

School-based interventions for ADHD: state of the evidence

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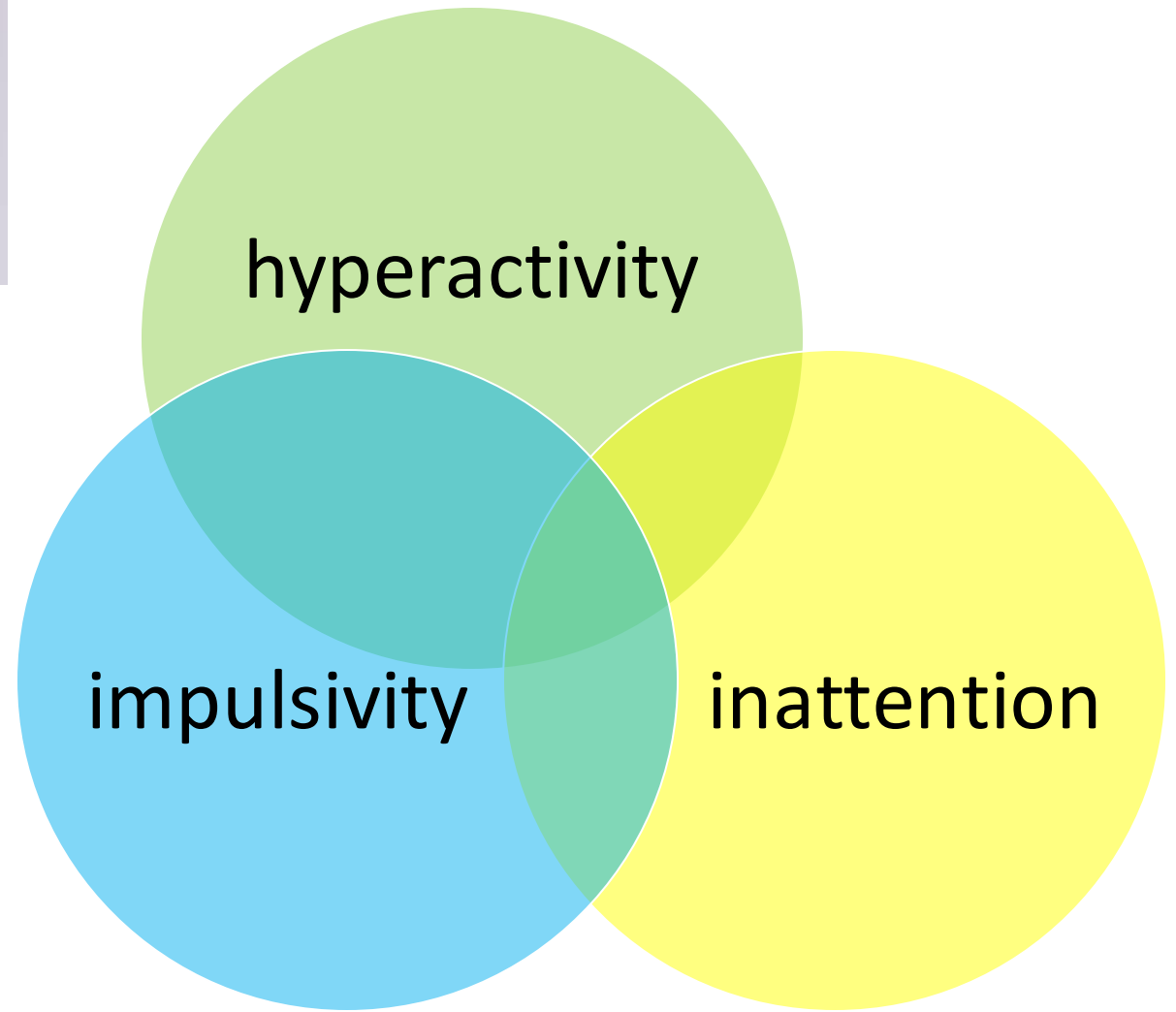
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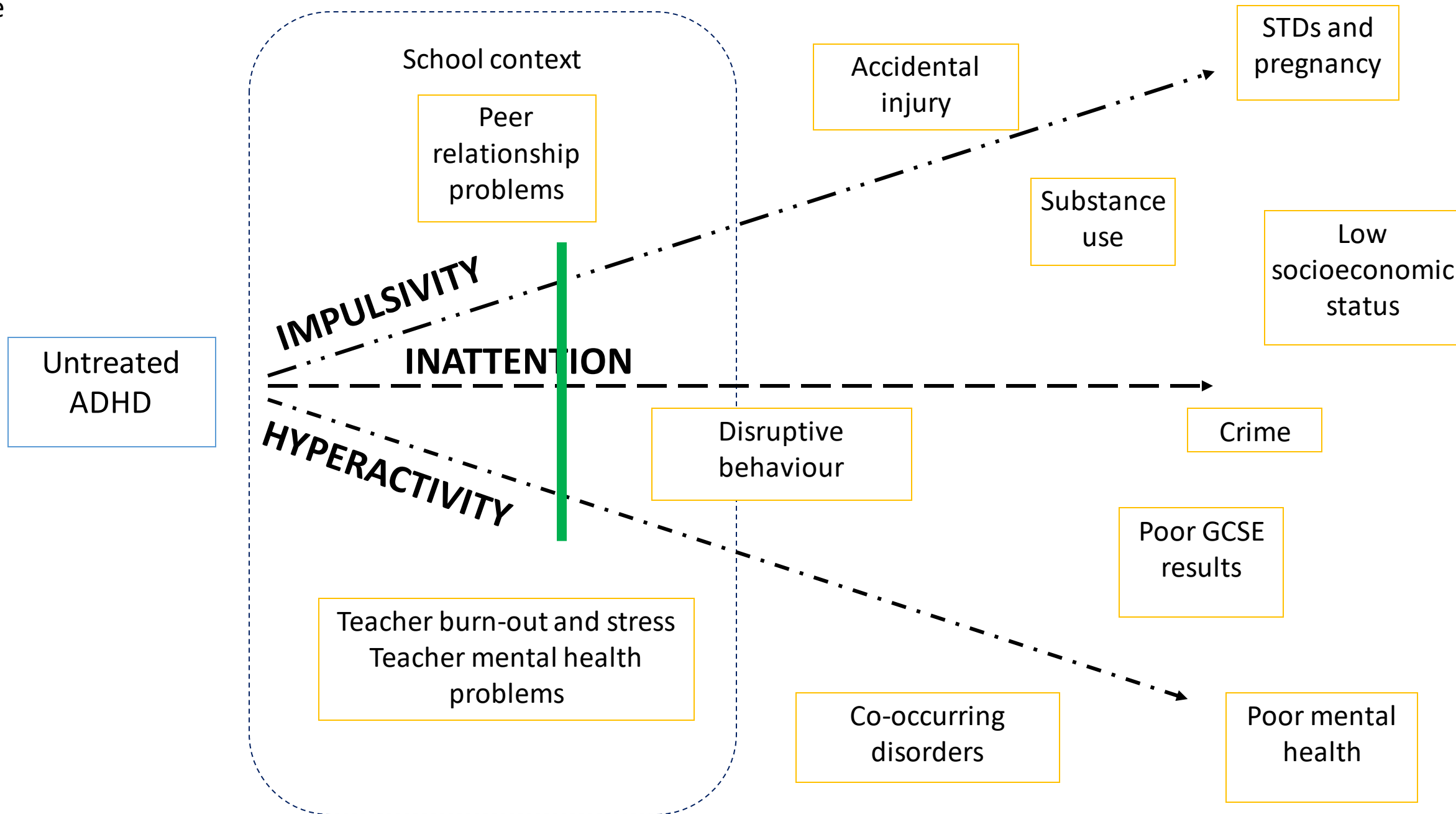
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Overview

