University of Southampton

Faculty of Environmental and Life Sciences

Psychology

'It Needs to Be, "We've Given Every Child with ADHD…Every Opportunity to Succeed."'[1]
A Collaborative Production of School ADHD Resources: Bringing Evidence and Experience Together.

by

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Abstract

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Thesis for the degree of Doctor of Philosophy

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ADHD can significantly disrupt children's education. Challenges in meeting classroom expectations, building successful peer and staff relationships, and possible learning barriers, can negatively affect the experience of children with ADHD in school. Children with ADHD can also bring many adaptive strengths to the classroom, such as creativity, enthusiasm, quick-thinking, and dynamic energy. School staff play a critical role in supporting and teaching children with ADHD, both in addressing difficulties and cultivating strengths, yet often feel ill-equipped to do so. A lack of suitable training opportunities has been identified. Issues of timing, contextualisation, and autonomy have been cited as key barriers in traditional training methods.

A systematic review and meta-analysis were performed to synthesize the available evidence for the effects of ADHD teacher training interventions. Teacher ADHD knowledge, teacher behaviours towards children with ADHD, and pupil ADHD-type behaviours were investigated. Initial improvements in teacher ADHD knowledge deteriorated over time, but evidence was inconsistent for changes in teacher or pupil behaviour. This study identified the significant limitations of traditional ADHD training models. To better understand what is needed in ADHD training, a qualitative interview study was used to capture school staff views and perspectives. Reflexive thematic analysis resulted in five themes: equipped with ADHD knowledge, confidence, and strategies to provide for the individual needs of children with ADHD; a joined-up team approach which draws on the knowledge of others; creating the opportunity for every child to succeed; supporting all children in the classroom; and, training and support which meets the needs of all school staff. Based on these two studies, a working group of school staff and a researcher collaborated to co-construct an ADHD resource for school staff. A systemic framework was used for critical reflection of this alternative approach to understand how and why the collaboration led to the published resource.

Keywords: ADHD, school staff, training, teachers, co-construction

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List of Accompanying Materials

The third paper of this thesis involved the creation of a website built by Rebecca Ward using a template supplied by Wix (https://www.wix.com/). The information on the website is the co-constructed knowledge from the collaborative working group described in Paper 3.

The website can be viewed at https://www.attic.org.uk/

Research Thesis: Declaration of Authorship

Print name: Rebecca Jane Ward

Title of thesis: 'It needs to be, "We've given every child with ADHD…every opportunity to succeed."'[1] A collaborative production of school ADHD resources: bringing evidence and experience together.

I declare that this thesis and the work presented in it are my own and has been generated by me as the result of my own original research.

I confirm that:

1. This work was done wholly or mainly while in candidature for a research degree at this University;
2. Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
3. Where I have consulted the published work of others, this is always clearly attributed;
4. Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;
5. I have acknowledged all main sources of help;
6. Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;
7. Parts of this work have been published as:-

Ward, R. J., Bristow, S. J., Kovshoff, H., Cortese, S., & Kreppner, J. (2020). The Effects of ADHD Teacher Training Programs on Teachers and Pupils: A Systematic Review and Meta-Analysis. *Journal of Attention Disorders*. https://doi.org/10.1177/1087054720972801.

Ward, R. J., Kovshoff, H., & Kreppner, J. (2021). School staff perspectives on ADHD and training: understanding the needs and views of UK primary staff. *Emotional and Behavioural Difficulties, 26*(3), 306-321. https://doi.org/10.1080/13632752.2021.1965342.

Signature: ..... Date:.....

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Firstly, thank you to the children and staff of all participating schools. My hope is that this project will be of some help for you to thrive in school. Secondly, thank you to my supervisors and wider research colleagues who have inspired me, challenged me, encouraged me, and made me laugh. Thirdly, thank you to my family and friends who have supported me all the way.

Turn your ear toward wisdom, and stretch your mind toward understanding.
Proverbs 2:2 (CEB)

Definitions and Abbreviations

ADHD	Attention-Deficit/ Hyperactivity Disorder
DSM-5	Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition
EHCP	Education and Health Care Plan
EY	Early Years
ICD-11	International Classification of Diseases 11th Revision
ICF	International Classification of Functioning
INSET	In-Service Training
ITT	Initial Teacher Training
KADDS	Knowledge of Attention Deficit Disorders Scale
NASEN	National Association for Special Educational Needs
NFPP	New Forest Parenting Programme
NHS	National Health Service
NICE	National Institute for Health and Care Excellence
NQT	Newly qualified teacher
SAOS	Southampton Advisory Outreach Service
SENCO	Special Educational Needs Co-Ordinator
SEN/SEND	Special Educational Needs/ Special Educational Needs and Disabilities
UNCRC	United Nations Convention on the Rights of the Child
UNESCO	The United Nations Educational, Scientific and Cultural Organization
UNICEF UK	UK Committee for the United Nations International Children's Emergency Fund

Chapter 1 An Introduction to ADHD Resourcing for School Staff

1.1 The Challenge

When I was working for a local charity helping disengaged teenagers and young adults to re-engage with education or employment, I discovered that many of these young people were diagnosed with attention-deficit/ hyperactivity disorder (ADHD). Their stories about school life were filled with misunderstandings, disappointment, underachievement, failure, and a belief that they were unable to learn. Their experience of our vocational training programme could not have been more different. Most of these young people arrived with no qualifications, no work experience, no sense of achievement, very low self-esteem and painful memories from school which created obstacles to engaging with further education or employment. During our programme, they identified their barriers, and ways to overcome them, setting off on a new pathway to success. I wished we could have stepped in earlier; in fact, right at the beginning of their school journey.

> 'Children with ADHD…they're not deliberately being naughty or disruptive in a deliberate way, they're trying to get some sort of feedback from someone because they're not able to regulate themselves.' (Headteacher, interview, 2018)

Almost all the young people on our programme described being labelled as 'naughty' or 'bad'. They were frequently removed from the classroom, and often the school, through repeated exclusions. They struggled with concentration and motivation, behaved erratically, and did not feel there was anyone that was able to help them. Consequently, they did not enjoy learning, or being in the school environment, they had few friends, were often in trouble, and ultimately gave up. Much of the literature paints a similar picture with poor lifelong outcomes (Biederman et al., 2004; Langberg & Becker, 2012; Parker et al., 2013).

At the same time, our recruitment channels brought us into contact with teachers from secondary schools and sixth form colleges who referred young people to our programme. They spoke of the challenges in teaching pupils with ADHD, knowing how best to support them, and understanding their specific needs. This resonates with the second paper in this thesis in which teachers, and wider school staff, desperately wanted training in ADHD to support children better and yet it is reported to be extremely rare (Ward et al., 2021).

> They're like, "What do I do here?". You know, "What's the right thing to do?" And that's really difficult when you've got twenty-nine other kids and you're trying to find out for yourself, kind of thing. I do think it's a real…gap. (SENCO, interview, 2019)

This is the motivation for the project described in this thesis. A desire to equip school staff in supporting children with ADHD, so that the children enjoy school and enjoy learning.

In this PhD, I originally planned to adapt the effective New Forest Parenting Programme (NFPP) for use with teachers to meet this need of ADHD training (Daley & O'Brien, 2013; Sonuga-Barke et al., 2001). The first two studies were designed to bring together existing evidence from studies of ADHD teacher training interventions and gain new perspectives through interviews with teachers to inform the adaptation of this programme. The third study would test and evaluate the adapted NFPP programme with primary teachers.

During 2020 amidst the COVID-19 pandemic, it became apparent that teachers were not able to participate in the third study as originally envisaged (more detail in section 1.9.3.1). At the same time, findings from the qualitative study (Paper 2) indicated that a different approach from the traditional model for training teachers would better meet the needs and desirability identified by those that were interviewed. It also became apparent that training needed to be made available to a wider variety of roles in the school than teachers alone (more detail in section 1.6.3).

Therefore, the third study in this PhD was reconsidered and a new path was taken. The literature on collaborative co-construction opened a new direction in the development of ADHD resources for and with school staff but raised challenges of time and energy. The work of many researchers and practitioners guided this development as will be evidenced throughout this thesis.

1.2 The Landscape of Neurodiversity and Inclusive Education

1.2.1 Neurodiversity

Neurodiversity is a term used to signify the breadth and variation in human neurocognitive functioning (Bölte et al., 2021; Kapp, 2020). Rather than categorising people as typical or disordered, it highlights differences in terms of strengths and capacities, the varied expressions of thinking and doing, and how a complex world benefits from the variety of ways of thinking that different people can bring (Rentenbach et al., 2017).

Historically, the term originated with Judy Singer, in the autism rights movement, arising from a reaction to the medical disorder-based classification used to identify dysfunction and impairment, and which often led to exclusion and loss of autonomy (Bölte et al., 2021; Kapp,

2020). The term is now used more broadly for other diagnoses of, what are termed, neurodevelopmental disorders (American Psychiatric Association, 2013; Bölte et al., 2021; World Health Organization, 2019).

A disorder-based, medical conception of ADHD focuses on dysfunction and impairment (Sonuga-Barke & Thapar, 2021). Diagnoses are based on a variety of persistent symptoms present in multiple contexts; most notably, developmentally inappropriate hyperactivity, impulsivity, and inattention, at home and in school/ the workplace (American Psychiatric Association, 2013; World Health Organization, 2019). These problematic symptoms are targeted for treatment in an attempt to reduce functional impairment (Sonuga-Barke & Thapar, 2021).

In contrast, neurodiversity provides an alternative paradigm to this disorder-based conceptualisation of ADHD (Bölte et al., 2021). Hyperactivity, impulsivity and inattention (the core triad of ADHD 'symptoms') are considered dimensional traits in the full spectrum of human functioning. Differences in these traits across the population are seen as strengths; valued diversity in a complex world (Rentenbach et al., 2017). Consistently, ADHD has been associated with strengths in problem-solving, creativity, intuition, reasoning and abstract thinking, although there are relatively few studies in this area (Ek et al., 2007; Smalley, 2008). The advantage of the neurodiversity approach is the recognition of environmental factors which contribute to enabling people with ADHD to use their strengths. The International Classification of Functioning (ICF; World Health Organization, 2001) identifies five environmental domains that may facilitate or hinder a person's functioning: products and technology; the natural environment or human changes to the environment; support and relationships; attitudes; and, services, systems and policies. Similarly, the ICF recognises the contribution of individual strengths as additional contributors to functioning (World Health Organization, 2001).

There are many benefits to a neurodiverse approach. Firstly, it changes the self-perception of children with ADHD (Sonuga-Barke & Thapar, 2021). Children are encouraged to identify and develop their different strengths and talents, raising self-esteem and encouraging participation (Bozic et al., 2017; Sonuga-Barke & Thapar, 2021). Secondly, solutions to barriers can be found in environmental changes, e.g., adjusting the classroom environment, changing school policies, and providing assistive technology (Bölte et al., 2021; Climie & Mastoras, 2015; World Health Organization, 2001). Environmental changes are likely to benefit other children in the classroom, particularly those pre-diagnosis or with sub-threshold levels of ADHD (Veenman et al., 2019). Thirdly, adapting environments can reduce the dependence on clinical and specialist health interventions, based on diagnoses and meeting certain thresholds (Sonuga-Barke & Thapar, 2021).

Nonetheless, Sonuga-Barke and Thapar (2021) cautioned against a radical neurodiverse approach with an extreme rejection of clinical diagnosis and treatment. Medication and non-pharmaceutical interventions have shown to be beneficial for children who do face difficulties at home or in school. A strengths-based approach, discussed in more detail later, recognises the importance of supporting children with ADHD to recognise their unique strengths and talents, alongside support to address their difficulties (Bölte et al., 2021; Bozic et al., 2017; Climie & Mastoras, 2015).

1.2.2 Inclusive Education

Ever since the Warnock Report in 1978 (Warnock, 1978), inclusion has been on the agenda of education policy in England (it is important to note that education policy is devolved in the UK and so varies between nations). For example, in England, policy is based on Special Educational Needs and Disabilities (SEND), whereas Scotland uses the broader definition of Additional Support Needs (Black, 2019). The SEND Code of Practice outlines the commitment to 'inclusive education of disabled children and young people and the progressive removal of barriers to learning and participation in mainstream education' (Department for Education & Department of Health, 2014, p.25). The Children and Families Act (2014, 20.2.a) provides definitions of disability and special educational need with respect to inclusive education, including a child who has 'significantly greater difficulty in learning than the majority of others of the same age.' It does state some exceptions to inclusion in mainstream education, and with respect to ADHD, most notably whether inclusion will impact 'the provision of efficient education for the children with whom he or she will be educated' (Children and Families Act, 2014, 35.3.a). When a child is identified as having difficulties, an Education, Health and Care Assessment is made to gather information about the child and determine their level of need. If an Education, Health and Care Plan (EHCP) is then provided for the child, certain provisions must then be made for the child at the school which is usually financed by the local authority (Children and Families Act, 2014). Without an EHCP, children who are identified as struggling in school, may be offered extra support, but this is dependent on the capacity of the school to provide.

There are two major issues related to ADHD and inclusive education. Firstly, the diagnostic criteria for ADHD specifies symptoms before the age of 12 suggesting some children may not be diagnosed in primary school (American Psychiatric Association, 2013; World Health Organization, 2019). Additionally, girls are traditionally underdiagnosed due to internalised symptoms and masking of difficulties (Quinn & Madhoo, 2014; Slobodin & Davidovitch, 2019). Although diagnosis does not guarantee an EHCP, it does provide useful evidence to be considered in the process, and if symptoms are being masked, the child continues to face barriers to learning

and participation (Steer, 2021; Wright et al., 2015). Secondly, teachers are usually the first to identify potential ADHD symptoms and are involved in referral and information provision for diagnosis (Alloway et al., 2010; Moldavsky et al., 2013; Topkin et al., 2015). DuPaul and Jimerson (2014) evidenced the contextual and assessment-related factors that may adversely affect identification of ADHD symptoms which may inhibit referral or provision of support within the school. Other potential barriers are found in inadequate policies, a lack of useful resources and facilities, inflexible curricula, cultural attitudes, pedagogical techniques and insufficiently trained staff (Schuelka, 2018). Specifically, continuing professional development in inclusive practices is deemed to be key in successful inclusive education, although guidance in identifying quality training is not specified (Schuelka, 2018; UNESCO, 2017).

1.3 Significance and Outcomes of this Thesis

There are three foundational pillars underpinning this thesis which will be discussed in this chapter. Firstly, there is ample evidence that ADHD can significantly disrupt children's education. In summary, the inability to switch attention and challenges with working memory disrupt learning and completion of work (Barkley, 2014; Biederman et al., 2004; Parker et al., 2013). Difficulties with self-regulation, together with poor social skills, can lead to disruptive behaviour and low self-esteem damaging relationships with peers and staff (Ewe, 2019; Langberg & Becker, 2012; Parker et al., 2013). Disruption may lead to exclusions, furthering limiting children's participation and membership of the school community (O'Regan, 2010). Children with ADHD are likely to achieve lower grades overall (Langberg & Becker, 2012).

Secondly, school staff play a critical role in children's academic and social development but do not receive the training they need to provide the support that children with ADHD require (Daley & Birchwood, 2010; Martinussen et al., 2011). Crucially, staff knowledge, attitudes, and behaviour influence the educational experience and achievement of children with ADHD (Sherman et al., 2008).

Thirdly, teachers feel ill-equipped to support children with ADHD (Hart et al., 2017; Martinussen et al., 2011) and current ADHD training programmes are not adequate (Ward et al., 2020). The main identified issues are that they are rarely available, too clinical, not contextualised, and untimely (Ward et al., 2021).

These issues lead us to the story of this thesis and the question of how best to resource school staff so that children with ADHD thrive.

1.4 Language

The language in the third paper of this thesis differs significantly from the language in Papers 1 and 2. Although in my professional practice, prior to starting my PhD, I acted from a strengths-based approach, I would not have been able to voice this or identify a specific framework with which I identified. My research began from a medical model perspective of ADHD reflecting the academic literature that I was reading, and the process of conducting a meta-analysis on teacher training interventions (Forness & Kavale, 2001). I used terms such as 'disorder', 'deficit', and 'comorbidity'. However, I began to experience a sense of cognitive dissonance in my research as I worked with school staff supporting children with ADHD and listened to the voices of children as well. Of particular significance were the voices of the collaborative working group in the third study, and discussions of neurodiversity. Terms that staff used such as 'inclusion', 'neurodivergent', 'a positive way', 'thriving', 'full potential', led me to explore the strengths-based approach (Climie & Mastoras, 2015) and I found this resonated with the way in which I wanted to conduct research going forwards. Hence different language was used, and a fuller explanation of the strengths-based approach is given in section 1.5.4.

1.5 ADHD as a Neurodevelopmental Difference

1.5.1 ADHD and the Classroom

ADHD is defined in the ICD-11 as being 'characterised by a persistent pattern (at least 6 months) of inattention and/or hyperactivity-impulsivity that has a direct negative impact on academic, occupational, or social functioning' (World Health Organization, 2019, 6A05). The important distinction between merely displaying traits of inattention, hyperactivity and/or impulsivity and being diagnosed with a disorder is the latter part of the World Health Organization's definition in which these traits are so persistent and severe that they are impairing for the individual. Within medical models, ADHD is classified as a neurodevelopmental disorder related to the structural and functional capacity of the brain, described as leading to a range of functional impairments and cognitive deficits (Faraone et al., 2015; Thapar et al., 2013). In terms of cognitive deficits, there is a focus on the pre-frontal cortex and executive functioning (Hill et al., 2003). This is thought to relate to difficulties with response inhibition and working memory (Barkley, 1997; Gropper et al., 2014). However, it is argued that executive functioning is not the core problem for all children with ADHD and may be particularly common to those with more inattentive subtypes (Sonuga-Barke et al., 2002; Thorell et al., 2009). Additionally, ADHD behaviour has been shown to have greater effects on academic performance than executive functioning (Barry et al., 2002). This is important to note as ADHD is known to be highly heterogeneous and individual differences need to be taken into account (Castellanos et al., 2006).

Other pathways explaining the characteristics of ADHD are associated with delay aversion and differences in reward mechanisms (Sonuga-Barke et al., 1996).

Despite this heterogeneity, there are common challenges identified for children with ADHD in the classroom, particularly when classrooms often require sitting for extended periods of time and completing tasks quietly (Gwernan-Jones et al., 2016). The systematic review by Gwernan-Jones and colleagues (2016) highlights the role of the classroom context in triggering symptoms. Poor relationships with peers and staff, and labelling with ADHD, can often damage self-perceptions and exacerbate stigma. Yet, the effect of the classroom context is not always seen and understood by staff (Gwernan-Jones et al., 2016).

