University of BRISTOL

Development (and initial evaluation) of a school-based intervention for ADHD

Postdoctoral fellowship proposal

Abby Russell

Senior Research Associate in Epidemiology

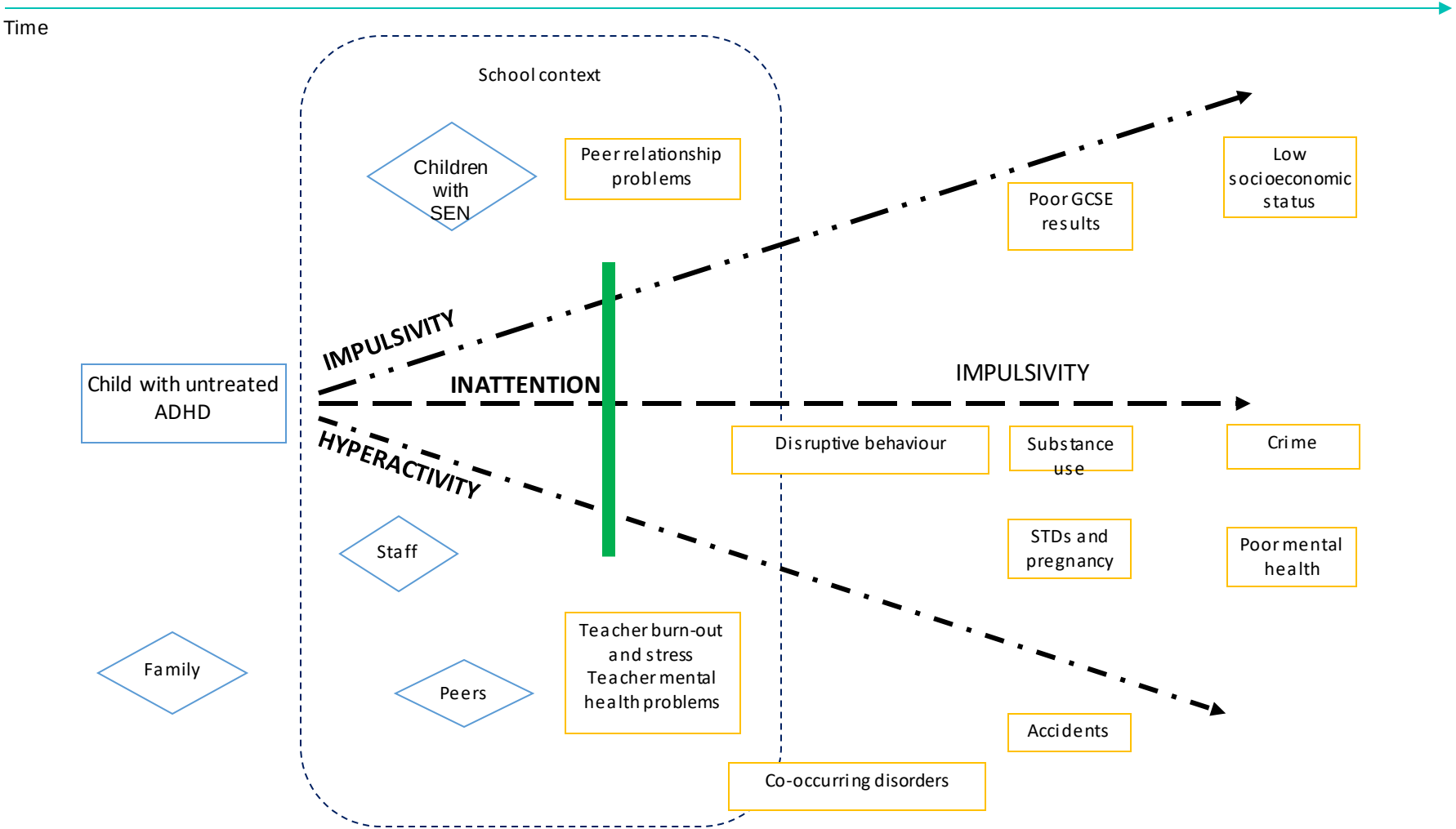
a.e.russell@bristol.ac.uk

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


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
Family
Peers
Teacher burn-out and stress
Teacher mental health problems
Accidents
Co-occurring disorders

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School-based interventions for attention-deficit/hyperactivity disorder: A systematic review with multiple synthesis methods