- Background
- Qualitative study of educators' experiences working with children with ADHD
- Systematic review and qualitative comparative analysis (QCA) of school-based non-pharmacological interventions for ADHD
- Delphi survey to gain consensus on outcomes that a school-based intervention should target
- Next steps



Time



Why me?



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4 systematic reviews
54 studies evaluating school-based interventions
84 studies of young person, teacher and parent
attitudes and experiences

HEALTH TECHNOLOGY ASSESSMENT

VOLUME 19 ISSUE 45 JUNE 2015
ISSN 1366-5278

various ways to measure outcomes. Therefore, our conclusions must be considered cautiously. More carefully designed research is needed before we can be clear about what works for whom when trying to support pupils with ADHD in school.

Moderator analyses were not able to clarify which programme features were linked with effectiveness. No studies included economic outcomes, thus the cost-effectiveness of non-pharmacological interventions targeting children with, or at risk of, ADHD cannot be established and compared with other available treatments. The majority of included studies targeted children at elementary school (40/54 studies) and none of the included studies was from the UK. The methodological quality of the trials was generally low. Although overall the evidence indicates the beneficial effects of non-drug intervention, the heterogeneity in effect sizes points to the lack of standardised interventions and shared outcome measures across the included studies.

Conclusions of reviews of ADHD interventions in schools

- Something works but we do not know what
- Short term interventions appear to be more beneficial than long term
- There is very little quantitative or qualitative research into schools experiences working with children with ADHD in the UK, and school-based interventions for ADHD in the UK
- Poor quality research/reporting

Educators' experiences of managing students with ADHD: a qualitative study

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Accepted for publication 8 January 2017

Abstract

Background The symptoms of attention-deficit/hyperactivity disorder are associated with difficulty coping with the social, behavioural and academic components of school. Compared with medication and other non-pharmacological treatment, there is less evidence relating to school-based interventions to support children with ADHD. There is additionally an absence of any research focused on the experiences and practices of educators in the UK around how they work with children who are inattentive, impulsive and hyperactive.

Methods Forty-two educational practitioners from primary, secondary and alternate provision schools in the UK participated in focus groups or individual interviews that explored (1) their experiences of managing students with ADHD in the classroom and (2) factors that helped and hindered them in this endeavour. Transcripts were analysed using thematic analysis.

Results Analysis identified six themes: broad strategies, student-centred, inclusive strategies, labelling, medication and relationships. Participants' experiences of managing students with ADHD drew upon a wide range of strategies that typically involved responding to individual needs in an inclusive manner, so individuals with ADHD could access the classroom with their peers. Participants spoke about three factors that helped and hindered managing students with ADHD. Labelling of

d20

ional
/

Keywords

ADHD, interventions,

Problems at school

Following sources of distraction (leaving the room to see what the source of a noise is)

Problems listening to instructions

No concentration

Runs across roads

In and out of seat

Problems with friendships

Bullied

Bullying

Distractible

Forgetting books, pencil etc

Can't stay in room

Aggressive

Implications for school-based interventions for ADHD

Short-term

Individuality of ADHD

Multiple strategies/
multicomponent

Flexible



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

Gregory A. Fabiano¹ · Kellina Pyle¹

ies. There are multiple studies that support school-based interventions for children with ADHD in improving impairments in classroom functioning (relationships with peers and adults; functioning within group settings such as the classroom; producing academic work) and build competencies in specific functional domains (e.g., note-taking, organizational skills, following school rules). These areas may be also improved through contingency management and organizational skills training interventions. In the recommendations

Possible Adverse Side Effects of School Behavioral Interventions

Linda J. Pfiffner, Ph.D., and George J. DuPaul, Ph.D.