In terms of behaviour and academic performance, difficulties with the following behaviours have been identified: taking turns; listening to instructions; sustaining attention on a task; working individually; taking part in whole class discussions; and organisation (DuPaul & Stoner, 2014). Children with ADHD do tend to perform better in small groups and in more physical or practical subjects, suggesting that context and instructional style are important; and, equally, what is acceptable behaviour in one classroom may be unacceptable in another (DuPaul & Stoner, 2014; Imeraj et al., 2013). Regarding academic achievement, in comparison to their peers, children with ADHD have been shown: to gain lower grades, particularly in standardised test scores; require more special education and additional support; experience more short-term and long-term exclusions; and obtain fewer qualifications (Biederman et al., 1996; Frazier et al., 2007; LeFever et al., 2002).

1.5.2 ADHD and Peer Relationships

Some ADHD behaviours have a particular impact on others, i.e. peers and staff, and disrupted relationships have been shown to impact on both academic achievement and school participation (DuPaul & Stoner, 2014; Ewe, 2019). Hyperactive and impulsive behaviours can be intrusive in friendships, and inattention can mean social cues go unnoticed (Hoza, 2007). In turn, this may go some way in explaining why children with ADHD tend to have fewer friends and experience more peer rejection than comparison children (Hoza et al., 2005; Pelham & Milich, 1984). Some additional explanations are put forward, such as social anxiety, although this is reported to have a greater association with poorer peer functioning in girls (Becker et al., 2019). The literature is certainly consistent in identifying externalising behaviours as a greater risk factor to peer rejection and victimisation (Cardoos & Hinshaw, 2011; Hoza, 2007; Mrug et al., 2009). However, studies in this area use a variety of samples, including children identified by clinical diagnosis and research diagnosis, those with and without concurrent diagnoses, and outcome measures via parent-report, teacher-report, and peer-report (Becker et al., 2019; Cardoos &

Hinshaw, 2011; Ladd et al., 2008; Mrug et al., 2009). This raises challenges in attributing peer relationship difficulties directly to ADHD, particularly when co-occurring conditions are considered. Peer rejection is associated with conduct disorder and oppositional defiant disorder, which is reported to co-occur in 30-50% of ADHD cases (Biederman et al., 1991; Mrug et al., 2009). There is more work to be done in this area to fully understand how children displaying traits of hyperactivity, impulsivity, and inattention can overcome difficulties in peer relationships with or without a diagnosis.

It is also worth considering the protective characteristics of friendships. Cardoos and Hinshaw (2011) conducted a study in girls with ADHD on a summer camp program. Given that peer rejection can happen quickly, and to consider the initiation of friendships, the study used a summer camp program. The results showed that having at least one friend provided some protection from peer rejection, and even better if the friend did not have ADHD themselves (Cardoos & Hinshaw, 2011). However, there were significant limitations with this study. Girls were assessed for ADHD type behaviours and the hyperactive/ impulsive subtype was excluded. Given that externalising behaviours have been shown to be a risk factor for peer rejection and victimisation, this seems an unusual choice. 63% of the sample were in the ADHD group which is much higher than the normal population and may have affected the overall environment. The sample was also entirely female. Becker and colleagues (2019) found there was lower social acceptance and peer functioning in girls with ADHD, in contrast to boys, for diagnosed children. Although there are promising signs that friendships could be a protective factor for children with ADHD, further research would enable better understanding of this area and especially for supporting girls with ADHD.

It is also worth mentioning that, given relationships are bidirectional, the source of difficulties with peers cannot be placed solely on the part of the child with ADHD. There are potential catalysts for peer difficulties from those children without ADHD, for example, through social devaluation, exclusionary behaviour, and negative reputations (Mikami & Normand, 2015). In supporting children with ADHD in the classroom, school staff need to be aware of the dynamics between children and promote positive peer relationships (Moore et al., 2017).

1.5.3 ADHD and Staff Relationships

Student-staff relationships are important for children's academic achievement and positive school experience (Ewe, 2019; Nurmi, 2012). A meta-analysis by Nurmi (2012) demonstrated that student engagement and motivation, prosocial behaviour, and academic performance were all positively associated with improved student-teacher relationships and had an impact on teacher instruction. Although most of the studies in the meta-analysis were cross-

sectional, therefore not able to demonstrate the impact of relationships over time, there is support for each of these factors in the literature (Graziano et al., 2007; Hughes & Kwok, 2007; Martin, 2004; Murray & Zvoch, 2011).

1.5.4 A Strengths-Based Approach

> I think focusing on those positives as well, and again it's like, it's never 'one size fits all'…but I think encouraging people to think, you know, "What does this child contribute to the class? What makes them amazing?" is really important. (Deputy Head Teacher, Interview, 2018)

The extant literature is primarily concerned with the deficit-based medical model of ADHD; a disorder to be treated and a problem to be addressed (Barkley, 1997; Caye et al., 2018; Jensen et al., 2005). The impact of ADHD in the individual may be struggling with low self-esteem, difficulty maintaining relationships, fewer qualifications, poor mental health and longer term struggles with addiction and criminal behaviour (Langberg & Becker, 2012; Montgomery et al., 2018; Parker et al., 2013). Within the family, parents' work may be affected, and relationships disrupted (Harpin, 2005; Peasgood et al., 2016; Pelham et al., 2007). In school, teachers report higher levels of stress and may interact more negatively with children, and costs may increase due to staffing changes and interventions (Barkley, 2014; Greene et al., 2002; Snell et al., 2013). More widely, the economic cost of ADHD has been estimated in relation to mental health service provision, lower achievement and, therefore, poorer employment outcomes, the need for special education provision, and the effects of potential criminality (Robb et al., 2011; Snell et al., 2013). This all paints quite a bleak picture. An additional consideration is that ADHD co-occurs in approximately 45-60% of cases with other diagnoses, such as autism and learning disabilities which are likely to bring additional challenges (DuPaul et al., 2012; Reale et al., 2017; Stevens et al., 2016).

In contrast, there is some research exploring a strengths-based approach (Climie & Mastoras, 2015; Rhee et al., 2001; Sewell & Park, 2021). Whilst still acknowledging that children with ADHD may face significant challenges and difficulties, the objective is to balance the challenges with children's unique strengths and resilience, such as logic, reasoning, and creativity (Ek et al., 2007; Fugate et al., 2013; Sherman et al., 2006). Although this body of literature is still relatively small in comparison to a deficit model, it is growing which is encouraging. Initially, the strengths-based approach was accompanied by cautionary notes from those who believed this focus may result in children with ADHD not getting the help they need, but this was a reaction to ADHD being positioned as an evolutionary advantage rather than recognising that children with ADHD have both strengths and difficulties (Sherman et al., 2006). Strengths-based approaches are

being included in conversations about inclusive education in the United States, although it is difficult to find evidence of this approach in the UK (Wehmeyer, 2019). In the ADHD resource developed as part of this thesis, we wanted to take this balanced strengths-based approach by providing information and strategies to support children in their difficulties together with material to cultivate their strengths.

Most ADHD interventions for children with ADHD aim to enable the child to adapt to the demands of the classroom environment by reducing symptoms and modifying behaviour (DuPaul et al., 2011). Although medication is a first-line treatment for school-age children in the United States, behavioural approaches take precedence in the UK based on the National Institute for Health and Care Excellence (NICE) guidelines (NICE, 2019; Wolraich et al., 2011). This is important as the reduction in symptoms, usually associated with ADHD medication, has not been shown to improve educational outcomes or cognitive challenges (Purdie et al., 2002). Moore and colleagues (2018) undertook a systematic review and meta-analysis of non-pharmacological school-based interventions for ADHD. They concluded that although some school-based interventions provide benefits to children with ADHD, there was no conclusive evidence of their effectiveness. However, outcomes were centred on reducing problem behaviours and the impact on academic outcomes with no mention of developing children's strengths. Interventions that aim to promote resilience do exist but there is a call for increased focus on strengths-based approaches (Mackenzie, 2018). Teacher training ADHD interventions which measure child outcomes tend to have the same focus as the former studies on behaviour modification and symptom reduction (Ward et al., 2020). However, teacher training ADHD interventions that measure teacher outcomes often have an additional focus of adapting the environment, by structuring learning differently or by modifying teachers' own attitudes and behaviour (Anto & Jacob, 2014; Barnett et al., 2012; Lasisi et al., 2017). Although these studies did not measure the relationship between teacher changes and pupil outcomes, there is evidence that improved teacher-student relationships do have a positive effect on children with ADHD (Ewe, 2019; Mikami & Hinshaw, 2003). Similarly, the literature on the protective nature of friendships could guide teacher practice when organising groups within the classroom or assigning seating plans (Becker et al., 2019; Cardoos & Hinshaw, 2011). Overall, a strengths-based approach to supporting the child, together with teacher interventions to improve classroom environments, may provide a more holistic solution to enabling children with ADHD to thrive.

1.6 Teacher Knowledge, Attitudes and Behaviour

1.6.1 Teacher Knowledge and Attributions of ADHD

Teacher knowledge of ADHD is important. Teachers are often the first people to refer children for diagnosis of ADHD and knowledge would enable more accurate and earlier referrals to be made (Aguiar et al., 2014; Biederman et al., 1991; Das, 2019). Additionally, through the diagnostic process, doctors almost always rely on teacher ratings of symptoms (Lasisi et al., 2017). Importantly, diagnosis signals that there might be underlying cognitive challenges alongside any more obvious behavioural challenges (Castellanos et al., 2006). However, criteria in DSM-5 (Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition) and ICD-11 (International Classification of Diseases 11th Revision) specify symptoms before the age of 12 years old, which may mean diagnosis may not happen until a children is in secondary school (American Psychiatric Association, 2013; World Health Organization, 2019). If a child with ADHD does not receive a diagnosis in primary school, teachers may simply attribute difficulties in the classroom to demotivation or laziness without realising that there could be underlying challenges to learning that require addressing or need extra support (Rucklidge et al., 2007).

For teachers themselves, knowledge has been shown to influence their attitudes and behaviours towards children with ADHD, which can affect outcomes (Avramidis et al., 2000; Lasisi et al., 2017; Mulholland & Cumming, 2016). Teacher knowledge influences planning, classroom management practices, and treatment acceptability, with many behavioural interventions implemented by teachers in the classroom (Anto & Jacob, 2014; Sciutto, 2015). Many studies have attempted to measure teachers' ADHD knowledge. Sciutto (2015) highlights the limitations of most of these studies as investigations of teacher knowledge have traditionally relied on true/false style questionnaires, giving limited understanding of where gaps in knowledge or false beliefs are held, not indicating the strengths of conviction in that belief, and not identifying random guesses. Although the strengths of conviction is not addressed, the Knowledge of Attention Deficit Disorders Scale (KADDS; Sciutto et al., 2000) was used in a survey of over 2000 teachers from nine different countries and included an additional response item of 'Don't Know' to reduce random guesses (Sciutto et al., 2016). This survey showed teachers' correct responses to range from 15-62%, with the majority of countries scoring over 33% (Sciutto et al., 2016). These overall scores are consistent with other studies (Akram et al., 2009; Mulholland et al., 2015; Topkin et al., 2015). However, a study by Mulholland et al. (2015), which measured both knowledge and attitudes using an ADHD-specific instrument with similar response options to the KADDS (Sciutto et al., 2000), showed similar results to previous studies on aetiology, treatment and assessment, but higher correct responses for symptoms (71%). Possible explanations

suggested were prior ADHD training, greater experience, or independent reading, although further studies are needed to investigate this. This does however provide an argument for ensuring specific ADHD training and resources are available to staff. Additionally, whilst relying on experience over time to improve knowledge is not ideal for an individual's development, the higher levels of knowledge associated with experience is a strong argument for mentoring, collaboration, and peer support between staff with different levels of experience to share knowledge (Aguiar et al., 2014; Barnett, 2010). In Barnett's (2010) study of 19 Canadian teachers, all participants had experience of teaching children with ADHD and 18 out of 19 participants had experience of children taking medication which may have contributed to high levels (80.5% correctly answered questions) of ADHD knowledge.

Teachers' knowledge of the aetiology of ADHD suggests acceptance of both medical and environmental models (Anderson et al., 2012; Bekle, 2004; Couture et al., 2003; Russell et al., 2016). In England, Russell and colleagues (2016) undertook a qualitative study with educational practitioners and reported the causes of ADHD as thought to be biological, environmental or a combination of both. Although participants admitted a lack of knowledge, some thought the cause to be based in genetics or the brain and considered this to be 'true' ADHD (Russell et al., 2016, p.110). Those that attributed ADHD to environmental causes discussed misdiagnosed behavioural difficulties and made links with the home, specifically parenting, and diet. There were also practitioners who understood early experiences to shape development, influencing attachment and neurological development leading to a diagnosis of ADHD, as well as a biological basis exacerbated or ameliorated by the environment. A lack of explicit connection with the school environment might offer a potential explanation of why teachers lack confidence in seeing adaptation of the classroom environment as key to supporting children with ADHD (Gwernan-Jones et al., 2016; Russell et al., 2016). An earlier study comparing Canadian and British teachers' attributions included sociocultural and political attributions as well as medical models, although this study had significant methodological issues such as poor sampling, low response rate, and missing data (Couture et al., 2003).

These various conceptualisations of the 'root cause' of ADHD suggest the need to investigate the impact of teacher attributions on behaviours and attitudes towards teaching children with ADHD. Studies that report teachers' beliefs that ADHD children's problem behaviours are involuntary and not a result of being naughty, suggest they are more likely to use strategies to help the child rather than punishing bad behaviour (Blotnicky-Gallant et al., 2015; Kos, 2008; Lovejoy, 1996). This is particularly true for inattentive or overactive behaviours in comparison to opposition (Lovejoy, 1996).

An important factor to consider is where teachers source their ADHD knowledge. Teachers report seeking information from colleagues, healthcare professionals, social networks and the internet, with the latter being most common (Akram et al., 2009; Alshehri et al., 2020; Bussing et al., 2012; Reavley & Jorm, 2011). Given that teachers' ADHD knowledge is important for children's success in school, there is certainly a need to address the deficit in knowledge. Additionally, as accuracy and reliability of web-based information about ADHD has been found to be generally poor, this emphasises the importance in this project of providing contributors' credentials on the website and ensuring information is evidence-based and reliable (King et al., 2021).

1.6.2 Teacher Attitudes and Behaviour towards Teaching Children with ADHD

The quality of the student-teacher relationship is reported to influence teachers' attitudes and behaviour as they plan lessons and classroom organisation, deal with disruption, and support children to develop self-regulation skills (Hargreaves, 2000; Martin, 2004; Nurmi, 2012). The literature exploring the influence of teacher attitudes towards children with ADHD suggests they do have a significant impact improving children's experience of school, their engagement and motivation, and the amount of additional support they receive (Anderson et al., 2017; Avramidis et al., 2000; Mulholland & Cumming, 2016). Mulholland and Cumming (2016) suggested that more positive teacher attitudes could improve disabled students' educational outcomes and school experience. Although disabilities are not specified, ADHD is mentioned as an example, but neither educational outcomes nor positive school experience are defined. However, a survey conducted with teachers in England reported that positive teacher attitude was likely to result in more additional support being offered to SEN (Special Educational Needs) children (Avramidis et al., 2000). Teacher attitudes may also influence referral of students for diagnosis which could result in additional support (Anderson et al., 2017; Jerome et al., 1994).

Several studies have attempted to investigate teachers' attitudes, and subsequent behaviours, towards teaching children with ADHD. Each have used self-report questionnaires to explore attitude, ambivalence, and also knowledge of diagnosis and treatment (Anderson et al., 2012, 2017; Bekle, 2004; Jerome et al., 1994). Some have also compared pre-service and in-service teachers (Bekle, 2004; Anderson et al., 2017; Anderson et al., 2012). Jerome et al. (1994) compared in-service teachers from America and Canada using a self-report questionnaire to measure teachers' knowledge and attitudes. However, attitude was only investigated in relation to the belief in ADHD being a legitimate disorder rather than distinguishing attitude from knowledge (Anderson et al., 2017). Bekle (2004) modified the questionnaire devised by Jerome et al. (1994) to include separate measures of attitude and compared in-service teachers with

teaching students in Perth, Australia. There was little difference in knowledge between the two groups although in-service teachers had had little or no training in ADHD and most teaching students had received ADHD training, suggesting in-service teachers' experience was valuable in gaining knowledge. However, both groups said that they would benefit from further training. In distinguishing attitude from knowledge, Bekle (2004) found that there was a positive correlation between knowledge and general attitude to ADHD. Recommendations were to provide better quality training for education students and in-service teachers to establish reliable knowledge on ADHD diagnosis and treatment and the implications of ADHD on curriculum planning.

Anderson et al. (2012) explored teacher attitudes further by basing their investigation on the tripartite model of attitude content, incorporating cognition, affect, and behaviour (Eagly & Chaiken, 1993). Their sample included in-service teachers, pre-service teachers with experience and pre-service teachers without experience and was designed to investigate the effect of experience on attitudes to ADHD. The study was conducted in New South Wales, Australia. In-service teachers were found to have greater knowledge, less favourable affect but more favourable behaviours than pre-service teachers. The authors suggested that this relationship between knowledge and affect suggests a need for in-service training for teachers to identify their emotional responses and coping mechanisms. Also, further study could investigate the impact of less favourable affect on ADHD children. Pre-service teachers with experience had no more knowledge than those without experience and although there was no significant difference in affect between these two groups, the pre-service teachers with experience showed a trend to less favourable affect. The study highlights training needs for teachers and teaching students to increase knowledge, awareness of potential ambivalence in affect, and to equip teachers with coping mechanisms when ADHD children's behaviour becomes problematic or challenging for teachers within the classroom.

Building on the previous study, Anderson et al. (2017) systematically explored attitudinal ambivalence in teaching ADHD children. The three attitude components described previously were measured and two measures of attitudinal ambivalence were used: intra-component ambivalence and inter-component ambivalence (Anderson et al., 2012, 2017). Intra-component ambivalence is used to describe positive and negative feelings within one component of attitude (Anderson et al., 2017; Eagly & Chaiken, 1993). For example, when considering the use of classroom strategies, a teacher may believe the strategies to be productive (positive belief) yet also believe them to be too time-consuming (negative belief; Anderson et al., 2017). Inter-component ambivalence conveys conflict between a teacher's beliefs, emotions, and/or behaviour (Anderson et al., 2017; Eagly & Chaiken, 1993). In this case, a teacher may, for example,

be frustrated (negative affect) by the off-task behaviours of a child yet also, at the same time, use positive behavioural strategies (positive behaviour) to support the child (Anderson et al., 2017). A self-report questionnaire was used in New South Wales, Australia contrasting a group of in-service teachers with a group of pre-service teaching students. The results showed that the experience of teaching children with ADHD increased self-efficacy. Both groups had management strategies of adapting lessons and pedagogical styles and both had attitudinal ambivalence. One interesting finding was that in-service teachers had greater knowledge, less ambivalence in behaviours, but more ambivalence in beliefs about ADHD. This could be explained by the fact that greater experience brings an awareness of the contrasting difficulties and positive aspects of teaching children with ADHD, but also a consistency in a professional approach and interactions with students which could have a positive impact on students' educational experience.