Darren A. Moore[a,*], Abigail E. Russell[b], Justin Matthews[c], Tamsin J. Ford[b], Morwenna Rogers[c], Obioha C. Ukoumunne[c], Dylan Kneale[d], Jo Thompson-Coon[c], Katy Sutcliffe[d], Michael Nunns[c], Liz Shaw[c] a
[a]Graduate School of Education, University
University of Exeter Medical School, Univ
South West Peninsula (PenCLAHRC), U
Exeter, Exeter, UK, [d]EPPI-Centre, Social
Education, University College London, Lo

Non-pharmacological interventions for atte
ments, but it is unclear how effective school-
which features of interventions are most effe
controlled trial evidence of the effectiveness o
tings. Three methods of synthesis were used
certain types of interventions are more effectiv
lead to effective academic outcomes. Twenty-

School Mental Health
https://doi.org/10.1007/s12310-018-9267-2

ORIGINAL PAPER

Best Practices in School Mental Health for Attention-Deficit/Hyperactivity Disorder: A Framework for Intervention

Gregory A. Fabiano[1] · Kellina Pyle[1]

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)

Limitations of existing studies

- Fail to take into account the heterogeneity of ADHD, applying multi-component interventions (for example covering social, academic, organisational and self-regulatory domains) to all
- Teachers report a need for brief strategies used as problems present in the classroom (not lengthy intensive intervention)
- Poor quality evaluation- cost effectiveness, blinded
- Not implementable in real-world context

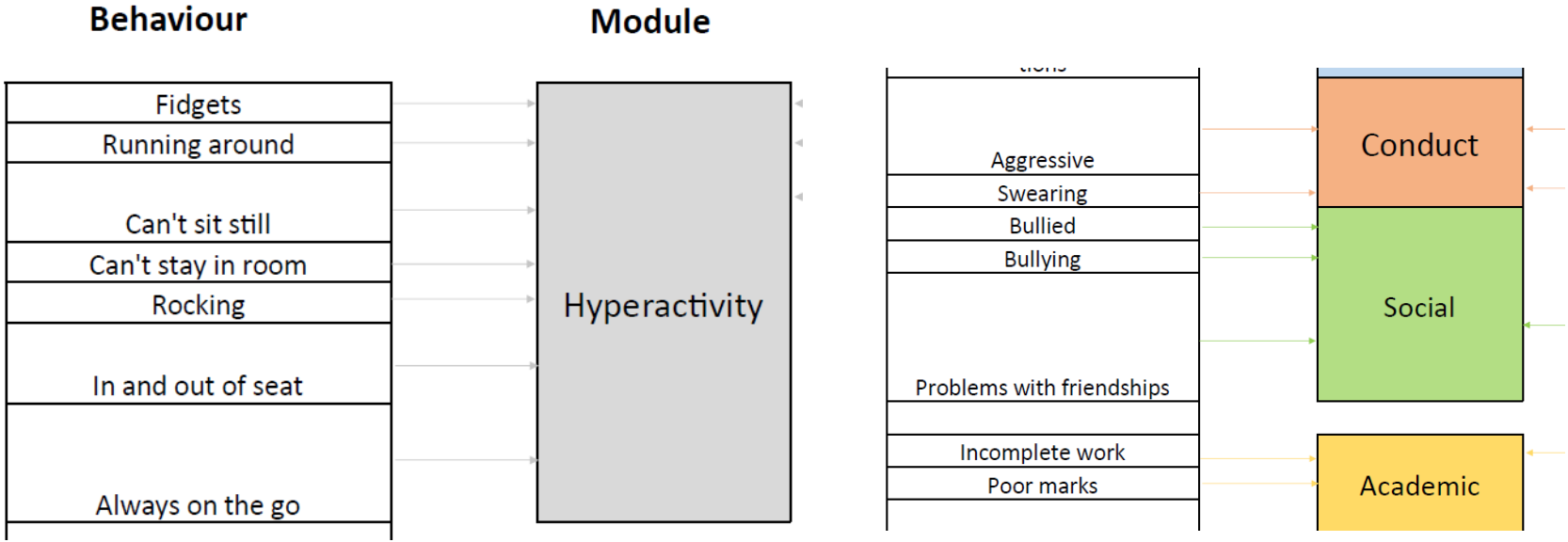
Fellowship project

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

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
Module
Fidgets
Running around
Can't sit still
Can't stay in room
Rocking
In and out of seat
Always on the go
Hyperactivity
Aggressive
Swearing
Bullied
Bullying
Problems with friendships
Incomplete work
Poor marks
Conduct
Social
Academic