Implications for school-based interventions for ADHD

Short-term

Contingency management

Individuality of ADHD

Consider adverse effects

Multiple strategies/
multicomponent

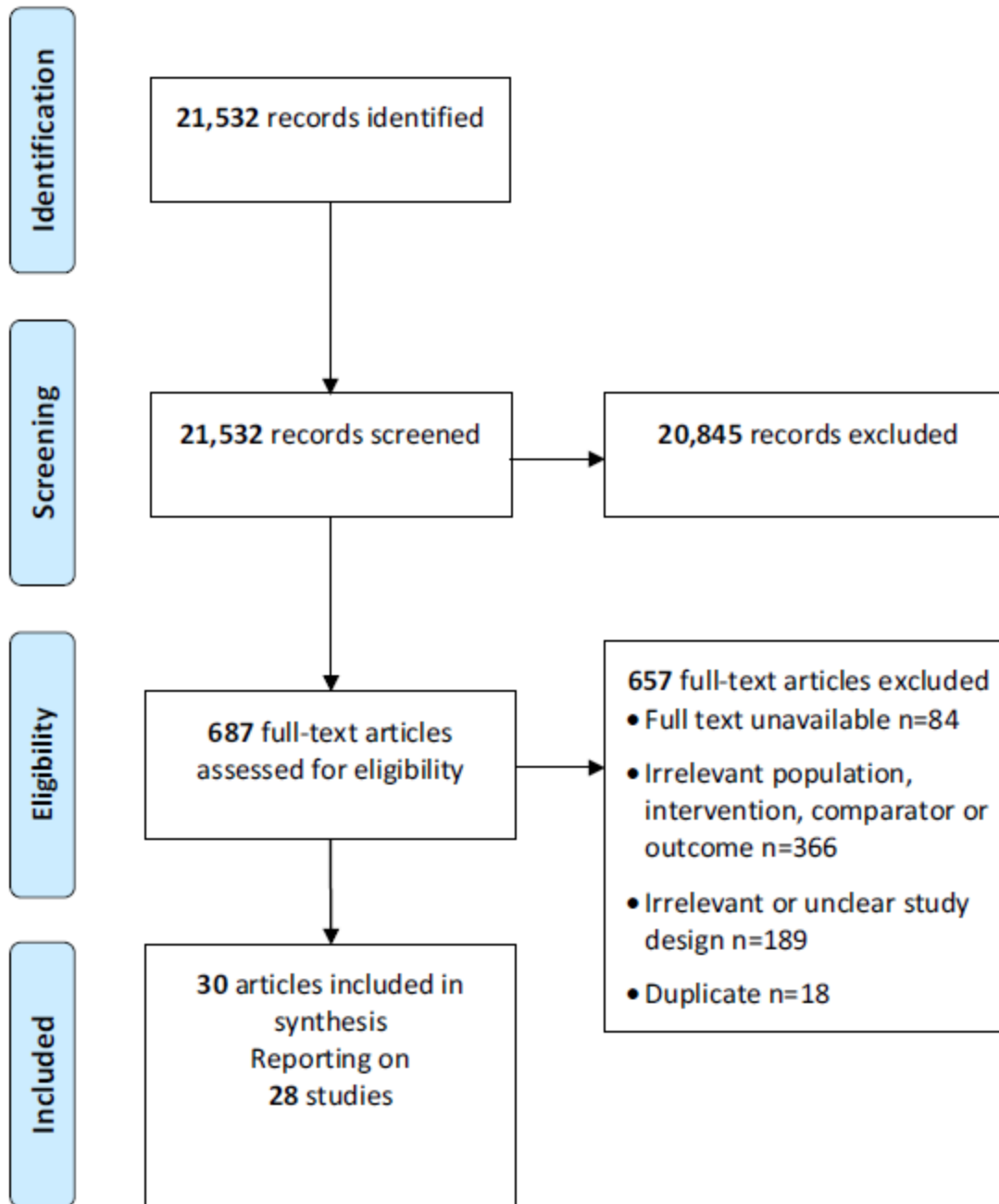
Functional behavioural analysis

Flexible

Adaptations informed by
ADHD-specific theory

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

- What is the effectiveness of school-based interventions for students with ADHD?
- Are some types of school-based interventions for students with ADHD more effective?
- What components of the interventions reviewed are effective for academic outcomes?



- Intervention type, outcome and informants categorised
- Study quality- adapted Cochrane risk of bias tool
- Differences between intervention and control groups on post-test means. Hedge's effect size (g): standardised mean difference with 95% confidence intervals.
- Random effects meta-analysis to pool effect sizes for each intervention-outcome-rater group

Are some types of school-based interventions for students with ADHD more effective?