Anderson et al. (2017) suggested teacher training, and in-service training, could include training in the awareness of attitudinal ambivalence, coping strategies, and emotional regulation support for the challenges of teaching children with ADHD, counselling for teachers with strong ambivalence, and opportunities for teaching students to work with ADHD children. At first glance, it seems that as teachers gain more experience of teaching children with ADHD, they learn classroom management techniques and teaching strategies which increase their competence, but despite some positive experiences, in general they experience less positive affect.

Further support for not only improving ADHD knowledge but also addressing attitudinal ambivalence are the associations with psychological well-being and burnout (Anderson et al., 2017; Oh, 2022). Although the mechanisms of these associations are not yet well understood, there is some evidence to suggest that attending to attitudinal ambivalence alongside ADHD knowledge may lead to a positive effect in these domains. Three linked studies, the first two with more than 300 full-time employees in the United States and the third utilising a large data-set of over 2000 participants, found attitudinal ambivalence to be associated with higher levels of burnout and poorer psychological well-being (Oh, 2022). Improving ADHD knowledge without addressing attitudinal ambivalence may not be effective longer-term given these associations. A study by Kołakowski and colleagues (2009) with 150 participating school teachers in Poland, investigated the effects of a relatively long ADHD workshop series (15 hours in total) on professional burnout. In the study, burnout was operationalised by measuring teachers' self-efficacy and life satisfaction. At post-test measures, there was initial improvement in ADHD knowledge but not in self-efficacy, although life satisfaction increased. The authors concluded that, although overall teacher well-being improved in general, teachers were unable to transfer the workshop learning to the classroom. This was perhaps due to the workshop comprising

theoretical knowledge but not practical coaching associated with problems in the school environment.

1.6.3 The Wider School Staff

Teaching assistants, and the wider and allied professional school staff (e.g., Special Educational Needs Co-ordinators or SENCOs), provide invaluable support for children with SEN, including ADHD (Greenway & Rees Edwards, 2020; Groom, 2006). In England, teaching assistants make up 28% of the overall school workforce with latest figures reported in 2018 being 263,913 (Department For Education, 2019). Day to day tasks are varied, ranging from helping to prepare and lead activities and classes, providing pastoral support for children, monitoring and reporting progress, and providing one-to-one support for children (National Careers Service, n.d.-b). In addition, when supporting children with SEN, teaching assistants are also expected to adapt materials and resources for an individual child, provide physical, social and emotional support, and work with external professionals, e.g. speech and language therapists (National Careers Service, n.d.-a). Teaching assistants may also be called upon alongside teachers to provide information for referral and diagnosis, and implement behavioural interventions (Anderson et al., 2017; Groom, 2006; Lasisi et al., 2017). Although several studies include teachers and support staff in training interventions, most of the literature regarding school-based interventions delivered by school staff, and ADHD training, involve teacher participants only (Jones & Chronis-Tuscano, 2008; Niznik, 2005; Richardson et al., 2015).

Thus, teaching assistants are expected to undertake a broad and varied role, requiring expertise and flexibility, yet receive little or no training and without any professional standards to ensure sufficient support (Greenway & Rees Edwards, 2021; National Education Union, 2019). The National Education Union gathered a group of educational professionals and union representatives which recently published its own Professional Standards for Teaching Assistants. Although these standards are non-statutory, they do provide guidance for schools in the face of the government's reticence to publish their own (National Education Union, 2019). With particular relevance to training and ADHD, the standards include identifying teaching assistants' training needs for developing sufficient knowledge and understanding and being able to contribute to effective assessment and planning.

Moore and colleagues (2017) explored views and experiences of ADHD from wider support staff alongside teachers, in both mainstream schools and pupil referral units. Although themes were developed from the whole group, there were several quotes attributed to the wider support staff in mainstream schools. Teaching assistants mentioned strategies that they had used to support disruptive behaviour but also others to proactively grow under-developed skills in

children with ADHD. This mirrors the strengths-based approach mentioned earlier (Climie & Mastoras, 2015). Teaching assistants also described their role in terms of enabling children with ADHD to be included in the mainstream class by making individual adaptations, and by building trusting relationships (Moore et al., 2017).

There is very little known about the knowledge and attitudes of teaching assistants in relation to ADHD, yet given their close role in supporting children and liaising with external professionals, it is an important area to understand and potentially address (Greenway & Rees Edwards, 2020; Groom, 2006). Greenway and Rees Edwards (2020) compared teacher and teaching assistant ADHD knowledge and attitudes in a sample from Wales, UK. 165 teachers and 157 teaching assistants, from both primary and secondary schools, completed the ADHD-specific measures devised by Mulholland (2016). The two groups were similar on school type, experience with ADHD, prior training in ADHD and support from the school. However, the group of teaching assistants were 88% female in comparison to 69% of teachers, and teachers had higher educational qualifications. For both groups, knowledge of symptoms was greatest (74% for teachers and 84% for teaching assistants) with teaching assistants scoring significantly higher on three out of the four subscales. There were no significant differences for school type or years' experience. Although there were some significant differences showing greater knowledge for support from school (teachers) and prior training (teaching assistants), effect sizes were small.

The difference in attitudes between teachers and teaching assistants showed significant differences. Teaching assistants scored significantly higher on positive feeling scores. Overall effect sizes were small but the three-way interaction of feelings with training and support, showed large (both groups had received training and support, or both groups had received training but no support) and very large effect sizes (both groups had received support but no training). 94% of teaching assistants found children with ADHD rewarding to work with in comparison to 73% of teachers. 89% of teaching assistants felt working with children with ADHD contributed to their growth in skills in comparison to 59% of teachers (Greenway & Rees Edwards, 2020).

Teaching assistants also scored significantly lower on negative feeling scores with a small effect size. 43% of teaching assistants found children with ADHD irritating in comparison to 79% of teachers. 48% of teaching assistants found supporting children with ADHD stressful compared to 61% of teachers. For teachers, high rates of knowledge were associated with positive attitudes but there were no significant associations between knowledge and attitudes for teaching assistants (Greenway & Rees Edwards, 2020). The analysis did enable a good understanding of the impact factors such as training, support, and school type on knowledge and attitude. There was

also a large sample size, but given the study was only conducted in Wales, differences in the school system may limit generalisability of the results.

Given that teaching assistants provide high levels of support for children with ADHD, it is encouraging to see the high levels of ADHD knowledge and positive attitudes. However, there is still room for improvement. The lack of statutory requirement for teaching assistants to receive training prior to taking up the position raises concerns, particularly as in-school training may not always include support staff (Groom, 2006). Experience with ADHD has been shown to be a valuable contributor to knowledge which, though not ideal, over time may mitigate the paucity of specialist training and support they need (Liang & Gao, 2016; Mulholland, 2016; Wang, 2009).

Greenway and Rees Edwards (2020) reported facilitators and barriers that teaching assistants identified in their ability to care for children with ADHD. Facilitators included improved knowledge and staff support. Barriers included a lack of support, the classroom environment and limited resources, and the negative attitudes of teachers leading to stigma, exclusion, and peer rejection. These are important factors when considering what training or professional development staff may need.

1.7 Continuing Professional Development: Training and Resourcing for Inclusive Education

1.7.1 Current Models of ADHD Teacher Training

1.7.1.1 Where Can Training be Found? It is difficult to gain a comprehensive understanding of what ADHD training is available globally for schools. The literature on ADHD teacher training interventions is based on specific research projects. These training programmes are not normally readily and freely available to schools unless it is an evaluation of an existing programme, or its success results in it being rolled out to a wider audience (Veenman et al., 2017).

There are several routes a school could take to provide ADHD staff training in England. Firstly, schools could contact their local authority for information on locally approved providers. For example, Southampton Advisory Outreach Service (SAOS) is commissioned by Southampton City Council to provide SEND support for schools in the city (The Southampton Advisory Outreach Service, 2017). Consultancy, training courses, and evaluation of provision are offered, and schools are required to pay for these services from their own budget. At the time of writing (January 2022), no specific ADHD courses are available. The local authority also provides an educational psychology service which provides support and advice on a range of special educational needs. Educational Psychologists may or may not have expertise in ADHD (Southampton City Council,

n.d.). This type of training relies on schools setting ADHD as a priority training need and allocating necessary resources, both financial and time.

Secondly, schools could point staff to self-directed learning materials, such as books or websites. The UK government recommends ADHD training materials published by NASEN (National Association for Special Educational Needs). There are several paid-for webinars designed for school staff, some of which have been written by the ADHD Foundation (NASEN, 2020). The issues of reliability and accuracy of other information which can be derived from the internet have already been discussed. However, self-directed training gives autonomy to individual teachers, allowing them to focus on topics that are especially pertinent to their current situation, and control on the timing and format of the learning (Artman et al., 2020).

Thirdly, schools may send staff on training courses provided by third sector organisations, for example, the ADHD Foundation (https://adhdfoundation.org.uk/) and NASEN (https://www.nasen.org.uk/). This type of training is costly. If a staff member is sent on a training day, there is the financial cost of the training and travel, plus additional staff may be needed to cover classes in their absence. If external supply staff are needed, this increases the financial burden, whereas if in-house staff are used, this may increase the workload of colleagues.

Finally, schools may organise their own training on INSET (In-Service Training) days or twilight sessions. They may use in-house staff, or colleagues from the learning trust in which they belong, or they may buy in expertise. For example, the charitable organisations mentioned previously may provide bespoke whole school training days, or an Educational Psychologist may be invited to lead a session.

One of the issues with training courses or whole school training is the parameters that dictate when they are scheduled; for example, to fit the school calendar, or when external agencies deliver them. This is not always the optimum timing for individual staff and is an issue discussed in more detail in the second paper of this thesis.

In terms of Initial Teacher Training (ITT), the core content framework published by the UK Government, specifically recommends that trainees should be confident and able to adapt learning for children with SEN (Crown Copyright, 2019). This includes working to understand individual differences, being able to adapt teaching responsively to the needs of children with additional needs, and seeking support from expert colleagues (Crown Copyright, 2019). It is important to consider that ITT is a relatively short space of time in which to learn and develop a wide range of knowledge and skills for the classroom. Therefore, it is critical that trainees are

aware of the variety of SEN children, understand how to assess the needs of individual children, and know where to find information and support (Nash & Norwich, 2010).

1.7.1.2 What Does ADHD Teacher Training Include? ADHD teacher training is usually comprised of psychoeducation with or without behavioural strategies. This is evidenced in research studies and, where available, in the type of training courses mentioned above (Corkum et al., 2019; Latouche & Gascoigne, 2019; Veenman et al., 2019). Psychoeducation may include aetiology, symptoms, assessment and diagnosis, and treatment options (Aguiar et al., 2014; Barnett, 2010; Both et al., 2016). Behavioural strategies are predominately focused on reducing undesirable behaviours, such as hyperactivity, impulsivity, and inattention (Gormley & DuPaul, 2015; Miranda et al., 2002; Mohammed, 2018; Shaban et al., 2015). Duration of training ranges from a two hour session to an 18 week programme (Tahiroğlu et al., 2004; Veenman et al., 2017). Methods of delivery tend to be either face to face workshops or online self-instructional materials (Barnett et al., 2012; Lasisi et al., 2017).

At present, it is difficult to find a strengths-based approach to ADHD teacher training although strengths-based approaches to teaching and assessment more generally are available (Bozic et al., 2017; Sewell & Park, 2021).

1.7.1.3 Who Compiles and Delivers ADHD Training? ADHD teacher training is normally delivered by clinical practitioners or academic researchers (Barnett et al., 2012; Froelich et al., 2012; Lasisi et al., 2017; NASEN, 2020). Most of the materials supplied by NASEN do not identify the source or authors. However, although individual contributors are not identified, some modules are provided by the ADHD Foundation whose training director is a former teacher (ADHD Foundation, 2020). Similarly, SAOS, mentioned previously, is comprised of educational practitioners specialising in SEND. One of the criticisms of suggested strategies for supporting children with ADHD in school, is the lack of contextualisation and understanding of current school practices (Braude & Dwarika, 2020; Ward et al., 2021). Ensuring school staff are involved in the production of training resources would seem a key approach to tackling this barrier.

1.7.2 Experience and Desire for Training

ADHD teacher training is perceived to be lacking resulting in teachers feeling ill-prepared for supporting children with ADHD (Martinussen et al., 2011). This is confirmed by many studies around the world. From a sample of 675 teachers across the United States, 58% said they had none or brief ADHD training. Although 42% reported receiving intensive ADHD training, there was no significant relation to the use of targeted strategies in the classroom which calls the usefulness of the training into question (Hart et al., 2017). In a Canadian study of 42 teachers, 86% said they

had received no pre-service training and 76% had received no in-service training (Martinussen et al., 2011). 42% of 528 Danish teachers had no previous training, and of the total sample, 62.5% thought that they did not know enough about ADHD (Mohr-Jensen et al., 2019). In Australia, just over half of 127 teachers had received ADHD training in their initial training, and 35% had experienced in-service ADHD training (Anderson et al., 2012). A study in India, found none of the 50 participants had received prior ADHD training (Anto & Jacob, 2014). From the participants of the qualitative study in this thesis, all participants had received very little to no specific ADHD training. However, in one small study in Canada with 19 teachers, 14 reported prior training which ranged from one to ten hours (mean = 3.73, SD = 2.79; Barnett et al., 2012). It is not clear why this sample had a much higher percentage of previous training. Although the participants were mostly from one school board, the geographical region is rural and access to ADHD training is deemed to be limited. Having said that, most of the participants were identified and recruited via word of mouth. Two educators at the school board had compiled a list of interested staff so it may be that prior training had increased their interest in taking part.

Overall, the picture is that most teachers have not had much or any ADHD training. Although these studies have relatively small samples, and some are conducted in one school or region, there is no evidence in the literature to suggest that any teachers or school staff have received sufficient specific training in ADHD, and teachers say they would benefit from more training (Anderson et al., 2017; Hart et al., 2017; Martinussen et al., 2011). Consistently, in Greenway and Rees Edwards (2020) study, 92% of teachers and 96% of teaching assistants report wanting more training.

1.8 Theoretical Framework

This thesis explores the co-construction of knowledge in the production of ADHD resources. Firstly, theories of co-production and knowledge creation are presented to understand how co-construction is not simply explained by collaboration. Knowledge creation is explored in some depth as different models build a comprehensive understanding of the concept of knowledge and how co-construction can take place. This leads to a further discussion of how tacit and explicit knowledge are expressed in schools. This understanding of knowledge and where it can be found provides the epistemological approach guiding the thesis.

1.8.1 Theory of Co-Production

The theory of co-production originated in the areas of political theory and policy analysis as issues surrounding centralised government and local governance were being explored (Ostrom, 1996). Co-production was used to describe practice that did not simply involve or engage with

service users, but brought them together with policy makers to collaborate and actively work together (Heaton et al., 2016; Needham & Carr, 2009; Ostrom, 1996). This transformational approach recognised that active engagement of users would produce different and better services to meet the present and future needs of those users than either group working alone (Banks et al., 2016; Boyle et al., 2010; Needham & Carr, 2009; Ostrom, 1996). Much of this rests on the recognition that user knowledge is different from professional knowledge and therefore adds more understanding to the process (Boyle et al., 2010; Ostrom, 1996). However, this presents the challenge of reliance on acceptance and trust between the two parties as different perspectives need to be equally heard and valued (Boyle et al., 2010; Heaton et al., 2016; Needham & Carr, 2009). Co-production has been adopted by other fields, such as health research and education, where academic and clinical evidence is used to design interventions in practice (McCabe et al., 2021; Reichow et al., 2008). There has been criticism of evidence-based interventions being unrealistic or unacceptable by practitioners because they are developed out of context and with little appreciation of the unpredictability of real life (Nastasi et al., 2000; Patrick et al., 2011; Reichow et al., 2008). Co-production addresses these disparities by involving practitioners in the design of interventions to ensure contextual issues are taken into account (Reed et al., 2021).

1.8.2 Knowledge Creation Metaphor

The knowledge creation metaphor describes knowledge that is produced as individuals work together in a shared space, using a reflective, iterative cycle to generate new actionable ideas (Paavola et al., 2004). This is different from the acquisition metaphor of knowledge which rests upon the knowledge-transfer premise in which knowledge is conceptualised as a 'property' which usually resides in academic or clinical research and is then transferred to practitioners (Guldberg et al., 2017; Sfard, 1998). It also distinct from the knowledge by participation metaphor which situates knowledge as being produced by participation e.g. discourse and activity (Sfard, 1998) but still residing in the individual or applicable only in the original context. The knowledge creation metaphor recognises the contribution of each individual and the knowledge they bring, without elevating them above the action of the whole community, and it is the interaction of knowledge through the group activity that is the key for innovation and the co-construction of new knowledge (Paavola et al., 2004). Paavola et al. (2004) provide an overview of three models of knowledge creation which contribute to their knowledge creation metaphor. See original for detail but a short summary is provided here.

1.8.2.1 Activity Theory. Engeström and colleagues' model of expansive learning draws upon activity theory and expansive learning theory (Engeström et al., 1999). These theories are based on the following premise: that human beings are embedded and act within a

sociocultural context, and so behaviour and activity can only be understood within that context. Activity theory's origins are in the sociocultural school of Vygotsky, which acknowledges the importance of context, alongside Marx' concept of activity being purposeful or driven by a goal (Engeström et al., 1999; Kozulin, 2004). Historically, it emerged in the psychology of child development and learning but gradually its broad applications were used in many different fields of research and practice. The model of expansive learning uses activity theory to provide a framework in which organisations can analyse and change their learning and working practices. It relies on collaboration as individuals bring their own reflections and critiques together and, through a seven-step process, share and develop those critiques, identify areas to improve upon, and work together to create and implement new ways of working. Engeström et al. (2002) used this model in a collaborative project, introducing researchers to the activity group, who guided the reflection process from a fresh perspective. This 'change laboratory' was used in a Finnish school to reflect on their provision for disadvantaged, immigrant children (Engeström et al., 2002, p.211). Through the process, staff were able to identify a specific area for change and then design and implement a project to accomplish it. Critics of the expansive learning model suggest its sociocultural perspective narrows its vision and links knowledge so closely to the context in which it has developed, that it overlooks knowledge that is not directly linked to that particular context or practice (Bereiter, 2002). However, although there is a strong contextual base, the model does allow for more abstract, creative thinking and conceptual knowledge, particularly when participants are suggesting novel solutions to a problem (Engeström et al., 1999).