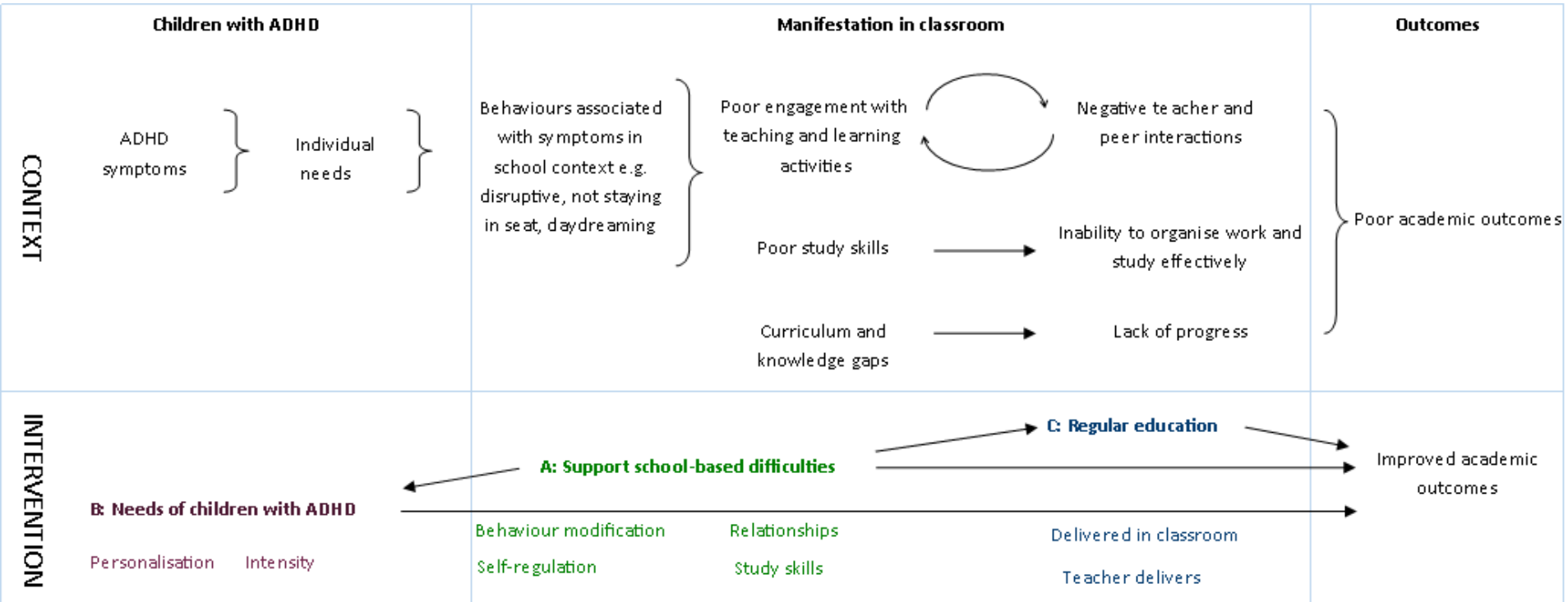
Aims for stage 1

Develop a prototype toolkit using Intervention Mapping (IM) and co-creation with stakeholder groups

- Update, identify and synthesise existing evidence, refine theory and create logic models of change in order to select strategies for inclusion in the intervention.
- Produce version one of the ADHD toolkit with extensive co-creation and collaboration of key stakeholder groups
- 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

Intervention mapping

1. Analysis of the problem (needs assessment)	Stakeholder workshops Logic models, co-created. Informed by theories
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	Stakeholder workshops Draw on existing literature for strategies where possible, co-create new strategies informed by steps 1-3 where needed
5. Plan for adoption, implementation and sustainability of the intervention	Case series study
6. Generate an evaluation plan	


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
C: Regular education
A: Support school-based difficulties
Improved academic outcomes
B: Needs of children with ADHD
Personalisation
Intensity
Behaviour modification
Self-regulation
Relationships
Study skills
Delivered in classroom
Teacher delivers