Teacher rated
academic outcomes

- Daily Report Card

$g = 0.68, 95\% CI = 0.17, 1.19$

Teacher rated ADHD
(combined) symptoms

- Daily Report Card

- Self-monitoring

- Neurofeedback

- Cognitive training

- Combined

$g = 0.30, 95\% CI = 0.02, 0.61$

- Study and
organisational skills

$g = 0.05, 95\% CI = 0.08, 0.17$

Implications for school-based interventions for ADHD

Short-term

Contingency management

Daily Report Card

Individuality of ADHD

Consider adverse effects

ADHD symptoms and academic skills

Multiple strategies/
multicomponent

Functional behavioural analysis

Combination of intervention types

Flexible

Adaptations informed by
ADHD-specific theory

Self-monitoring

Relaxation

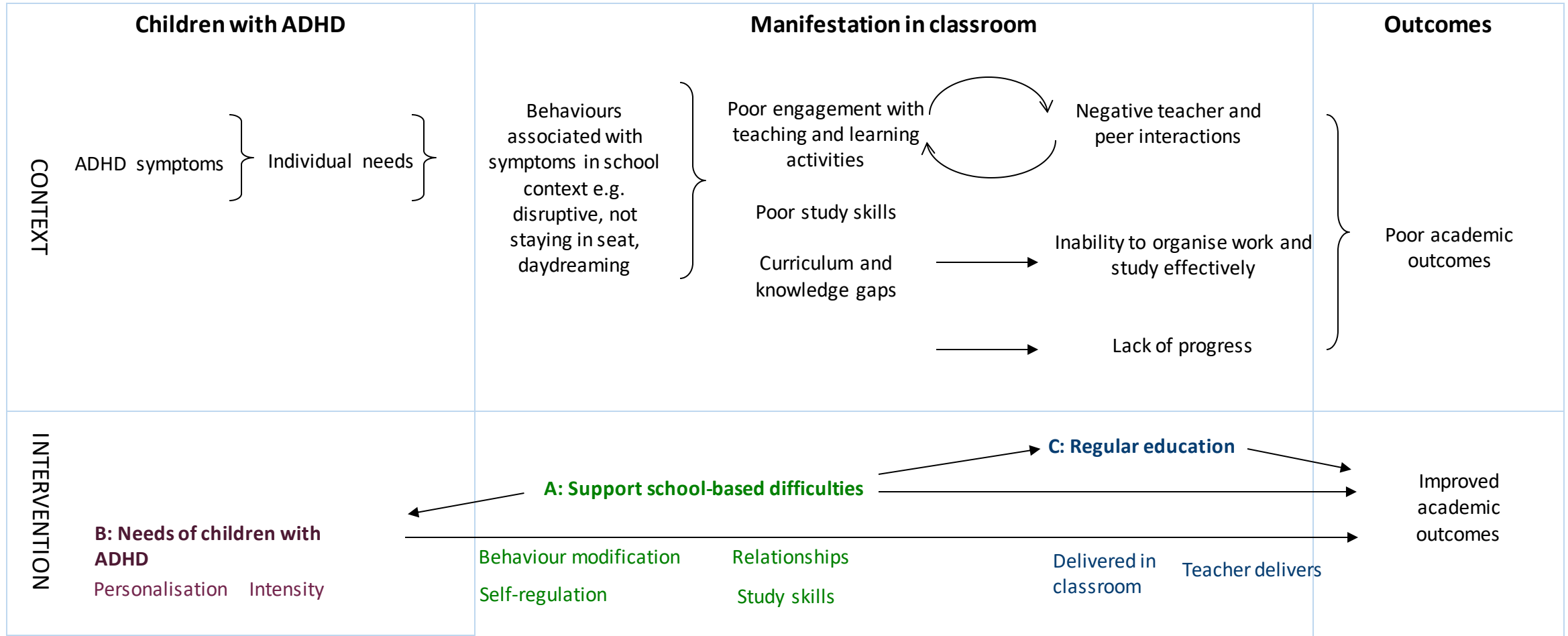
Organisation and study skills, cognitive training

What aspects of the interventions reviewed are effective for academic outcomes?

Qualitative Comparative Analysis (QCA)