1.8.2.2 A Theory of Knowledge Building. Bereiter's (2002) model of knowledge building is heavily influenced by the three worlds of Karl Popper (2012). Bereiter (2002) uses the imagery of baking to describe the three worlds. World 1 comprises physical and material reality, such as baking a cake. World 2 describes mental states, theories, or models; for example, the mental processes the chef uses to take a recipe and bake a cake. World 3 is the concept of the recipe, a conceptual artefact that can be debated, interpreted, innovated (Bereiter, 2002). In Bereiter's (2002) model, conceptual artefacts are the cornerstone of knowledge building. They describe knowledge that exists outside the individual, in a shared space, with a purpose of solving problems or originating new thoughts or advancing new knowledge. These conceptual artefacts belong to the community, are open to debate, critique, and transformation. An original idea can be taken and developed by others, have implications beyond what was initially imagined, and be adapted for different contexts. This theory has been applied in a variety of spheres (including computer science, education, healthcare) when exploring collaborative approaches (e.g. Kimmerle et al., 2010; Moskaliuk et al., 2009). For example, in the development of a wiki (a web

page that allows online users to edit and update information), Kimmerle and colleagues (2010) explain the interaction between users on the site as knowledge building because each user in turn, builds upon previous entries and brings alternative perspectives and insights to the topic, which are then further built on.

1.8.2.3 A Dynamic Theory of Organizational Knowledge Creation. In the field of organisational research, Nonaka (1994) makes the distinction between tacit knowledge and explicit knowledge, presenting a model in which each informs the other creating new knowledge. Based on a philosophical exploration of what constitutes knowledge, Nonaka and Takeuchi's (1995) model particularly focuses on the interaction of tacit knowledge and explicit knowledge. Tacit knowledge can be described as instinctive knowledge, knowing how to act or respond in a given situation to achieve particular results. It is an awareness of consequences, an act without conscious thought, and embedded in beliefs and values experience (Nonaka & Takeuchi, 1995; Polanyi, 1967). This form of knowledge is difficult to formalise in writing, and often the result of experience, where technical know-how intersects with mental schemas to create an intuitive action (Nonaka & von Krogh, 2009). This is in contrast to explicit knowledge which is the formal set of rules or structures that can be easily transmitted through written explanations and creates boundaries within which systems are regulated and enforced (Nonaka & Takeuchi, 1995). Knowledge conversion in groups between tacit and explicit knowledge is what Nonaka and Takeuchi (1995) argued leads to innovation and development. Individuals begin to discuss their ideas on how to address a particular issue, and in the dialogue that ensues, the group begin to identify actions, structures, or products that might help. This explicit knowledge then influences an individual's future actions and shapes their tacit knowledge. The bidirectional influences of tacit and explicit knowledge result in changes or development as the organisation moves forward.

1.8.3 Explicit and Tacit Knowledge in Schools

The current education system and methods of accountability have been argued to reduce teachers to conduits of explicit knowledge and skills, as if technicians passing predefined information to the next generation, rather than educational professionals (Biesta, 2015; Lambirth et al., 2021). The UK government identify the purpose of education in three domains: to build the economy through knowledge and skills; to nurture cultural capital through championing social justice and the arts; and to develop character traits in preparation for adult life (Gibb, 2015). Although this resonates quite closely with Biesta's (2015) multidimensional view of education aiming for qualification, socialisation, and subjectification, there seems to be a key difference. Biesta's (2015) definition sees the three areas as distinct yet inter-related, with the academic achievement of qualification balanced with development of cultural capital alongside building

initiative and responsibility. However, the rhetoric from Gibb (2015) circles back to qualification and an undertone of academic achievement in each domain, and the Department for Education website focuses almost exclusively on the economy and employment as the ultimate goal of education (Department for Education, n.d.). This effectively limits and reduces education to one domain (Biesta, 2007). The emphasis on qualification may explain why accountability for teachers in England is largely contractual rather than responsive, i.e. teachers are measured on government-defined indicators which measure qualification outcomes rather than a broader metric reflecting multiple domains (Sachs, 2015). This performance culture is characterised by low autonomy, low trust, and a lack of freedom to choose how best to achieve the curriculum outcomes (Evans, 2010; Locke et al., 2005).

However, to really achieve the government's defined purpose of education, teachers must do much more. Winch et al. (2015) describes teachers' expertise as being comprised of: tacit knowledge; critical reflection; and technical know-how. Tacit knowledge could be translated as wisdom: the ability to recall previous experience, understanding of the environment or culture, taking initiative to achieve a particular outcome. This comes from experience, developing norms of practice, testing assumptions, and adapting to different situations (Nonaka, 1994; Rynes et al., 2001). Critical reflection is a key component of professional development as teachers find ways to capitalise on successful teaching or improve practice (Department for Education, 2016). Technical know-how is the type of knowledge that lends itself to standardised measures; it is more formulaic, precise, universal knowledge that can be planned, controlled, and measured. This is where the government put their emphasis. Consequently, teachers are not treated as autonomous professionals, exercising judgement in how they will achieve a balanced education.

Teaching expertise is recognised to stem from the craft of expert teachers; those with experience who can bring intuitive action into the classroom by being flexible and adaptive in their context (Berliner, 2004; Eaude, 2014). This expertise can be summed up as tacit knowledge, embedded within the explicit knowledge of the school system and the curriculum (Eaude, 2014; Sprott, 2016). Teachers know the boundaries in which they must work, but as their expertise grows, they are able to intuitively determine the most effective ways of creating a learning environment to meet the needs of a particular individual or cohort (Berliner, 2004; Eaude, 2014). Most studies of teacher training for ADHD focus on behavioural interventions, positioning the teacher as not knowledgeable, with the transfer of academic or clinical knowledge being the answer (Latouche & Gascoigne, 2019; Owens et al., 2017; Veenman et al., 2019). However, these studies are focussed on explicit knowledge and do not facilitate the sharing of expertise or tacit knowledge by teacher participants. It is also worth mentioning that many of the ADHD training

programmes are directed at teachers alone, although there are some that include wider school staff (Bradley-Klug et al., 1997; Jones & Chronis-Tuscano, 2008; Niznik, 2005). To facilitate development and innovation, theories of knowledge creation require the sharing of tacit and explicit knowledge within organisations to generate new knowledge. Therefore, co-construction provides a better direction in which to utilise a broader range of knowledge and collaboration.

Additionally, although the emphasis of tacit knowledge has been placed on teachers, with an assumption that explicit knowledge is coming from academics, types of knowledge are not limited to specific participants or roles. Teachers may have greater depth of tacit knowledge for classroom management, but also bring explicit knowledge of structures and curricula that need to be considered. Equally, academics may bring explicit knowledge from academic literature, but may also bring tacit knowledge from conducting previous research and prior work experience. It is therefore simplistic and reductionist to create a definitive distinction between research and practice with no recognition of the learning and evidence that underpins practice or how research has been influenced by practice (Hordern, 2020; Parsons, 2021).

1.8.4 Knowledge Co-construction

In this thesis, knowledge co-construction describes the shared efforts of bringing together people with both tacit and explicit knowledge, recognising the contributions of both academic knowledge and classroom experience, so that knowledge creation can take place. It is this shared activity, i.e. co-production with knowledge creation that leads to knowledge co-construction (Parsons et al., 2020). In relation to teacher professional development, there are a number of studies exploring teacher collaboration. These collaborations use terms such as professional learning communities, communities of practice, and teacher learning groups (Stoll et al., 2006; Vrieling et al., 2016; Wenger, 1998). Collaboration is seen as a way to build capacity, beyond individual practice, which has shown longer-term results than individual learning (Stoll et al., 2006; Vrieling et al., 2016). It comprises active participation in professional development and tends to be rooted in everyday practice as teachers share their experience (Boud & Hager, 2012). The collaboration predominately results in knowledge exchange, as teachers share their ideas and experience, listening to each other, reflecting on and evaluating practice (Doppenberg et al., 2012). However, there are fewer studies which explore co-construction in relation to professional development (van Schaik et al., 2019; Vangrieken et al., 2015). Van Schaik and colleagues (2019) investigated co-construction of knowledge in a three year study of 39 teachers from 25 secondary schools who participated in teacher learning groups. Knowledge co-construction was described as practice-based if the knowledge shared derived solely from practice and included only teachers. Research-informed knowledge co-construction incorporated research knowledge from academic

literature or external experts, and research-based co-construction involved collaborative research activities involving teachers and academics (van Schaik et al., 2019). The research-based knowledge co-construction most closely resembles the approach taken in this thesis. The dialogue between teachers and researchers as each brought their own expertise, combined with taking part in research activities together, meant that participants began to construct new knowledge around pedagogical practices and developing skills. These groups went beyond mere collaboration, or co-production, because they also created new knowledge together.

Knowledge co-construction in schools does seem to be limited to teacher participants in partnership with academics (van Schaik et al., 2019; Vangrieken et al., 2015). However, given the importance of the wider school staff in supporting children with ADHD, collaborative groups would benefit from including a more diverse range of school staff. This is especially relevant for broader topics, such as special educational needs, which are relevant for all staff.

1.8.5 Epistemology and Knowledge

A critical realist approach best describes my pathway in this thesis, comprising a realist ontology and a constructivist epistemology. In terms of the ontology, I see mental schemas, meanings, motives, and intentions as real phenomena that can be communicated and understood, as well as the physical reality of animate objects, structures and processes (Maxwell, 2012; Putnam, 2001). Therefore, the views and perspectives of participants, together with my own, are worth expressing and reflecting on to understand what was happening in the studies presented, and why certain actions were taken. At the same time, processes, structures and physical, albeit digital, products are real and can be explored. Both these mental entities and physical entities interact and influence each other. For example, participants' meanings, beliefs, and intentions can provide explanations of how they engaged in the project or what we as a group produced, and the physical and digital space we occupied, along with the technology we used, may have been significant in shaping each person's beliefs or ideas (Putnam, 2001; Sayer, 1992). The idea of interaction, and the collaborative nature of this work, resonates with Putnam's (2001) proposition that reality is not fixed but we negotiate and renegotiate it through our language, our experience and our understanding. A related aspect of reality is the concept of culture. Traditionally, culture has been seen as a set of shared values or behaviours (Maxwell, 2012; Schwandt, 2001), or at the very least, similarities that unite people and differences seen as challenges to overcome (Burbules & Rice, 1991; Rorty, 1989). However, an alternative view that has been instrumental in qualitative inquiry, is that culture contains diversity, and interaction and participation bring people together (Atran & Medin, 2008; Wallace, 2003). This is important when exploring training and resourcing for schools and the multiple layers of educational culture, in

terms of the diversity of individual education systems, local authorities, schools and classrooms. I understand culture to be a real phenomenon that influences, and is influenced by, the people acting within it, the systems that frame education in schools, and the physical buildings and resources that are used. This culture is enhanced by its diversity, and participants from a range of local authorities and school roles, had an impact on the studies in this thesis. As Bateson (1990, p.156) wrote: 'I feel a need for a term that would assert both collegiality and the fact that the process is made possible by our differences.' So, my approach rests on the basis that ideas, meaning, culture, resources, and systems are all real phenomena that are constantly interacting and influencing each other resulting in the actions and behaviours of the people involved.

At the same time, from an epistemological point of view, I identify these different types of reality, i.e., mental, cultural and physical domains, as knowable. I have shown my understanding of knowledge as being both tacit and explicit, residing in different people, and able to be co-constructed in collaborative groups. The collaboration has enabled a variety of perspectives to shape the research and contribute to the iterative process throughout the studies (Becker & Richards, 2007). However, the data and analysis I present is viewed from a subjective perspective, in which my own understanding filters what I see and hear, including my presentation of participants' reflections (Maxwell, 2012). I have strived for reflexivity, using reflective exercises throughout the studies and applying those reflections moving forwards, to be transparent and self-aware, recognising that I present a thoughtful yet incomplete understanding (Becker & Richards, 2007; Finlay, 2012).

1.9 The Path of the Three Papers

The first paper indicates that the formalised teacher training interventions reported in the literature have only short-term effects (Ward et al., 2020). The second paper highlights the lack of ADHD training available for school staff in the UK, and that which has been delivered lacking in quality (Ward et al., 2021). Therefore, we addressed this gap in understanding, methods, and provision in the third paper by co-producing an ADHD resource that meet the needs of staff. This resource was designed to be contextualised, evidence-based, and readily accessible when needed. Additionally, we provide a strengths-based approach that provides support to address children's difficulties whilst also nurturing their strengths. A systemic framework is used to critically reflect on the model used, highlighting its strengths and limitations, with recommendations for future work.

1.9.1 Paper 1: The Effects of ADHD Teacher Training Programs on Teachers and Pupils: A Systematic Review and Meta-Analysis

Systematic reviews are used to provide a synthesis of all the available literature pertaining to a precise research question. Meta-analyses provide an overall statistic by bringing together the data and results of all the included studies (Da Costa & Jü Ni, 2014).

This type of review can be used to guide the development of interventions by enabling high quality studies to be distinguished from those with methodological or other problems, gaining a better understanding of which results can be generalised across different characteristics e.g. populations, and by identifying limitations to be considered in future research (Bero et al., 1998; Mulrow, 1994). Pre-specified criteria are used to systematically search and identify relevant studies (Da Costa & Jü Ni, 2014; Mulrow, 1994). This framework is a strength of the systematic review as the procedure is transparent and searches can be replicated to assess their accuracy (Garg et al., 2008). However, there are limitations to systematic reviews. Publication bias can and does occur when studies with null or negative results are not submitted for publication, the time lag between study completion and publication is long, and financial constraints produce barriers to publication (Bellefontaine & Lee, 2014; Paez, 2017). This type of bias can lead to a skewed view of the evidence e.g. an overestimation of an intervention's effectiveness (McAuley et al., 2000). Including grey literature in the search criteria can unearth unpublished literature, e.g. doctoral theses and yet-to-be published studies, reducing this publication bias and providing a more up-to-date picture of the field (Bellefontaine & Lee, 2014; McAuley et al., 2000; Paez, 2017). As English is often used in publications around the world, systematic reviews often restrict searches to English language only, excluding studies which may provide important cultural insights or valuable international data (Stern & Kleijnen, 2020). Practical issues of time, finance, or availability of language resources are cited as the most common barriers to removing language restrictions (Neimann Rasmussen & Montgomery, 2018). However, in an attempt to gather all available evidence, it is important to minimise bias, whether language or otherwise, and strive to find ways to remove barriers to inclusion; at the very least, a bibliography of excluded papers on the basis of language could be included so that the reader is aware of the wider material (Stern & Kleijnen, 2020).

The aim of the first paper was to provide a rigorous systematic review and meta-analysis of the available evidence for the effects of ADHD teacher training interventions. This was accomplished by answering the following two research questions:

Primary research question: How effective are ADHD teacher training interventions in increasing teachers' knowledge and positive behaviours toward children with ADHD-type behaviours?

Secondary research question: Does an ADHD teacher training intervention result in reduced ADHD-type behaviours of pupils in the classrooms of participating teachers?

Originally, the answers to these questions were designed to inform the adaptation of the NFPP for use with teachers, although following the change of direction in the project, this evidence identified a need to explore alternative resource methods to traditional training models.

Scoping searches were used to guide the development of the inclusion and exclusion criteria. Given the differences between mainstream schools and special schools, it was decided to include mainstream teachers only as the materials were designed to equip teachers in mainstream schools. Furthermore, teachers alone, as opposed to wider school staff, were selected because the literature identifies teachers as responsible for overseeing classroom management, teaching techniques, and intervention delivery (Pfiffner et al., 2016; Sciutto et al., 2016; Topkin et al., 2015). To minimise bias, no language or date restrictions were applied to the search strategy, and searches of grey literature were also conducted.

1.9.2 Paper 2: School Staff Perspectives on ADHD and Training: Understanding the Needs and Views of UK Primary Staff

The systematic review and meta-analysis identified significant limitations of traditional training models for teachers. There were initial improvements in ADHD knowledge and positive behaviours towards children with ADHD directly after training, but over time, these gains were lost, suggesting this was not a sufficient longer-term solution. Given that ADHD training for teachers is reported to be, at best, infrequent, a more sustainable solution is needed. To better understand what is needed in training resources, from the perspectives of school staff who are the ones who must implement the outcomes or outputs of training, qualitative interviews were undertaken. The aims of the second paper were twofold: to capture the views of primary school staff in the UK regarding what they considered to be important when teaching children with ADHD; and their perspectives on the content and delivery of effective ADHD training.

Qualitative interviews can be used to explore the experiences and perspectives of participants related to a particular topic of research (Rubin & Rubin, 2012). They are one of the most commonly used methods in qualitative research (Edwards & Holland, 2020). Semi-structured interviews are transactional in nature, using a pre-prepared set of questions or topic areas by the researcher, but providing opportunities for the respondent to raise their own issues and ideas

(Braun & Clarke, 2013; Edwards & Holland, 2013). Some critics of the qualitative interview method focus on the nature of the data and how it is analysed. For example, constructionists argue that the data cannot be understood outside of the context of the interview, whereas a more naturalistic view would consider the meaning and perspectives of the participants more broadly, understanding that they may be describing experiences and views from other times or places (Back, 2010; Edwards & Holland, 2020; Silverman, 2017). In this qualitative study, I took a critical realist approach (as described earlier), as I understood participants' views and experiences to be real, meaningful expressions of relationships and situations from their lives (Qu, 2020; Terry et al., 2017). I was aware of my own subjective analysis of the interviews, and used a reflective, iterative process to present my reflections. This approach guided my decision to use reflective thematic analysis (Braun & Clarke, 2006; Clarke & Braun, 2016).

Other critiques of qualitative interviews focus on the mode of interview, whether face-to-face, by telephone, or using video calls. As new technologies have been introduced, and entered common usage, interviews have moved from the traditional face-to-face mode and used alternative methods (Edwards & Holland, 2020). Digital technologies have enabled geographical, time, and cost constraints to be minimised, broadening the potential range of participants (Deakin & Wakefield, 2013; Lo Iacono et al., 2016; Sturges & Hanrahan, 2004). Concerns surrounding telephone interviews identify a lack of visual cues as potentially influencing the conversation, although conversely, may enable more sensitive topics to be discussed (Novick, 2008; Sturges & Hanrahan, 2004). Research that has compared face-to-face and telephone interviews within the same study, have shown differing results in terms of quality or depth of response, with some seeing no difference and others finding telephone interviews to be shorted with less detail (Irvine et al., 2012; Sturges & Hanrahan, 2004). Sturges and Hanrahan (2004) suggested that the subject matter, or sensitivity of the topic, may be influenced by the mode used, and is a matter to consider when designing the study. I used both face-to-face and telephone interviews to gather the data, to broaden the recruitment of participants and address the implications of time and expense. I did not feel that participants' responses would be significantly affected by the lack of visual cues, and I felt that telephone use was common to all involved. Video conferencing was not common practice for school staff at this time prior to the COVID-19 pandemic and was, therefore, not used.