Skill building

UCSF

University of Exeter

College of Medicine and Health

Maastricht University

CIPHer

Development and Evaluation of Complex Interventions for Public Health Improvement

A UKCRC Public Health Research Centre of Excellence

University of Bristol

Centre for Public Health

King's College London

Aims for stage 2

- Refine the toolkit so that it is feasible and acceptable to implement in the school setting in a multiple-baseline case series study
- Assess whether the toolkit is perceived as useful by end users and whether ADHD symptoms show evidence of improvement

- 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

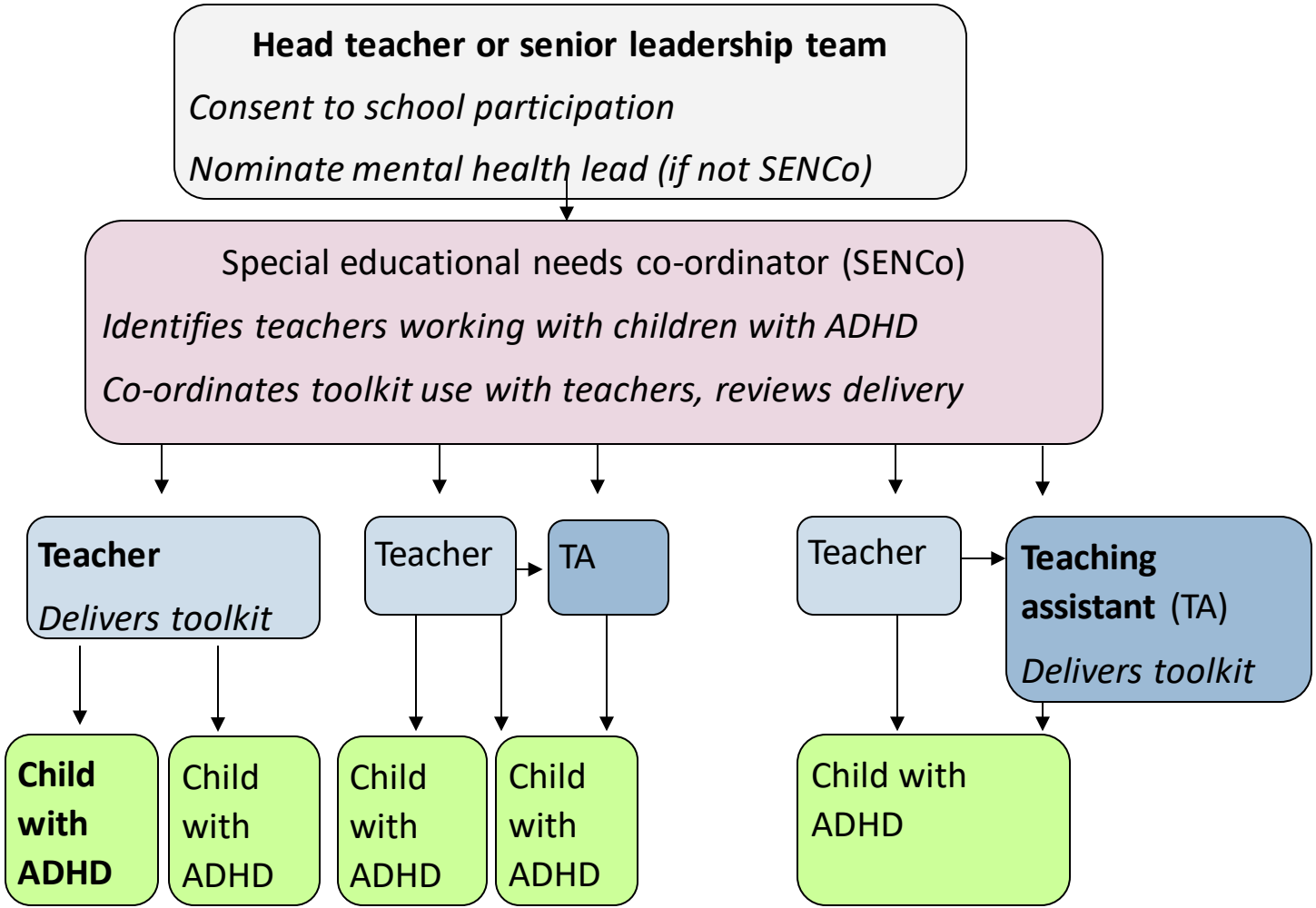
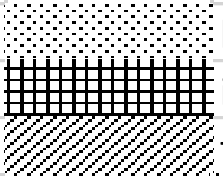