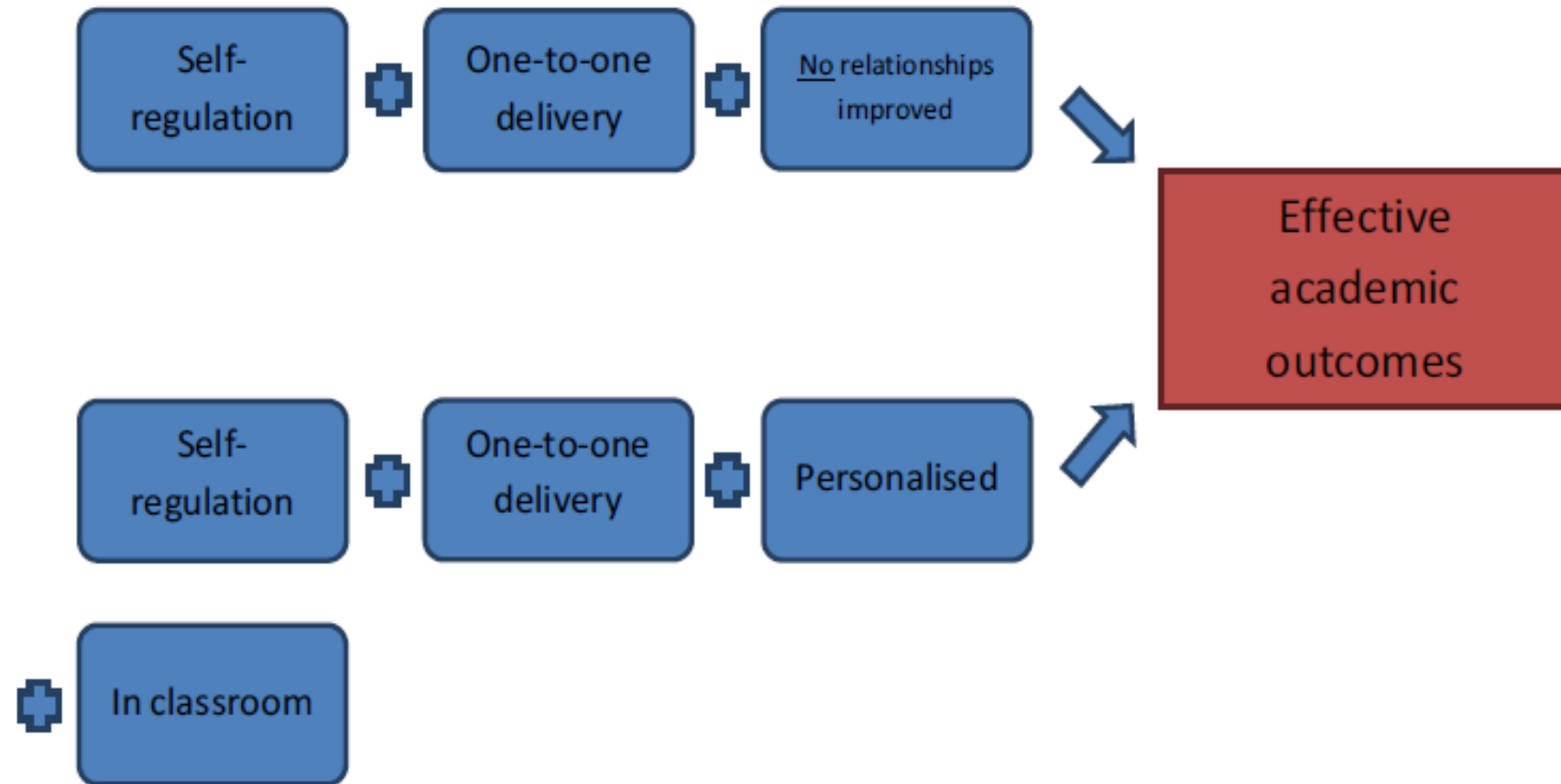
- set relations and Boolean logic
- finds commonalities between different cases with the same outcome
- The focus of investigation is the different configurations of intervention or contextual **conditions** that together are responsible for interventions leading (or not) to **effective** academic outcomes

Logic model- academic outcomes



Case	Study skills	Behaviour modification	Self-regulation	Personalised	Classroom delivery	One-to-one delivery	Condition	Relationships	Total Hours	Effective academic
Jurbergs et al., 2010 NPC	Cases (n=22)		0.67	0	1	1	1	0.33	0	0.992
Jurbergs et al., 2010 PC	0	0.67	0.67	0.67	1	1	1	0.33	0	0.983
Palcic Jurbergs 2009 TC	0	0.67	0.67	0.67	1	1	1	0.33	0	0.982
Langberg et al., 2012;	1	0.67	1	0	0	1	0	0.33	0.33	0.977
Denkowski et al., 1983;	0	0	0.67	0	Weight		0	0	0	0.882
Langberg et al., 2018 CHIEF	1	0.67	0.67	0.67	0	1	0	0.33	0.33	0.702
Molina et al., 2008;	1	1	1	0.67	0	0.67	0	Effectiveness		0.697
Evans et al., 2014;	1	0.67	1	0.67	0	0.67	0			0.609
Denkowski & Denkowski, 1984 Neurofeedback	0	0	0.67	0	0	1	0	0	0	0.585
Pfiffner et al., 2016;	1	1	0.67	0.67	0.33	0.33	0	1	0.67	0.585
Fabiano et al., 2010;	0	1	0.67	0.67	1	1	0.67	1	0.67	0.475
McGraw et al., 2004;	0	0	0	0	0	0	0	0	0	0.475
Langberg et al., 2018 HOPS	1	0.67	1	0	0	1	0	0.33	0.33	0.439
Langberg et al., 2008;	1	1	0.67	0	0	0.33	0	0.33	0.67	0.346
Seeley et al., 2009;	1	1	1	0.67	1	0.33	0.67	1	1	0.335
Iseman & Naglieri, 2011;	0	0	0.33	0	1	0	1	0	0	0.202
Evans et al., 2016 CHP after school	1	0.67	1	0.67	0	0.33	0	1	1	0.179

Findings



Implications for school-based interventions for ADHD

Short-term

Contingency management

Daily Report Card

Individuality of ADHD

Consider adverse effects

ADHD symptoms and academic skills

Multiple strategies/
multicomponent

Functional behavioural analysis

Combination of intervention types

Flexible

Adaptations informed by
ADHD-specific theory

Self-monitoring

Relaxation

One to one delivery (academic)

In classroom (academic)