Reflexive thematic analysis was used to explore the views and perspectives of school staff because it provides a framework in which the researcher can identify and reflect on patterns within the data (Braun & Clarke, 2006; Clarke & Braun, 2016). Codes, words or short phrases, are used to describe portions of the data and then codes with similar meanings are brought together

to form themes (Braun & Clarke, 2006). Themes are designed to encapsulate meaning as people's stories are interpreted. It is reflexive because themes are created by the researcher as they engage with the data, reflect, and interpret the patterns that they find (Braun & Clarke, 2006; Braun & Clarke, 2019). Therefore, given the subjective nature of this analysis, transparency is key to demonstrating how this analytical tool has been used and fits with the epistemological approach (Braun & Clarke, 2020). In this study, the critical realist approach assumed the reality of participants' views and experiences beyond the immediate context of the interview (as described earlier; Maxwell, 2012; Putnam, 2001). This means that it was possible to use the knowledge produced in the study to understand the everyday experience of school staff when supporting children with ADHD, and then to use the themes to provide recommendations for ADHD training needs going forwards.

1.9.3 Paper 3: A Collaborative Working Group Approach to Producing ADHD School Staff Resources

1.9.3.1 COVID-19 and Schools. The first two cases of Covid-19 in the UK were confirmed on 29 January 2020, and by March 2020, case numbers had risen to over 3000 (Statista, 2022; Wright, 2021). The UK Government announced that schools would close for most children from Monday 23 March 2020, except for vulnerable children and those of key workers, and remain closed until further notice; all other children would move to home learning (Department for Education, 2020). Between March 2020 and June 2021, two further lockdowns were instigated, and schools faced significant disruption to normal timetables and routines (Institute for Government, 2021). School staff combined face-to-face and online teaching, extra duties to ensure social distancing, and needed to manage their own personal circumstances in relation to the pandemic (Kim et al., 2021).

I planned to recruit school staff for an ADHD training programme between April and July 2020, with the programme being delivered from September to December 2020. School staff were, understandably, unable to commit to this programme. Additionally, questions raised by the first two studies led me to explore ways of including school staff in the development of the resource. Reading the literature on participatory methods and being part of a community of researchers using different participatory approaches (ACoRNS; https://acorns-soton.org.uk/about/), led me to the literature on co-construction and knowledge creation. From this, the collaborative working group model emerged.

1.9.3.2 A Collaborative Working Group Approach. The collaborative working group was designed to create a form of participatory research in which participants from both research and practice were co-constructing knowledge together. Participatory research positions

participants as active agents and subjects in a research project, rather than the more traditional objects of research (Bergold & Thomas, 2012). In this way, groups that have previously been researched are enabled to make their own voices heard and shape the research process (Russo, 2012). Bakhtin's concepts of polyphony and carnival are relevant here (Bakhtin, 1981). Mikhail Bakhtin's work explored the role of dialogue in meaning-making, particularly considering who is involved in the dialogue, and how their voices are heard (Koschmann, 1999). These ideas feed into concepts of power and hierarchy, which may limit or empower each voice. Polyphony means multiple voices, and in Bakhtin's world, describes independent voices, with no one voice privileged over any other (Bakhtin, 1981; Kim, 2006). Carnival is used to describe the way in which normal hierarchies of power and influence are disrupted (Bakhtin, 1981; Koschmann, 1999). Educational research involving researchers and practitioners usually takes the form of a researcher designing the study and inviting practitioners to be objects of the research as participants (Joram, 2007; Nilholm, 2014). The researcher takes an authoritative position taking charge and dictating how participation will be enacted. Co-construction aims to disrupt this traditional hierarchy and create a space in which different voices can be heard, equally valued, and influential in the project (Bergold & Thomas, 2012). The collaborative working group brought school staff from different schools, experience levels and roles, together with a university researcher and disrupted this traditional power dynamic which positions the researcher as expert and the staff as participants. Power was shared as each person contributed, listened to each other, reflected through the discussions, and wrote sections of the resource. Boundaries were crossed, and barriers broken down, enabling multiple perspectives to be heard and valued equally. Different voices were brought together, and the collaboration facilitated expression of these voices. Researchers and practitioners took on new roles as they shared the research journey together (Evans & Jones, 2004). For example, in this study, I, as a researcher, became a facilitator and advisor to create an environment in which the practitioners could research, share knowledge, discuss literature, and produce evidence-based resources. However, these roles were not static and over the course of the project, group members had opportunities to take different roles. Jabri (2004) describes this as a process of shifting identities. As people dialogue together, they co-construct meaning, and this influences their own identity, which in turn contributes to the dialogue.

To achieve this collaboration, reflexivity for all participants was key, both in terms of identifying our own values and assumptions, and also our approach to the research (Borg et al., 2012). Each week, group members had the opportunity to share their reflections on our progress,

our process, and the direction in which we were heading. This required a deliberate sharing of power through a values-led approach (Parsons, 2021).

Our values were determined by the collaborative nature of our group as we met in what has been described as the third space, where the gap between academic research and educational practice is bridged, and new knowledge can be co-constructed (Skattebol & Arthur, 2014). Our agreed values were safety, democracy, reflective practice and stimulation. First, this third space was designed to be a safe space where each person's contribution was respected, regardless of their professional role, and where confidentiality within the group was maintained until explicitly agreed to be removed e.g. adding participant names to the resource (Bergold & Thomas, 2012). Secondly, the intent was for this space to be democratically organised recognising the expertise of each participant and the diverse forms of knowledge that they brought which I will expand upon later (Bergold & Thomas, 2012; Guldberg et al., 2017; Jones & Stanley, 2010; Mayer & Van Acker, 2009; Paavola et al., 2004). Reflective practice is a key component of professional development enabling skills and knowledge to be adapted and applied to specific contexts, e.g. classrooms, playgrounds, as well as for supporting individual children (Larrivée, 2013; Rashid, 2017). In this context, school staff could reflect on their own practice with individual children in different settings and tailor their approach accordingly. Not only does this reflective practice apply within individuals but it is also the hallmark of knowledge creation in a collaborative group as participants reflect on each other's contributions and interact with the ideas being shared (Paavola et al., 2004). The collaboration to co-produce knowledge for transformative action is an exciting dynamic and so the final value threading through this safe, democratic, reflective space was to produce a stimulating and productive environment in which ideas could be debated, scrutinised, used as kindling to fuel more suggestions, or indeed thrown out.

The third paper had two aims. Firstly, to develop an ADHD professional development resource using a collaborative working group model comprising school staff and researchers. Secondly, to critically reflect on the collaborative working group model through the views and experiences of participating school staff.

1.10 Author Contributions

Rebecca Ward was the lead author and wrote all three papers submitted as part of this thesis. In the first paper, Samuele Cortese supervised the procedure for the systematic review and meta-analysis, and along with Hanna Kovshoff and Jana Kreppner, advised on revisions required for the final paper. Hanna Kovshoff and Jana Kreppner

supervised the second and third papers, contributing to the development of themes, interpretation of the findings, and revisions required for each written paper.

Chapter 2 The Effects of ADHD Teacher Training Programs on Teachers and Pupils: A Systematic Review and Meta-Analysis

This paper was published in *Journal of Attention Disorders* in 2020.

2.1 Abstract

Objective: To synthesize the evidence on the efficacy of ADHD teacher training interventions for teachers' ADHD knowledge and reducing pupils' ADHD-type behaviours. **Method:** Six electronic databases were systematically searched up to 14/04/20. Meta-analyses were performed to pool standardised mean differences (SMD). **Results:** 29 studies were included in the systematic review, and 22 meta-analysed. SMD for teacher knowledge within subjects at post-test and follow-up was 1.97 (95% confidence interval = 1.49, 2.45) and -1.21 (-2.02, -0.41) respectively. Between subjects analyses at post-test showed SMD = 1.56 (0.52, 2.59), with insufficient data at follow-up. At post-test, SMD for pupils' behaviour within and between subjects was 0.72 (0.20, 1.25), and 0.71 (-0.11, 1.52), respectively. Medium-to-high risk of bias was found in all but one study. **Conclusion:** ADHD teacher training programs may be effective in initially improving ADHD teachers' knowledge. There is inconsistent evidence for their efficacy to reduce students' ADHD-type behaviours.

2.2 Introduction

Attention-Deficit/Hyperactivity Disorder (ADHD) is one of the most commonly diagnosed childhood conditions. Meta-analytically pooled data (Polanczyk et al., 2007; Thomas et al., 2015) provide estimates of 5-7% (95% CI=5.01–5.56; 6.7-7.8 respectively) in school-aged children, equating to approximately one child per classroom (Dalsgaard et al., 2014) and if left untreated, can lead to significant, functional impairments. The prevalence rate in adults is estimated to be 2.5% (95% CI=2.1-3.1; Simon et al., 2009). Developmentally inappropriate levels of inattention and/or impulsivity-hyperactivity create problems in school, disrupting learning and peer relationships (American Psychiatric Association, 2013; Daley & Birchwood, 2010; Loe & Feldman, 2007). The classroom behaviour of children with ADHD can also negatively impact learning for other students and teachers (DuPaul & Stoner, 2014; Wheeler & Carlson, 1994). Academic underachievement for children with ADHD can have lifelong implications associated with poor academic and vocational progression, social skills and relationships, poor mental health, and criminality (Langberg & Becker, 2012; Montgomery et al., 2018; Parker et al., 2013), yet few studies investigating teacher training interventions report follow-up measures to show long-term effects; those that do are limited to six months post-intervention (for example, Both et al., 2016) making it difficult to assess the long-term benefit of the training. Given that the average child spends over 13, 000 hours in compulsory school education (Long, 2019; Rutter, 1979), it is critical to find effective interventions in schools to support children with ADHD.

One of the main treatment recommendations for ADHD, alongside pharmacological treatment, involves behavioural interventions (NICE, 2019; Pfiffner & DuPaul, 2015; Wolraich et al., 2011; Wolraich et al., 2019). Researchers have demonstrated that teachers' knowledge of ADHD significantly correlates with teachers' confidence in their ability to effectively teach children with ADHD, create an inclusive classroom, and manage behaviour (Bussing et al., 2002; Ohan et al., 2008; Sciutto et al., 2000). Furthermore, diagnostic processes rely greatly on teachers' information on children (Topkin et al., 2015; Wolraich et al., 2003); in fact, teachers are often the first to identify behavioural difficulties (Both et al., 2016; Shelemy et al., 2019). Therefore, with early referral being key to address problem behaviours before they become well-established (Aguiar et al., 2014), it is vital for teachers to have appropriate knowledge of ADHD so they can recognise and act on symptoms early.

ADHD teacher training interventions have been developed to strengthen teachers' knowledge about ADHD, train them to create a supportive environment in the classroom and develop strategies to address problem behaviours. Studies investigating teachers' knowledge of ADHD and its impact on teaching behaviours, identify a need for more continuing professional

development to address knowledge gaps (Bekle, 2004; ComRes, 2017; Sciutto et al., 2016), better quality training for education students (Bekle, 2004; Kos et al., 2004), and further research into classroom management techniques and curriculum planning (Bekle, 2004; Kołakowski et al., 2009; Shelemy et al., 2019). A systematic review of studies measuring teachers' ADHD knowledge conducted by Mohr-Jensen and colleagues (2019) found knowledge scores varied considerably for symptoms, behaviours, prognosis and treatment, and identified educating teachers about ADHD as a key factor in raising knowledge levels. The majority of specific teacher training programmes for ADHD have focussed on increasing knowledge and shown these programmes to be effective (Aguiar et al., 2014; Anto & Jacob, 2014; Syed & Hussein, 2010).

Whilst many teacher training programmes also include behavioural management strategies, few studies report improvements in teachers' use of positive behaviours towards children with ADHD, and with the exception of Park and Park (2017), date from over ten years ago (Bloomquist et al., 1991; Miranda et al., 2002; Rossbach & Probst, 2005). In this context, it is important to recognize that teachers are typically reluctant to endorse more intensive management strategies which impinge on planning and preparation or require additional staff within the classroom. Instead they tend to use less intensive strategies more frequently, for example: breaking verbal instructions down into simple, step-by-step patterns; positive teacher feedback; and creating seating plans in the classroom (Blotnicky-Gallant et al., 2015). However, Kos (2008) suggests that a lack of consistency in implementing good strategies repeatedly with the same child can result in little behaviour change for that child.

Effects of teacher and classroom strategies on the ADHD-type behaviours of pupils in the classrooms are also measured in relatively few studies (for example, Bloomquist et al., 1991; Corkum et al., 2019; Froelich et al., 2012). This is, perhaps, surprising given the literature suggests that the rationale for teacher training in ADHD, in addition to improving self-efficacy and self-confidence for teachers, is to improve the social and educational outcomes of the child with ADHD (Anto & Jacob, 2014; Barnett et al., 2012; Jones & Chronis-Tuscano, 2008).

A systematic understanding of the effectiveness of reported ADHD teacher training programmes is compromised by the fact that comparison across studies is difficult because a variety of outcome measures and methodologies are used (Norris & Atkins, 2005; Reed et al., 2005) which span different professional sectors, namely, psychological, medical and educational (Singh, 2011; Smith, 2017). Firstly, there are few randomised controlled trials (RCTs) and significant heterogeneity in study designs (Deeks et al., 2003; Norris & Atkins, 2005). The majority of studies investigating ADHD teacher training interventions are non-randomised studies, including many single-arm cohorts (Latouche & Gascoigne, 2019; Lessing & Wulfsohn, 2015; Shehata et al., 2016). In addition, these studies vary in terms of design, intervention

characteristics, heterogeneous recruitment techniques, measurement tools and measurement timeframes (Anto & Jacob, 2014; Corkum et al., 2019; Lasisi et al., 2017). Secondly, there are only few well-developed tools to assess risk of bias in non-randomised studies (Deeks et al., 2003; Reed et al., 2005), particularly when a number of different study designs are included (Deeks et al., 2003; Stang, 2010; Sterne et al., 2016). Thirdly, outcome measures of symptom change in children following teacher training tend to be completed by participating teachers, raising the risk for bias in measurement of outcomes (Sterne et al., 2016). Finally, fidelity to the intervention is important when assessing its effectiveness in order to accurately assess the impact of the intervention as it was designed and to be able to replicate findings in other groups and yet rarely reported (Johnson et al., 2006; McKenna et al., 2014).

With the methodological limitations of the literature in mind, the present study aims to provide a rigorous systematic review and meta-analysis of the available evidence for the effectiveness of ADHD teacher training interventions. To our knowledge, there has been no published quantitative synthesis of the literature specifically focussed on the efficacy of ADHD training for qualified teachers to improve knowledge on ADHD as well as reduce pupils' ADHD-type behaviours of hyperactivity, impulsivity and inattention.

The following questions guided the present systematic review and meta-analysis:

Primary question: How effective are ADHD teacher training interventions in increasing teachers' knowledge and positive behaviours towards children with ADHD-type behaviours?

Secondary question: Does an ADHD teacher training intervention result in reduced ADHD-type behaviours of pupils in the classrooms of participating teachers?

Given the exploratory nature of the meta-analysis, no a priori hypotheses were formulated.

2.3 Method

This systematic review and meta-analysis were conducted according to the PRISMA recommendations (Preferred Reporting Items for Systematic Reviews and Meta-Analyses; Moher et al., 2009). The protocol for this review and meta-analysis was pre-registered in PROSPERO (CRD42020164748).

2.3.1 Search Strategy

Initially, on 8 November 2019, a systematic search was performed in six electronic databases (covering medical, educational, and psychology domains): PsycINFO, CINAHL Plus, ERIC, MEDLINE (EBSCO), Web of Science, and Scopus. Search terms were defined using the PICO format (see Table 1). Additionally, backward and forward citation chasing were conducted. Peer-reviewed studies and grey literature were included to avoid selection or publication biases. Similarly, no language or date restrictions were placed on the search to avoid these biases. A final

search was conducted on 14 April 2020 to capture any articles published between the initial search and submission for publication. This search revealed no new studies that met the inclusion criteria.

2.3.2 Inclusion and Exclusion Criteria

Inclusion and exclusion criteria were determined to address the research questions (see Table 2). Teacher training interventions that were primarily or solely comprised of psychoeducation and/ or behavioural strategies to address ADHD specifically were the focus of this review and meta-analysis, and interventions where ADHD formed a minor part of the content, or more broadly focussed interventions for problem behaviours, were excluded. If the study sample included a mixture of teachers from both mainstream and special education settings, the study was only included if it was possible to obtain and extract the data for mainstream teachers only.

2.3.3 Screening and Study Selection

The results of the database searches were exported to Endnote X9 and duplicates were removed. Titles and abstracts of the remaining studies were then screened, and non-pertinent papers removed. Full-text screening was conducted on the remainder to identify the studies to be included in the systematic review. These were further screened for inclusion in the meta-analysis determined by whether sufficient data were reported to calculate effect sizes at pre-test and post-test points, and follow-up, if appropriate (see Figure 1). Where there was insufficient data available in published articles, study authors were contacted up to two times.

Each stage of the literature search and screening process was undertaken by two independent researchers (RW and SB) and any conflicts were resolved through discussion and consensus. A third independent, senior researcher (SC) was available to make a final decision in the event of no resolution.

2.3.4 Data Extraction

Selected studies were initially organised by outcome measures. Two groups were formed: teacher outcomes and pupil outcomes. Teacher outcomes were divided into two subgroups: teacher knowledge and teacher behaviour strategies. Pupil outcomes measured pupil behaviour related to ADHD symptoms. The following data were manually extracted from each study by two independent researchers and recorded in Microsoft Excel: intervention content (topics) and mode of delivery (e.g., face-to-face, online) and length of intervention (e.g. number of sessions, duration of sessions), numbers of participants (intervention group and any comparison group), and the outcome measures reported for each group in the study (see Appendix A).

