1		1	1
6			5	2	1
7	2	1		1	1
8			5	2	1

References

- Kok G. 2014. A practical guide to effective behavior change: How to apply theory-and evidence-based behavior change methods in an intervention.

- Bartholomew L.K., Markham, C.M., Ruiter, R.A., Fernández, M.E., Kok, G. and Parcel, G.S., 2016. Planning health promotion programs: an intervention mapping approach.

- Moore DA, Russell AE, Matthews J, Ford TJ, Rogers M, Ukoumunne OC, Kneale D, Thompson-Coon J, Sutcliffe K, Nunns M, Shaw L. School-based interventions for attention-deficit/hyperactivity disorder: A systematic review with multiple synthesis methods. Review of Education. 2018 Oct;6(3):209-63.

- Fabiano GA, Pyle K. Best Practices in School Mental Health for Attention-Deficit/Hyperactivity Disorder: A Framework for Intervention. School Mental Health. 2018:1-20.

- Moore DA, Russell AE, Arnell S, Ford TJ. Educators' experiences of managing students with ADHD: a qualitative study. Child: care, health and development. 2017 Jul;43(4):489-98.

bristol.ac.uk

Time

School context

Children with SEN

Peer relationship problems

Low socioeconomic status

Poor GCSE results

IMPULSIVITY

Child with untreated ADHD

INATTENTION

IMPULSIVITY

HYPERACTIVITY

Disruptive behaviour

Substance use

Crime

Staff

STDs and pregnancy

Poor mental health

Teacher burn-out and stress
Teacher mental health problems

Family

Peers

Accidents

Co-occurring disorders