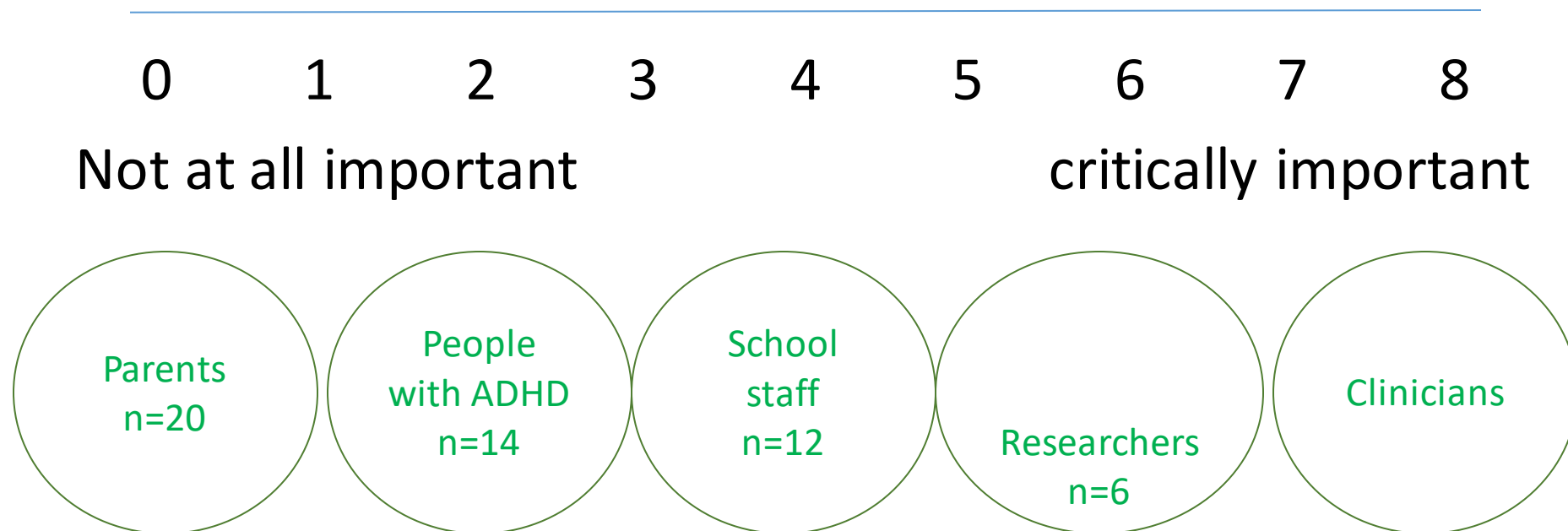
Self-regulation (academic)

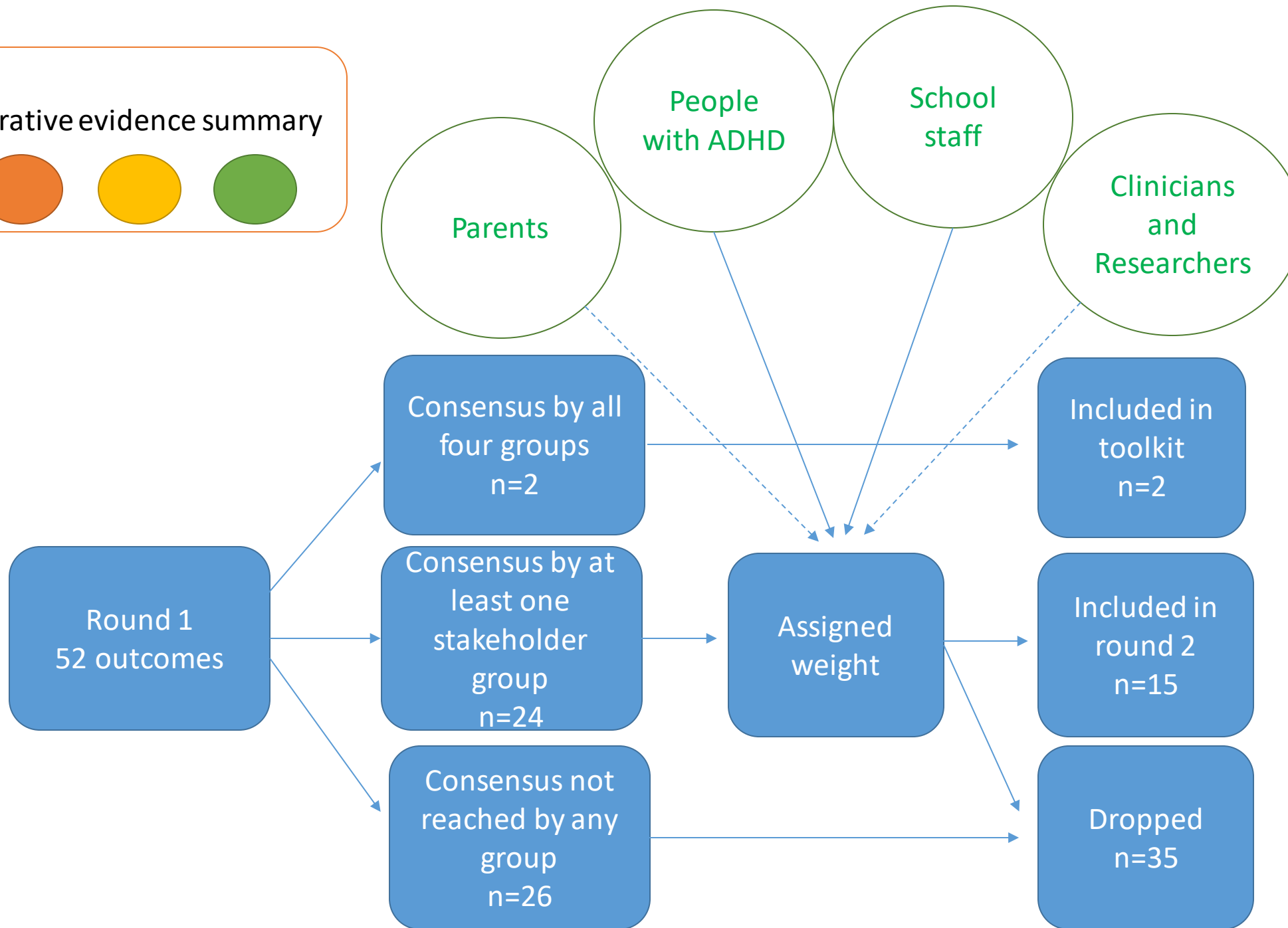
Organisation and study skills, cognitive training
Focus on relationships

Delphi survey

What outcomes do key stakeholders believe are important to target in a school-based intervention for ADHD?