Table 1
PICO Search Terms

Participant	(Teacher* OR Educator* OR "Educational practitioner*" OR Schoolteacher* OR Pupil* OR Student* OR Learner* OR Teen* OR Child* OR "Young people" OR Adolescen* OR Youth* OR Infant* OR Junior*)
Intervention	("Training program*" OR "school-based" OR CPD OR "Professional development" OR Psychoeducation OR "In-service training" OR "Incredible Years" OR Triple-P OR "Coaching program*" OR "teacher training" OR "teacher program*" OR "in-service teacher education" OR "teacher education")
Condition	(ADHD OR AD/HD OR "Attention-deficit/ hyperactivity disorder" OR "Attention deficit hyperactivity disorder" OR "Attention deficit disorder" OR "hyperkinetic disorder" OR Inattent* OR Hyperactiv* OR overactiv* OR off-task OR "Emotional Behavioral Disorder" OR "Emotional Behavioral Difficulty")
Outcome	(Attitude* OR Behavio* OR Skill* OR "Classroom management" OR Knowledge OR Effectiveness OR Efficac* OR Impact OR Symptom* OR Strateg* OR Attainment OR Progress OR Achievement)

2.3.5 Outcome Measures

The following outcomes were included in the analysis: (a) teacher ADHD knowledge, measured with self-report questionnaires (b) teacher behaviours towards pupils with ADHD-type behaviours, measured with a variety of tools including self-report using vignettes, self-report questionnaires and blinded observations (c) pupil ADHD-type behaviours tested with a variety of measures including observations and teacher reports. For studies that reported pupil ADHD-type behaviours with more than one measure, a hierarchy was established before extracting the data. This hierarchy ensured the most proximal assessment, which was a report by the rater closest to the classroom setting (i.e. the teacher) of hyperactivity, impulsivity and inattention. If more than

one measure was used by the teacher, the hierarchy was based on the validity and reliability of the tools used (see Appendix B).

2.4 Risk of Bias

Risk of bias for the selected studies was assessed independently by two researchers using the revised Cochrane Risk of Bias Tool (ROB2; Higgins et al., 2019) for randomised controlled trials, and the Risk of Bias for Non-randomised Studies of Interventions (ROBINS-I; Sterne et al., 2016) for all other studies. Global risk of bias for each study was calculated by the instructions supplied for each tool; namely, that an overall medium or high risk of bias was determined if a medium or high risk of bias was found in any one domain, respectively.

A list of confounding variables was compiled by the research team (see Table 3) to complete the risk of bias for non-randomised studies. Disagreements were resolved by discussion and agreement within the research team.

2.4.1 Analytic Plan

The meta-analysis was conducted using Comprehensive Meta-Analysis, which allowed for effect size data to be entered in multiple formats, including means and standard deviations, paired t-tests, and correlations (Borenstein et al., 2014). Due to the different types of behaviours measured (for example, punitive reactive strategies, labelled praise, rule violations by pupils) and the range of tools used (including blinded observations, self-report of intended teacher behaviour using vignettes, self-report of actual teacher behaviour), effects for change in teacher behaviour strategies were not meta-analysed. Analyses were conducted for pre-test to post-test measures to investigate the effects of the intervention, and from post-test to follow-up to examine whether any improvements at post-test were sustained at follow-up. For post-intervention outcomes, standardised mean differences (SMD) for effect measures with a 95% confidence interval were calculated, and a random-effects model was used due to the expected heterogeneity between studies. A chi-squared test and the I-squared statistic assessed heterogeneity, with an I-squared value greater than 50% suggestive of substantial true (as opposed to random) heterogeneity. Publication bias was measured, using funnel plots and Egger's test, for any analysis comprising ten or more studies (Higgins et al., 2019). Subgroup meta-analyses to compare the results from randomised controlled trials to non-randomised studies, as well as interventions for primary teachers and secondary teachers, were planned in order to investigate possible moderators of effects.

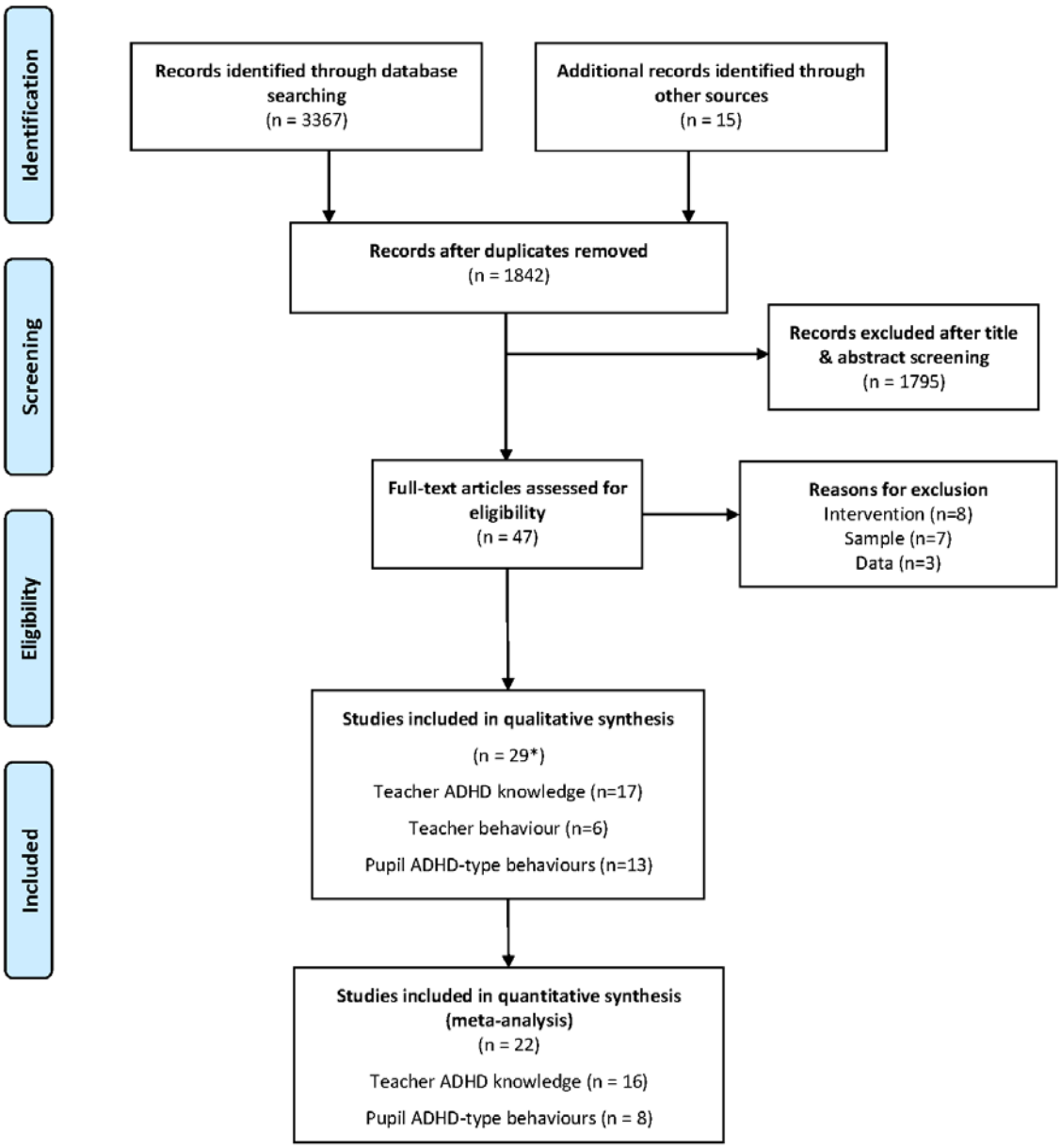
Table 2

Inclusion and Exclusion Criteria

Criteria	Inclusion	Exclusion
Population	Primary or Secondary School teachers	Pre-school teachers, post-compulsory education teachers, teaching assistants, other educational professionals, teachers in special schools
	Children with a diagnosis of ADHD or identified as displaying ADHD-type behaviours (i.e. hyperactivity, impulsivity, inattention/ off-task behaviour)	
	Children in primary or secondary mainstream education (aged 4-16 years)	Children in special schools, children in pre-school or post-16 education
Intervention	ADHD teacher training interventions for in-service teachers (of any type, delivery mode, duration or intensity)	Teacher training interventions delivered prior to teacher qualification e.g. in teacher training colleges.
	ADHD teacher training interventions which have one condition as teacher training only	Training interventions where the teacher component is combined with other groups e.g. parents, child
		Training interventions where ADHD is a minor component of the training, e.g. induction training, or one part of a larger training programme.
Comparison	No comparison group, waitlist control, alternative treatment, control group	
Outcome	For teachers in mainstream primary and secondary classrooms:	Measures for special education teachers
	measures of teachers' ADHD knowledge	
	measures of teachers' behaviour management strategies towards children with ADHD and ADHD-type behaviours	

Criteria	Inclusion	Exclusion
	For children with a diagnosis of ADHD or identified as displaying ADHD-type behaviours (i.e. hyperactivity, impulsivity, inattention/ off-task behaviour) in primary or secondary education: measures of child ADHD symptoms (e.g. inattention including off-task behaviours, impulsivity, hyperactivity) and related impairments, including problem behaviours and social functioning	Measures for children in special schools, pre-school or post-16 education
Study design	Controlled trials (randomised and non-randomised), intervention studies	Qualitative studies
Date	All dates included	
Location	Global	No locations excluded
Language	All languages (if translation is possible)	No languages excluded unless translation not possible due to time or financial constraints
Types of publication	Peer-reviewed journal articles and grey literature (dissertation theses, reports, articles in press)	Any other type of publication, including conference papers
Databases	Six electronic databases were searched encompassing psychology, education and medical literature: PsycINFO, CINAHL Plus, ERIC, MEDLINE (EBSCO), Web of Science, Scopus	Any other databases

Criteria	Inclusion	Exclusion
Terms **(plus synonyms detailed in the PICO document)**	Teacher Pupil ADHD Training Teacher knowledge, teacher behaviour Child ADHD symptoms	



From: Moher, D, Liberati, A, Tetzlaff, J, Altman, DG, The PRISMA Group (2009). *P*referred *R*eporting *I*tems for *S*ystematic *R*eviews and *M*eta-*A*nalyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi: 10.1371/journal.pmed1000097

*31 articles are included as one study had a brief published article alongside a comprehensive unpublished dissertation, and another study had two published articles focussing on different outcome measures.

Figure 1
PRISMA Diagram for Systematic Review and Meta-Analysis

2.5 Results

The systematic search identified 29 studies conducted in 18 countries: Australia (n=1), Brazil (n=1), Canada (n=3), Egypt (n=1), Ethiopia (n=1), Germany (n=4), India (n=1), Iran (n=2), Netherlands (n=1), Nigeria (n=1), Pakistan (n=1), Poland (n=1), Saudi Arabia (n=1), South Africa (n=1), South Korea (n=1), Spain (n=1), Turkey (n=1) and the United States (n=6). Twenty-two studies provided sufficient data for meta-analysis. Seven studies required translation into English from the following languages: Arabic, French, German, Korean, Polish and Turkish.

Table 3

Confounding Variables for Non-Randomised Studies

Teacher outcome measures	**Pupil outcome measures**
Characteristics of teachers	**Characteristics of pupils**
Previous knowledge of ADHD Years of teaching ADHD medication for children Contamination if teachers from the same school are in both the intervention and control groups Experience of management of student with ADHD	Age of child Gender of child Severity of ADHD Comorbidities ADHD medication for children
Characteristics of delivery Duration and mode of delivery within study	**Characteristics of delivery** Duration and mode of delivery within study
Characteristics of the school/ setting Differences between schools	**Characteristics of the school/ setting** Differences between schools

2.5.1 Study Design and Participant Information

Of the 29 retained studies, ten were randomised controlled trials and 19 non-randomised studies (see Table 4), including non-randomised controlled trials (n=5), uncontrolled before-and-after comparison studies (n=13), and one multiple-baseline trial. Sample sizes ranged from 6-150 participants, comprising a mix of primary (n=26) and secondary teachers (n=3), and children with a clinical diagnosis of ADHD (n=4) as well as those displaying ADHD-type behaviours at sub-clinical levels (n=7).

A range of measures were used for the different outcomes examined in the included studies. The most proximal assessment for each study is presented in Table 4. The mode of intervention delivery varied across studies including face-to-face training sessions and individual consultations, as well as self-directed learning from web-based materials and self-instructional booklets. Duration of training courses ranged from a single two-hour session to a programme continuing for 18 weeks. Fidelity was only measured in five studies and training providers ranged from university trained facilitators to medical professionals, such as child and adolescent psychiatrists.

In the next sections, a narrative synthesis of all included studies in the systematic review is presented first, followed by the meta-analysis from the subset of studies with sufficient data.

Teacher ADHD Knowledge. Teacher ADHD knowledge was measured in 17 studies (1-5, 7, 11-13, 16, 19, 21-23, 26-28; see Table 4). Of these, seven studies (4, 7, 12-13, 21-22, 26) used the full, or a modified version of the Knowledge of Attention Deficit Disorder Scale (KADDS; Sciutto et al., 2000). However, the majority of the other studies devised their own questionnaire, with only one (2) reporting validity and reliability measures. Fifteen studies (four RCTs; see Table 5) reported a statistically significant improvement in teacher ADHD knowledge in post-intervention measures, with two studies (16, 24), both RCTs, showing no significant change. Reported effect sizes were available for six studies and showed a large effect. Six of the 17 studies (7, 11-13, 19, 27; two RCTs; see Appendix D) also performed follow-up measures, ranging from 1-6 months post-intervention. Two studies (7, 13), both non-randomised studies, reported a significant decrease in ADHD knowledge from post-test to follow-up scores although in both cases, follow-up scores were significantly higher than pre-test scores.

Two studies, comprising one RCT and one non-randomised trial (11, 19), reported no significant difference between post-test and follow-up scores, although the non-randomised trial (11) reported follow-up scores to be significantly higher than pre-test scores. One study, an RCT (12), involved a booster session two and a half weeks later at which additional measures were recorded, and reported a further significant improvement from post-test to booster scores in ADHD knowledge.

The meta-analysis of studies with within-subject designs (n=16; four RCTs; see Figure 2), showed that teacher training interventions produced statistically significant improvements in teacher ADHD knowledge at post-test, which were not retained at follow-up (1-6 months); SMD was 1.97 (1.49, 2.45) and -1.21 (-2.02, -0.41) respectively (see Figure 3).

Table 4

Overview of Included Studies (RCTs in bold) Including Interventions and Measures[a]

Study no.	First Author (year)	Study design	Sample *N*	Comparison group(s)	Content of training	(Mode) & duration of training	Primary Outcome	Most Proximal Assessment
1	Aguiar (2014)	Uncontrolled before-and-after design	37 teachers	None	Psychoeducation Behavioural Strategies	(Face-face) 1 x 6hr session	Teacher knowledge	Study own questionnaire, teacher
2	Anto (2014)	Uncontrolled before-and-after design	50 teachers	None	Psychoeducation Behavioural Strategies	(Self-instruction booklet) 1 week	Teacher knowledge	Study own questionnaire, teacher
3	Barbaresi (1998)	Uncontrolled before-and-after design	44 teachers	None	Psychoeducation Behavioural Strategies	(Face-face) 1 x 2.5hr session	Teacher knowledge	Study own questionnaire, teacher
4	Barnett (2010)[bc]	Uncontrolled before-and-after design	19 teachers	None	Psychoeducation Behavioural Strategies	(Self-instruction online) 7 weeks	Teacher knowledge Teacher behaviour	KADDS TBQ teacher

Study no.	First Author (year)	Study design	Sample *N*	Comparison group(s)	Content of training	(Mode) & duration of training	Primary Outcome	Most Proximal Assessment
5	Barnett (2012)[c]	Uncontrolled before-and-after design	19 teachers	None	Psychoeducation Behavioural Strategies	(Self-instruction online) 7 weeks	Teacher knowledge Teacher behaviour	KADDS TBQ teacher
6	**Bloomquist (1991)**	RCT (multiple-armed)	12 ADHD children	13 ADHD children control, 11 multicomponent condition	Psychoeducation Behavioural Strategies	(Face-face) 2 x 1hr session 10x1hr consultation	Pupil behaviour	Blinded observation
7	Both (2016)	Uncontrolled before-and-after design	44 teachers	None	Psychoeducation Behavioural Strategies	(Face-face) 1 x 2.5hr session	Teacher knowledge	KADDS teacher
8	**Corkum (2019)** [f]	RCT	28 teacher/ADHD pupil[e] dyads	30 waitlist control teacher/ student dyads	Psychoeducation Behavioural Strategies	(Self-instruction online) 6 weeks	Pupil behaviour	Conners 3-T teacher
9	Froelich (2012)	Non-randomised controlled trial	8 teachers 25 ADHD children	8 teachers 17 children	Psychoeducation Behavioural Strategies	(Face-face) 12 x 2hr sessions	Pupil behaviour	YCI teacher

Study no.	First Author (year)	Study design	Sample *N*	Comparison group(s)	Content of training	(Mode) & duration of training	Primary Outcome	Most Proximal Assessment
10	Gormley (2015)[f]	Multiple baseline design	3 teacher/ ADHD children dyads	None	Behavioural Strategies	(Face-face) 2 yrs biweekly	Pupil behaviour	BOSS, blinded
11	Kołakowski (2009)	Uncontrolled before-and-after design	150 teachers	None	Psychoeducation Behavioural Strategies	(Face-face) 15hrs over 3months	Teacher knowledge	Study own questionnaire, teacher
12	**Lasisi (2017)**	RCT	84 teachers	75 waitlist control teachers	Psychoeducation Behavioural Strategies	(Face-face) 1 x 2.5hr session	Teacher knowledge	SRAQ teacher
13	Latouche (2019)	Non-randomised controlled trial	113 teachers	161 waitlist control teachers	Psychoeducation Behavioural Strategies	(Face-face) 1 x 2hr session	Teacher knowledge	KADDS teacher
14	Lauth-Lebens (2016)	Uncontrolled before-and-after design	25 teachers 25 ADHD children	None	Psychoeducation Behavioural Strategies	(Face-face) 7 x 90min sessions	Pupil behaviour	DSM-IV-TR symptom list teacher
15	Lessing (2015)	Uncontrolled before-and-after design	1 teacher 10 ADHD children[e]	None	Behavioural Strategies	(Face-face) Not reported	Pupil behaviour	CTRS-R teacher

Study no.	First Author (year)	Study design	Sample *N*	Comparison group(s)	Content of training	(Mode) & duration of training	Primary Outcome	Most Proximal Assessment
16	**Miranda (2002)**	RCT	29 teachers 29 ADHD children	21 teachers 21 ADHD children	Psychoeducation Behavioural Strategies	(Face-face) 8 x 3hr sessions+ 8 weekly interviews	Teacher knowledge Pupil behaviour	Study own questionnaire, teacher Non-blinded observation teacher
17	Mohammed (2018)[f]	Non-randomised controlled trial	9 children with ADHD symptoms	9 normative children	Psychoeducation Behavioural Strategies	(Face-face) 6 x 6hr sessions + weekly coaching	Pupil behaviour	BOSS, blinding unknown
18	Nadeau (2012)[f]	Non-randomised controlled trial	11 teachers	26 teachers	Psychoeducation Behavioural Strategies	(Face-face) 6 x 2hr coaching	Teacher behaviour	Study own questionnaire, teacher
19	**Obaidat (2014)**	RCT	40 teachers	40 teachers	Psychoeducation Behavioural Strategies	(Face-face) 8 x 2hr sessions	Teacher knowledge	Study own questionnaire, teacher