Head teacher or senior leadership team
Consent to school participation
Nominate mental health lead (if not SENCo)
Special educational needs co-ordinator (SENCo)
Identifies teachers working with children with ADHD
Co-ordinates toolkit use with teachers, reviews delivery
Teacher
Delivers toolkit
Teacher
TA
Teacher
Teaching assistant (TA)
Delivers toolkit
Child with ADHD
Child with ADHD
Child with ADHD
Child with ADHD
Child with ADHD

Figure 1. Multiple baseline case series design- study timeline

School	Spring 2022	Summer 2022	Autumn 2022	Spring 2023	Summer 2023	Autumn 2023	Spring 2024
1							
2							
3							
4							
5							
6							
7							
8							

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			6-10		1-5			6-10		1-5			6-10		1-5			6-10	
Activity																					
Recruitment and consent-schools, teachers	x																				
Recruitment and consent-children, parents	x																				
Randomisation	x																				
ADHD symptom measure, functioning measure		x	x		x		x	x		x	x	x	x		x	x	x	x		x	x
Preparatory stages											x	x									
Implement digital Daily Report Card												x									
Implement module 1												x	x								
Implement module 2															x	x					
Module outcome measures												x	x		x	x		x			x
Verbal feedback on modifications													x			x					
Questionnaire measures (acceptability, feasibility)													x				x				
Interviews, focus groups (acceptability, feasibility)																				x	x

Half term

Notes: Baseline may be multiple terms so term shown would be repeated until the term prior to intervention start. Each schoolterm 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.

Outcome	Measure	Informant
child ADHD symptoms	SNAP-IV (Swanson, Nolan and Perry questionnaire) or Conners rating scales	teacher, parent
School functioning	Social Skills improvement system (SISS) rating scales (measures social, academic and competing problem behaviours)	teacher, teaching assistant
child dimensional psychopathology	Strengths and Difficulties Questionnaire (SDQ)	parent and teacher
child satisfaction with school	How I Feel About My School (HIFAMS)	child
child quality of life	Child Health Utility for Economic Evaluation (CHU9D)	child completed and parent proxy
healthcare and education resource use	Drawing on the Client Service Receipt Inventory (CSRI) and measures in the Database of Instruments for Resource Use Management (DIRUM) repository	parent
teacher wellbeing	Warwick-Edinburgh mental wellbeing scale (WEMWBS), Work Productivity and Activity Impairment Questionnaire (WPAI; presenteeism)	teacher
observational measures	Behavioral Observation of Students in Schools (BOSS) or Teacher-Pupil observation tool (TPOT)	School staff or undergraduate student

Analysis

- Primary outcomes: visual and descriptive, evidence of effect replicated across individuals

- Feasibility and acceptability by continuation criteria and Thematic Analysis of focus group and interview data

Continuation rules	Acceptable	Discuss, modify	Stop
Recruitment of schools	6 or more	5	4 or fewer
Recruitment of teachers, children and parents	>65%	20-65%	<20%
Retention of schools, teachers, children and parents	>65%	40-65%	<40%
Training completed (teachers)	>90%	70-90%	<70%
Introductory video watched (parents)	>50%	20-50%	<20%
Child strengths activity completed	>50%	20-50%	<20%
Adherence to dDRC	>70%	50-70%	<50%
Teacher-completed measures	>70%	50-70%	<50%
Parent-completed measures	>50%	20-50%	<20%
Child-completed measures	> 70%	50-70%	<50%
Observational measures	>50%	20-50%	<20%
Attendance at toolkit-related meetings	>75%	40-75%	<40%
% of occasions toolkit reportedly used as instructed	>75%	50-75%	<50%
Follow-up measures completed	>50%	20-50%	N/A

Outputs and dissemination

Phase 1

i) evidence synthesis of intervention-outcome pathways
ii) development of the intervention, intervention mapping

Phase 2

i) ADHD toolkit and manual
ii) Case-control study findings
iii) Iterative development during case-control study

Collaborative partners to aid dissemination

ADHD foundation, Association for Child and Adolescent Mental Health, Exeter consortium, Dartmoor and Devon teaching alliances Devon 0-25 team, Babcock LDP.

References

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