Health, behavioural, cognitive, educational, social





Results

?Are the functional
outcomes most
important?

Included in
toolkit
n=2

Inattention
Teacher-child conflict

Academic skills
Organisational skills
Task engagement

ADHD symptoms
Attending behaviour
Executive function
Hyperactivity/impulsivity

Included in
round 2
n=15

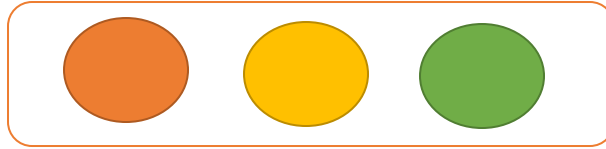
Social functioning
Classroom behaviour
Conduct problems
Global functioning

Decrease in intrinsic
motivation
Feeling singled out
Frustration, anger and
disappointment
Internalising symptoms

New
outcomes to
include
n=6

Self-esteem
Anxiety
Independence
Attitude towards school
Impact of and distress caused
by symptoms
Self-regulation

Evidence summary



Highly correlated with:
number of groups who reached consensus
($r = .519$, $p = .001$)
number of groups who reached drop criteria
($r = -.552$, $p < .001$)

?Is this a good
thing or a bad
thing?

?Do we include
evidence
summary in
round 2?

Thematic analysis of free text comments

Complexity of ADHD

ADHD as different- for each child and in different contexts
Chain of inter-related outcomes and long term outcomes
Strengths of children with ADHD
Things are hard to recognise and target

Relationships

Awareness of ADHD and it's impact on relationships
How teachers should interact with children with ADHD
Impact of relationships on symptoms and related problems, and vice versa
School-home

School as the right (or wrong) place

Failures of the system
How schools could adapt and what they need to do
Prioritising inclusivity and understanding
School as right or wrong place

Problems with questionnaire

Round 2

- 21 outcomes
- Redefine consensus
- Better explanations

>70% of respondents in a stakeholder group scoring the item 7 or 8,
<15% scoring 0-2



Components and considerations for a potentially-effective school-based intervention for ADHD

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)

Consider adverse effects

Combination of intervention types

Relaxation

Self-monitoring

Target:

ADHD symptoms
and academic
skills

Teacher-child
conflict

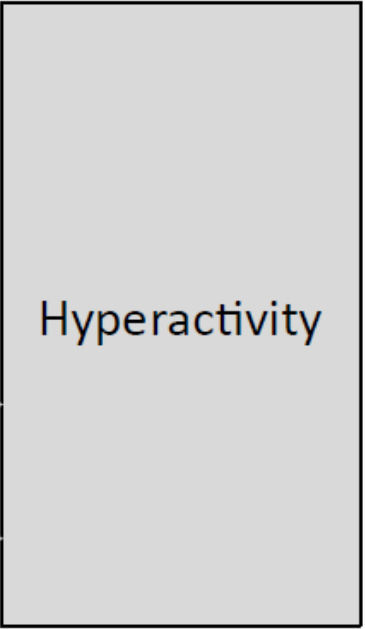
ADHD toolkit

- 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

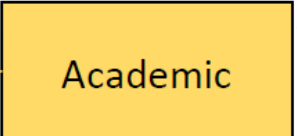
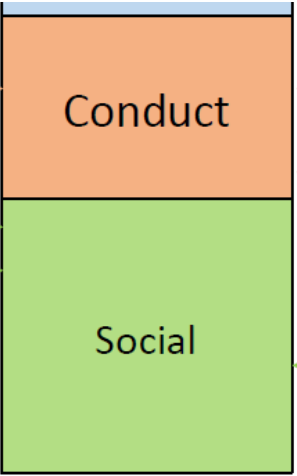
Fidgets
Running around
Can't sit still
Can't stay in room
Rocking
In and out of seat
Always on the go

Module



Signs

Aggressive
Swearing
Bullied
Bullying
Problems with friendships
Incomplete work
Poor marks