Study no.	First Author (year)	Study design	Sample *N*	Comparison group(s)	Content of training	(Mode) & duration of training	Primary Outcome	Most Proximal Assessment
20	**Owens (2017)**	RCT	31 teachers	27 teachers	Behavioural Strategies	(Face-face) 1 x 3hr session 8 x30min coaching	Teacher behaviour	Blinded observation
21	Park (2017)	Non-randomised controlled trial	35 teachers	35 teachers	Psychoeducation Behavioural Strategies	(Face-face) 8 x 1hr sessions	Teacher knowledge Teacher behaviour Pupil behaviour	KADDS PSEIA K-ARS teacher
22	Procaccini (2014)[b]	Uncontrolled before-and-after design	35 teachers	None	Psychoeducation	(Self-instruction online) 1 x 45 min session	Teacher knowledge	KADDS teacher
23	Rossbach (2005)	Uncontrolled before-and-after design	6 teachers 6 ADHD children	Teachers n=5 5 ADHD children	Psychoeducation Behavioural Strategies	(Face-face) 3 x 4hr sessions	Teacher knowledge Pupil behaviour	Study own questionnaire, teacher DSM-IV symptom list, teacher

Study no.	First Author (year)	Study design	Sample *N*	Comparison group(s)	Content of training	(Mode) & duration of training	Primary Outcome	Most Proximal Assessment
24	**Sarraf (2011)**	RCT	35 teachers	35 teachers	Psychoeducation Behavioural Strategies	(Face-face) 2 x day sessions	Teacher knowledge	Study own questionnaire, teacher
25	**Shaban (2015)**	RCT	32 ADHD children[e]	32 ADHD children	Behavioural Strategies	(Face-face) 8 x 3hr sessions	Pupil behaviour	TRF teacher
26	Shehata (2016)	Uncontrolled before-and-after design	60 teachers	None	Psychoeducation Behavioural Strategies	(Face-face) 15 x 1hr sessions	Teacher knowledge Teacher behaviour	KADDS TBSS teacher
27	Syed (2010)	Uncontrolled before-and-after design	49 teachers	None	Psychoeducation Behavioural Strategies	(Face-face) 5 x 2hr sessions	Teacher knowledge	Study own questionnaire, teacher
28	Tahiroğlu (2004)	Uncontrolled before-and-after design	104 teachers	None	Psychoeducation Behavioural Strategies	(Face-face) 1 x 2hr session	Teacher knowledge	Study own questionnaire, teacher
29	**Veenman (2017)**[d f]	RCT	58 children	56 children	Psychoeducation Behavioural Strategies	(Face-face) 18 week program	Pupil behaviour	COC, non-blinded

Study no.	First Author (year)	Study design	Sample *N*	Comparison group(s)	Content of training	(Mode) & duration of training	Primary Outcome	Most Proximal Assessment
30	**Veenman (2019)**[d f]	RCT	58 children	56 children	Psychoeducation Behavioural Strategies	(Face-face) 18 week program	Pupil behaviour	COC, non-blinded
31	**Zentall (2007)**	RCT	36 teachers 72 ADHD children 72 normative children	13 teachers 26 ADHD children 26 normative children	Psychoeducation Behavioural Strategies	(Face-face) 2 day sessions	Teacher behaviour Pupil behaviour	Non-blinded observation CBTC Teacher

[a] See Appendix C for more detailed information on interventions and measures. KADDS=Knowledge of Attention Deficit Disorders Scale; TBQ=The Behavior Questionnaire; Conners 3-T=Conners 3-Teacher Assessment Report; YCI=Yale Children's Inventory; BOSS=Behavioral Observation of Students in Schools; SRAQ=Self-report ADHD questionnaire; DSM-IV-TR symptom list=teacher report questionnaire based on symptom list in DSM-IV; CTRS-R=Revised Conners' Teacher Rating Scale; PSEIA=Practice Scale of Educational Intervention Activity; K-ARS=Korean version of the ADHD Rating Scale; DSM-IV symptom list=teacher report questionnaire based on symptom list in DSM-IV; TBSS=Teacher' Behavioral Strategies Scale; CBTC=Classroom Behavior Tally Checklist, COC=Classroom Observation Code, TRF=Teacher Report Form.

[b] Unpublished dissertation thesis

[c] The articles by Barnett (2010) and Barnett et al. (2012) are one study with a published article and unpublished thesis reporting different detail

[d] The articles by Veenman et al. (2017, 2019) are one study with two published articles reporting different measures

[e] clinically-diagnosed ADHD

[f] fidelity measured

Table 5

Summary of Results by Outcome for Pre-Post Test Measures using Most Proximal Assessment with Effect Sizes (where reported)

Outcome measures ›	Teacher measures				Pupil measures	
Study (first author & date)	**Teacher knowledge (n=17)**		**Teacher behaviour (n=6)**		**Pupil behaviour (n=16)**	
Aguiar (2014)	+	η^2=0.57 (p<0.001)				
Anto (2014)	+	nr				
Barberesi (1998)	+	nr				
Barnett (2010; 2012)	+	nr	=	nr		
Bloomquist (1991)					-	nr
Both (2016)	+	*d*=1.51				
Corkum (2019)					+	η2=0.06 (p=0.01)
Froelich (2012)					+	F(1,41)=4.98 (p<0.031)
Gormley (2015)					*	IRD=0.13-0.55
Kołakowski (2009)	+	nr				
Lasisi (2017)	+	*d*=0.9				
Latouche (2019)	+	*d*=2.38				
Lauth-Lebens (2016)					+	*d*=1.77
Lessing (2015)					+	nr
Miranda (2002)	=	nr			~	nr
Mohammed (2018)					+	nr
Nadeau (2011)			+	η^2=0.48 (p=0.006)		
Obaidat (2017)	+	η^2=0.78				
Owens (2017)			+	*d*=0.33-1.12		
Park (2017)	+	F=7.16 (p=0.010)	+	F=4.29 (p=0.043)	+	F=4.34 (p=0.041)
Procaccini (2014)	+	nr				
Rossbach (2005)	+	nr			~	nr
Sarraf (2011)	=	F(1,61)=0.14 (p=0.71)				
Shaban (2015)					+	F(3, 62)=62.98 (p=0.001)

Outcome measures ›	Teacher measures				Pupil measures	
Study (first author & date)	Teacher knowledge (n=17)		Teacher behaviour (n=6)		Pupil behaviour (n=16)	
Shehata (2016)	+	nr	+	nr		
Syed (2010)	+	nr				
Tahiroğlu (2004)	+	nr				
Veenman (2017; 2019)					±	*r*= -0.074 (p<0.01); *r*=0.133 (p=0.639)
Zentall (2007)			+	χ2(1, n=11)=4.28(p=0.039); χ2(1, n=11) =4.06, p =0.041; χ2(1, n=11)=3.59, p=0.049	~	nr

+ significant improvement **–** significant deterioration **=** no significant change ± outcome measures reported conflicting results

~ incomplete data reported IRD = individual rate difference

For studies using between-subject designs (n=6; four RCTs), the findings reflected statistically significant improvements from pre to post measures for teachers receiving the intervention compared to a control group which received no intervention; SMD was 1.56 (0.52, 2.59; see Figure 4) but there was insufficient data at follow-up. Results reported for teacher knowledge did not change when only RCTs were pooled (see Appendix E). Publication bias was only assessed for Teacher ADHD Knowledge (Within Subjects Pre-Post Measures) as this was the only analysis that included at least ten studies (Borenstein et al., 2009, pp. 227-292; see Figure 5). The asymmetrical funnel plot and a p value = 0.0001 in the Egger's test indicated significant publication bias (Higgins et al., 2019).

In summary, the evidence from this systematic review and meta-analysis suggests that ADHD teacher training interventions lead to a significant increase in teacher ADHD knowledge, with a large effect size. This increase in knowledge is not maintained when re-tested within 6 months of the end of the intervention although teachers do still show higher levels of knowledge than they did prior to the intervention.

Teacher Behaviour. Six studies measured teacher behaviour using self-report questionnaires (4/5, 18, 21, 26; non-randomised studies) and blinded observations (20, 31; RCTs) with only one study (4/5) showing no significant improvement at post-test. The self-report questionnaires were a mixture of study-own developed questionnaires (18, 21), and validated questionnaires by Kos (2008; The Behavior Questionnaire; reliability and validity unreported) and Azjen and Fishbein (1980; Teachers' Behavior Strategies scale; reliability reported as acceptable (r=0.87)). The study

own questionnaires reported acceptable reliability for the scales used, although Cronbach's alpha was only reported in the paper by Barnett et al. (2010, 2012; α=0.76-0.85). All studies reported post-test measures but no follow-up measures. Four studies (20-21, 26, 31) reported a significant improvement in teacher's use of behaviour management strategies, with small to large effect sizes. An additional study (27) did report a significant improvement between groups but only measured teacher behaviour at post-test (no pre-test measures were taken), and only for 11 out of 49 teachers in the sample. One study (18) initially reported no significant differences post intervention, although a significant, positive change, with a large effect size, was reported following a secondary analysis introducing prior ADHD training as a covariate. Overall, teacher behaviour improved post-intervention with a mixture of small to large effects but no follow-up data was available for this outcome. Additionally, the heterogeneity of teacher behaviour measures meant meta-analysis of the data was not possible.

Pupil ADHD-Type Behaviours. ADHD-type behaviours were measured in 13 studies using teacher rating questionnaires (8-9, 14-16, 21, 23, 25, 31; four RCTs), non-blinded observations (17, 29/30) and blinded observations (6, 10; one RCTs) as the most proximal assessment. Eight studies (8-9, 14-15, 17, 21, 25, 30; three RCTs) reported a significant positive change in ADHD-type behaviours following intervention. Effect sizes ranged from small to large. Two studies (6, 29; both RCTs) showed no significant difference at post-test. The study by Veenman et al. (2017; 29, 2019; 30) showed a significant and positive change in pupils' ADHD-type behaviours when rated by participating teachers, but there was no significant positive change in pupil behaviour when objective measures including blinded observations and actigraphy were used. Four studies (6, 8, 23, 25; three RCTs) collected follow-up measures between 2.5 weeks and 6 months. Three (8, 23, 25; two RCTs) reported a significant improvement in ADHD-type behaviours at follow-up as rated by participating teachers, with the one study reporting an effect size (23; non-randomised trial) showing a medium effect. However, the study which employed blinded observations (6; RCT), showed no significant difference at post-test or follow-up. Given the heterogeneity in interventions and study methods (for example, follow up times), it is not possible to identify intervention characteristics that led to positive results. Additionally, the lack of blinding across studies weakens confidence in reported effects. In summary, results were mixed for pupil ADHD-type behaviours post-intervention with some studies reporting an improvement and others a deterioration. The meta-analysis, which comprised three RCTs in a total of seven studies, goes some way in explaining this by identifying that, at post-test, within subject measures showed an improvement, with an SMD of 0.78 (0.37, 1.18; see Figure 6) but between subject measures (three RCTs in a total of five studies) showed no significant difference, with an SMD of 0.71 (-0.11, 1.52; see Figure 7). There was no difference in results when only RCTs were pooled. All of the studies in the meta-analysis (n=8) used teacher ratings of pupil behaviour, completed by the

participating teacher in the intervention. In contrast, three studies (6, 10, 29/30) used objective measures including blinded observations and actigraphy with two of these studies (6, 29/30) reporting no improvement in pupil ADHD-type behaviours. One study (10) reported an improvement in pupil behaviour but this study was a multiple baseline design with only three pupils and it was not possible to perform a meaningful comparison between this and the other studies included in this review. Data for effects at follow-up were only available for three studies (8, 14, 25) for meta-analysis. Interestingly, analyses revealed an overall significant improvement in pupil behaviour from post-test to follow-up for within subjects (SMD = 0.39, 95% CI = 0.15, 0.62; see Figure 8) and between subjects (SMD = 0.50, 95% CI = 0.14, 0.87; see Figure 9), up to six months after the intervention had finished. This was particularly surprising for the between subject analyses, given that there had been no significant difference at post-test. On closer inspection of the data, in both cases, there was a further improvement from post-test to follow up on the two studies featuring a control group (8, 25), which had seen a significant improvement from pre-test to post-test.

In summary, the currently available evidence does not consistently suggest that ADHD teacher training interventions reduce pupils' ADHD-type behaviours in the classrooms of participating teachers.

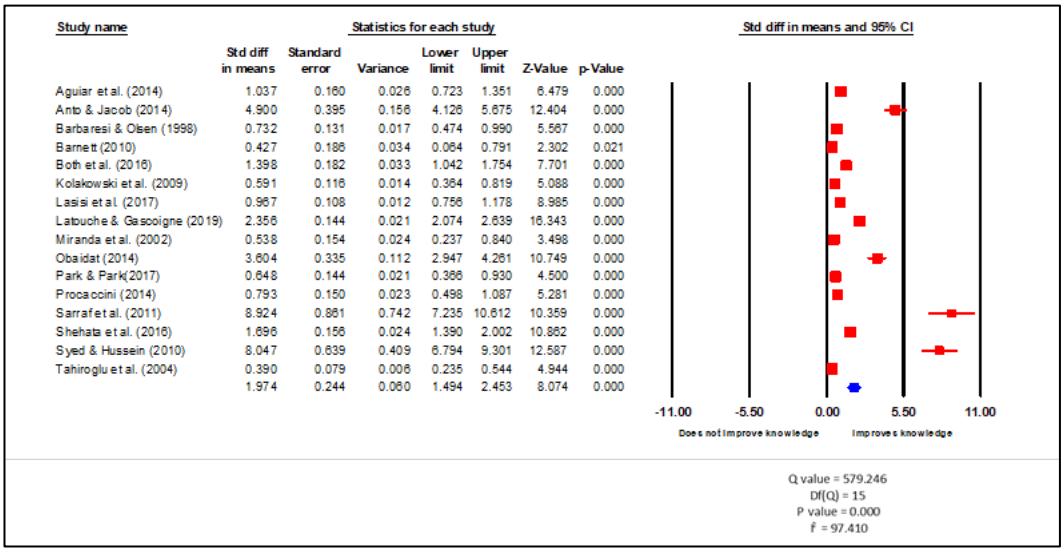


Figure 2
Teacher Knowledge Pre-Post (Within Subjects)

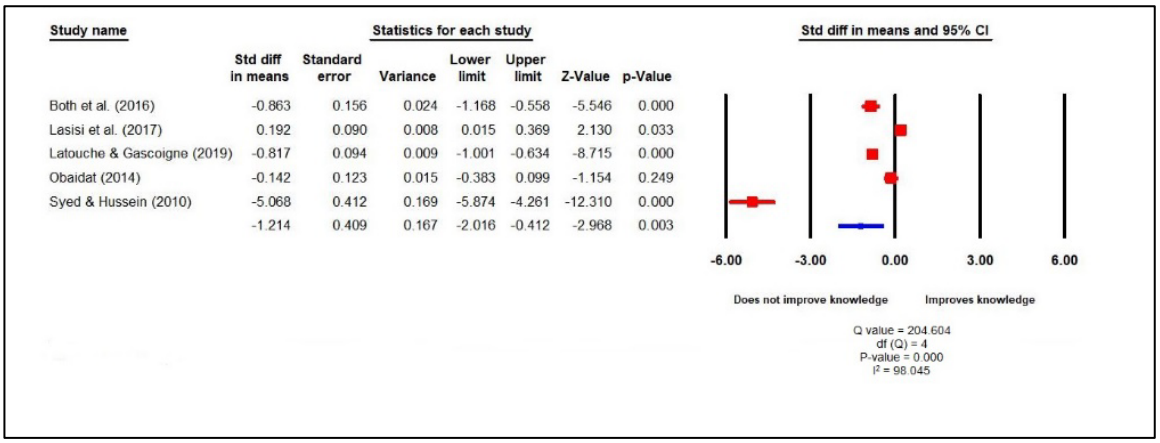


Figure 3

Teacher Knowledge Post-Follow Up (Within Subjects)

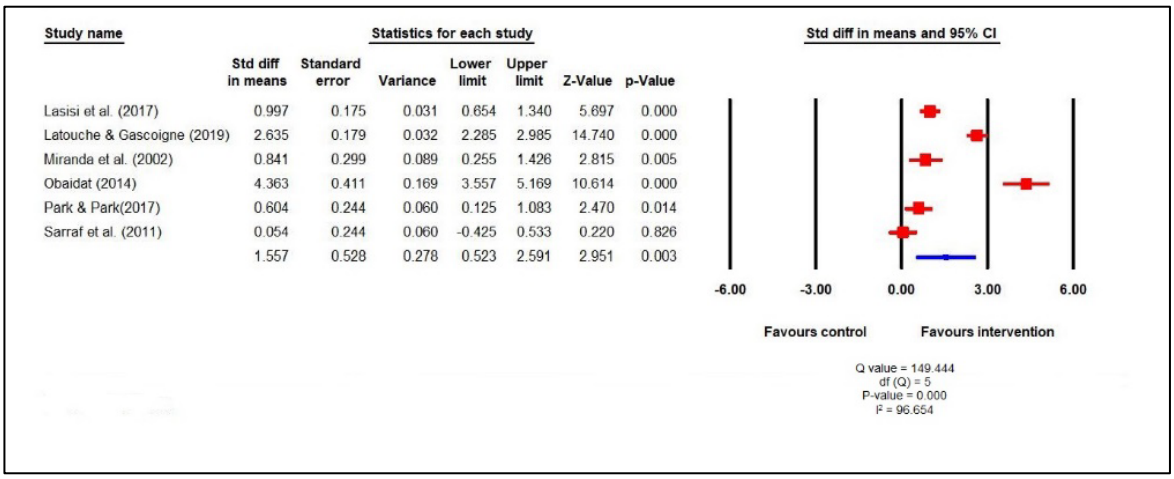


Figure 4

Teacher Knowledge Pre-Post (Between Subjects)