Fellowship project proposal

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

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

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 theory

Stakeholder workshops

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

Case series study

Skill building



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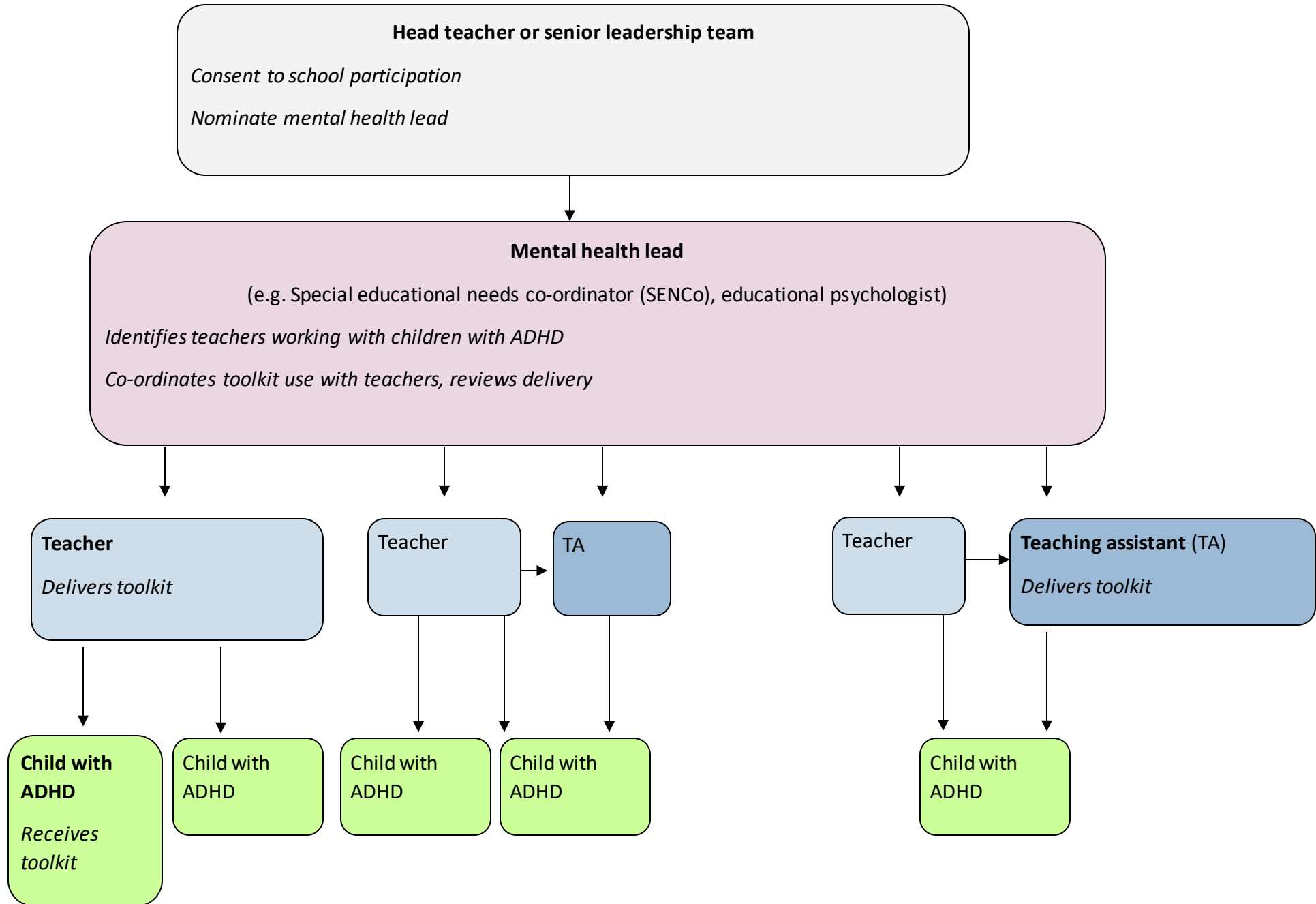
Maastricht
University

UCSF



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



		School term						
School	Child Participant	Spring 2022	Summer 2022	Autumn 2022	Spring 2023	Summer 2023	Autumn 2023	Spring 2024
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		H a l f t e r m	6'10		1-5		H a l f t e r m	6'10		1-5		H a l f t e r m	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
Preparatory stages																		
Implement digital Daily Report Card																		
Implement module 1																		
Implement module 2																		
Module outcome measures																		
Questionnaire measures (acceptability, feasibility)																		
Interviews, focus groups (acceptability, feasibility)																		

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Acknowledgements

Darren Moore, Tamsin Ford and Roisin Perry

Marianne Tay, Sophie Arnell, Becky Mars, Heather O'Mahen and Barney Dunn, Justin Matthews, Morwenna Rogers, Obioha Ukoumunne, Dylan Kneale, Jo Thompson-Coon, Katy Sutcliffe, Michael Nunns, Liz Shaw and Ruth Gwernan-Jones

?Are the functional
outcomes most
important?

?Do we include evidence
summary in round 2?

Extra slides

Approximate number of participants by participant type					
School	Teacher/Teaching	Mental	School	Child	Parent
	Assistant	Health		paired	phone
	interviews	Lead	focus	interviews	interviews
		interviews	group		
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

Intervention	Resource(s)	Who implements?
Tier 1		
Common strategies		
Labeled praise	Pfiffner and DuPaul (2015)	Any school staff
Planned ignoring/teacher attention	Pfiffner and DuPaul (2015)	Any school staff
Posted/regularly reviewed rules; reprimands	Pfiffner and DuPaul (2015)	Classroom teacher
Class-wide programs		
Good behavior game	Barrish et al. (1969)	Classroom teacher
Tier 2		
Individual interventions		
Daily report card	Volpe and Fabiano (2013)	Classroom teacher and parent
Organizational skills training	Gallagher, Abikoff, & Spira (2014); Langberg (2011); Schultz and Evans (2015)	School mental health provider
Tier 3		
Individual interventions		
Time-out	Fabiano et al. (2004)	Classroom teacher
Token economy	Kazdin (1977) for a detailed guide; Pelham and Fabiano (2008) for ADHD-specific review	Classroom teacher