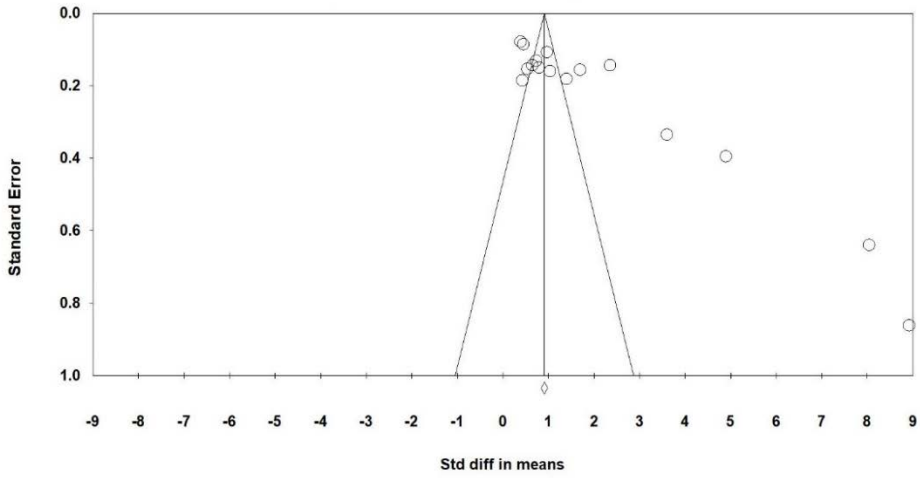


Figure 5

Funnel Plot of Standard Error by Std Diff in Means

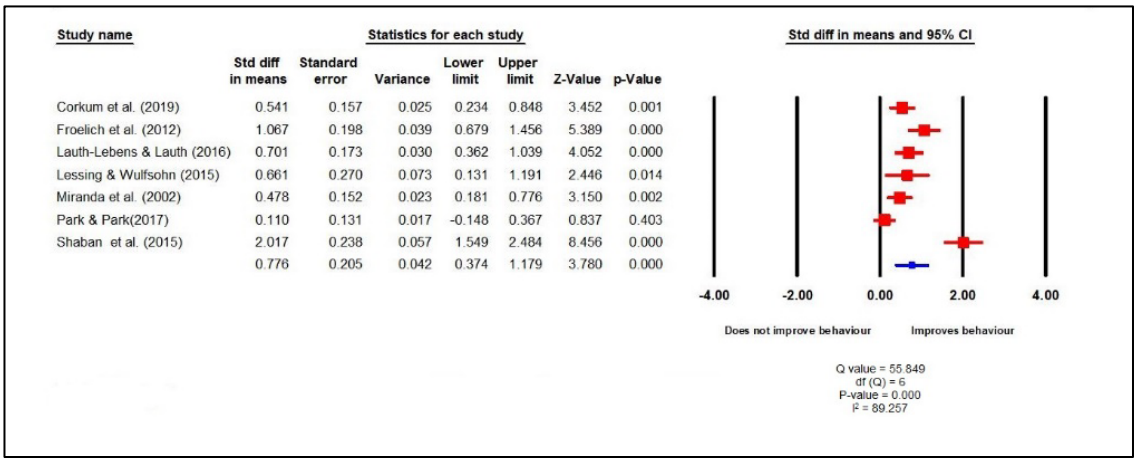


Figure 6

Pupil Behaviour Pre-Post (Within Subjects)

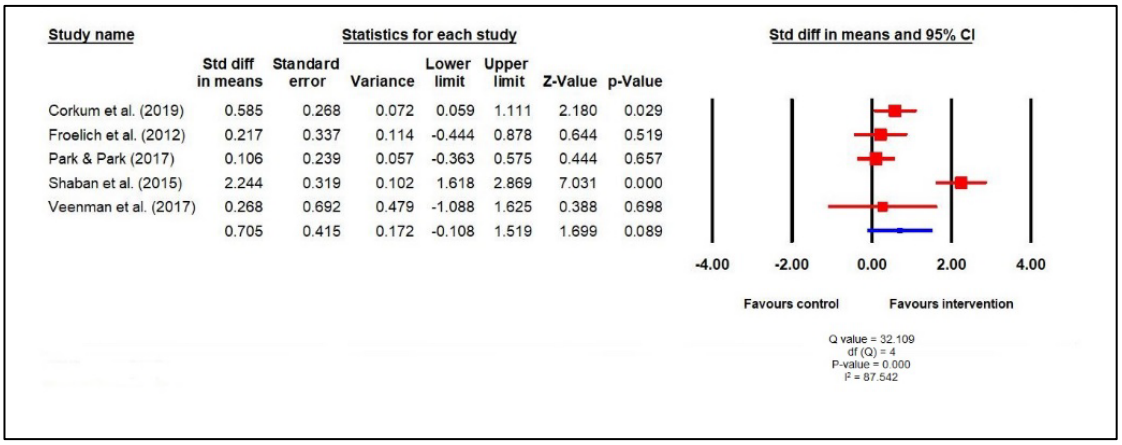


Figure 7

Pupil Behaviour Pre-Post (Between Subjects)

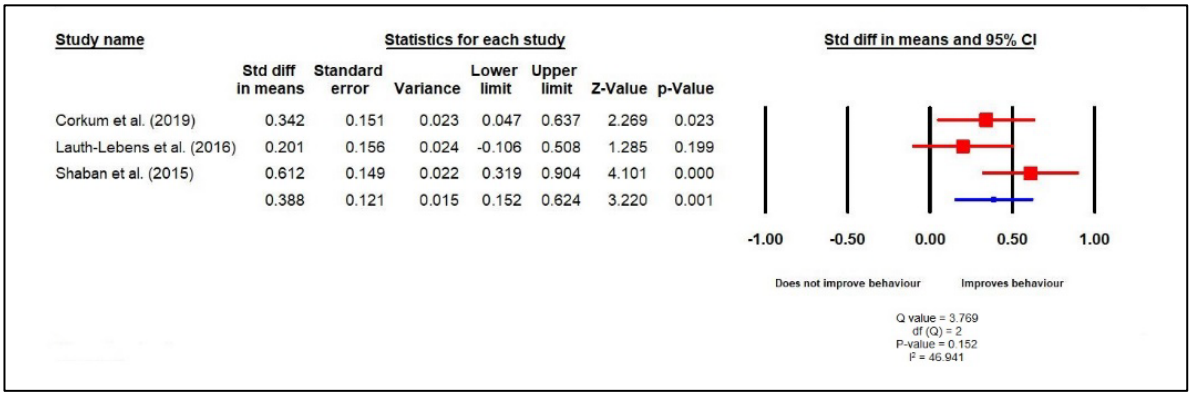


Figure 8

Pupil Behaviour Post-Follow Up (Within Subjects)

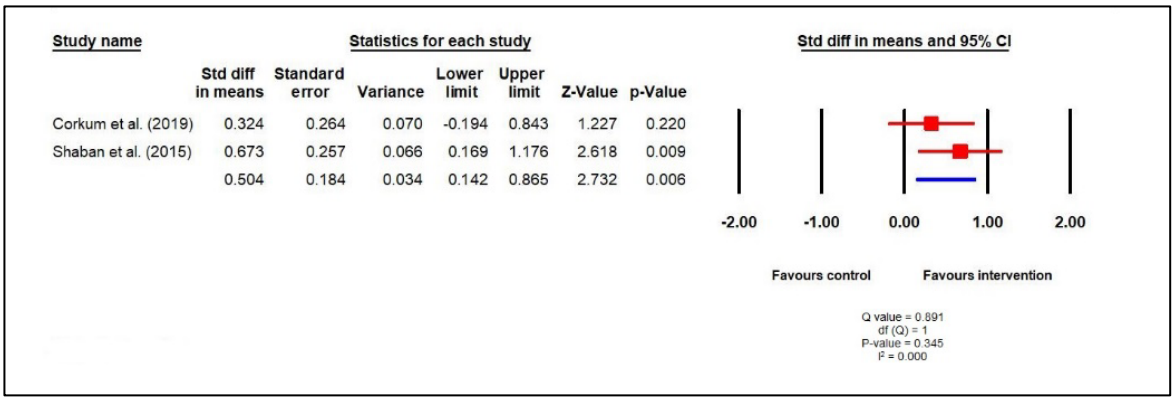


Figure 9
Pupil Behaviour Post-Follow Up (Between Subjects)

2.5.2 Risk of Bias

The intervention studies included in this systematic review and meta-analysis were predominately at risk of bias from confounding variables and the use of subjective outcome measures completed by participants, as well as a substantial lack of reporting detail on the randomisation process for the randomised trials. Only four of the included studies reported using blinded outcome assessors, and none of these studies were included in the meta-analysis, highlighting the lack of reliability in the results reported. The Risk of Bias assessments (see Figure 10 and Figure 11) highlight the medium to high risk of bias found in all studies, except one (29) which received a low risk of bias. Half of the non-randomised studies had one intervention group with no control or comparison group, and so the 'Classification of interventions' domain was not applicable.

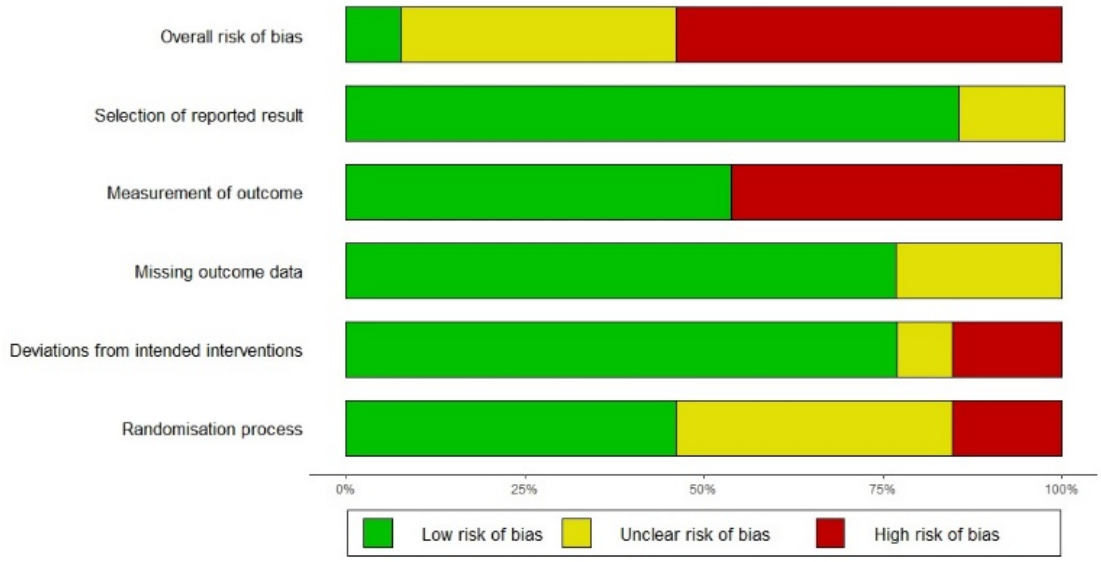


Figure 10
Risk of Bias for RCTs

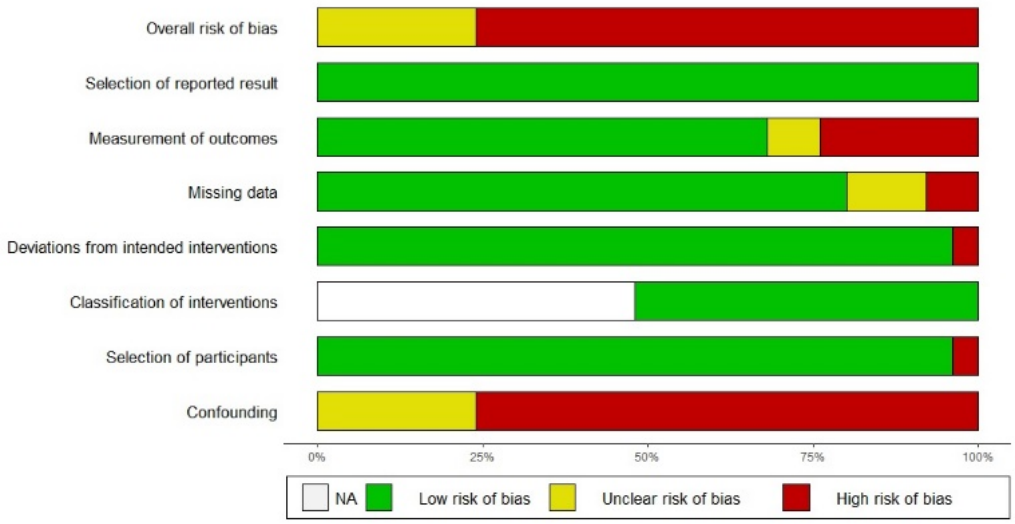


Figure 11
Risk of Bias for Non-Randomised Studies

Discussion

This study is the first to systematically synthesize the literature on the efficacy of ADHD teacher training interventions for both teacher and pupil outcomes. There is evidence that teachers play a crucial role in supporting children with ADHD in their classrooms, both in social and academic adjustment (Arcia et al., 2000; ComRes, 2017; Daley & Birchwood, 2010; Parker et al., 2013; Pfiffner & Haack, 2014), and this systematic review examined whether ADHD-focussed training interventions improved teachers' knowledge of ADHD and ability to implement behaviour management strategies to help pupils displaying ADHD-type behaviours.

While previous systematic reviews have explored teachers' knowledge of ADHD (Mohr-Jensen et al., 2019) and psychoeducation for teachers (Dahl et al., 2020; Montoya et al., 2011), none has conducted a meta-analysis, nor considered effects on pupil behaviour. This systematic review and meta-analysis provide a comprehensive understanding of the literature by examining the effects of specific ADHD teacher training on teachers' ADHD knowledge, the behavioural strategies that teachers employ with pupils displaying ADHD-type behaviours, and whether there is any effect on the ADHD-type behaviour of pupils in the classrooms of participating teachers. To ensure all relevant literature was included and to mitigate the risk of bias, no date or language restrictions were set, and grey literature was included in the searches.

Our study provides evidence that ADHD teacher training programs are beneficial in improving ADHD teacher knowledge immediately after training, though this should be interpreted with caution given the medium-to-high risk of bias of included studies. Importantly, this finding was consistent across almost all study designs, and intervention types. Only one study failed to detect a significant between group difference (24); this study compared two groups of teachers with both receiving information on ADHD albeit in different ways (i.e. a non-attendance ADHD

psychoeducation programme was compared with an attendance-based workshop on ADHD). Teachers in both groups showed increased knowledge of ADHD following the intervention suggesting that the mode of delivery was unimportant. One difference was noted, however. Those teachers that attended a face-to-face workshop did show a significant increase ($F(1,60)=11.3$, $p=0.001$) in knowledge of strategies to use in the classroom in comparison to those who had followed the online learning programme. The authors attributed this to more discussion of strategies in addressing particular problem behaviours (Sarraf et al., 2011).

Where reported, effect sizes were large for the increase in ADHD teacher knowledge following the intervention, but only seven out of seventeen studies reported an effect size. Our meta-analysis yielded an overall large effect size of SMD=1.97 (95% CI=1.49, 2.45). Therefore, it is possible that ADHD teacher training interventions increase teachers' ADHD knowledge in a meaningful way. However, before they can be recommended, higher quality evidence is needed. Four studies (2, 19, 24, 27) reported particularly large effect sizes but each employed its own intervention and author-designed knowledge questionnaire, with a range of time frames, preventing us from identifying any possible characteristics which led to such a marked difference from the rest of the included studies. Important to note here is that the assessment of publication bias for this outcome measure suggested the likelihood of overestimation of the intervention effect (Higgins et al., 2019).

Our findings further suggest that the level of gain in ADHD knowledge following interventions was not sustained at later follow-up assessments with an overall significant decrease in knowledge (SMD = -1.21 (95% CI= -2.02, -0.41) within three months of the end of the interventions. However, knowledge still remained significantly greater than at pre-test (see Appendix F). It is important to note that pooling RCTs in the meta-analysis revealed no change in the direction of the effect for each analysis. Two studies did report knowledge to be sustained (12, 19) but important methodological differences need to be highlighted for these. Lasisi et al. (2017) provided a booster session of further training, two and a half weeks post intervention, in which the outcome measure was repeated. The second study (19) enrolled teachers on an educational diploma, reflecting a training programme which was more time-intensive than those used in the other studies (i.e., sixteen hours in total compared to the rest of the interventions being one session lasting between two and two and a half hours). Given the observed decrease in knowledge at follow-up in other studies, it is worth considering whether a more intense approach as taken by Obaidat (2014) and/or offering booster sessions is more likely to result in sustained effects at follow-up, but future research is needed to address this question systematically.

Six studies reported data on teacher behaviours towards pupils with ADHD-type behaviours but the methods employed across the studies were vastly different and thus it was not possible to meta-analyze them. Our narrative synthesis of these six studies suggests that teacher

training interventions can result in positive effects on teacher behaviour, with only one study (4/5) showing no significant effect post-intervention. Important to note is that unlike the other studies which used either blinded observations or teacher self-report to measure change in the use of behavioural strategies, Barnett (2010) used vignettes of hypothetical scenarios. Although vignettes may be useful in allowing a direct comparison across participants' responses to the same (hypothetical) scenario (Norcini, 2004), they also allow a sense of detachment from the situation (Poulou, 2017). Because vignettes describe hypothetical situations, these may not always relate to those experienced and of relevance to teachers in their setting. Indeed, after investigating teacher attributions for problem behaviour, Lucas et al. (2009) concluded that this method using hypothetical scenarios was limited in determining how a teacher may respond to a child in real life. Although blinded observations are considered the gold standard of measuring behaviour change following a workshop intervention (D'Eon et al., 2008), only two studies employed blinded observations (20, 31) with one recording very limited data (31), and neither having a control group with which to compare outcomes. The remaining studies used teachers' self-report, thus risking biased results given teachers were not blind to intervention status and the potential expectation of change resulting from the intervention (Gualtieri & Johnson, 2005; Jerosch-Herold, 2005; Moore et al., 2019).

All studies lacked detailed information on the specific intervention components relating to behavioural strategies. However, a common factor in those studies reporting improvement in teacher behaviour post-intervention was an intervention model consisting of multiple sessions over a number of weeks (6-15 weeks). This enabled teachers to use strategies in the classroom and then discuss their success or failure in subsequent meetings (Nadeau et al., 2012; Owens et al., 2017; Park & Park, 2017; Shehata et al., 2016). This enabled a problem-solving approach to address specific behaviours and adapt to an individualised model for each child (Foubister et al., 2020). One exception was the study by Zentall and Javorsky (2007) which employed a two-day intervention. However, only post-test data for teachers' use of positive behaviours was collected and there was no control group, rendering it difficult to make a meaningful comparison with the other studies. Given the small number of studies and the high risk of bias due to the use of teacher self-report measures, the data and evidence are currently not sufficient to suggest that teacher training interventions bring positive change in teacher behavioural management strategies. No follow-up measures were collected for this outcome and so there is currently no evidence on the long-term nature of any behaviour change.

The evidence to support behavioural change in pupils with ADHD-type behaviours from this systematic review and meta-analysis is uncertain. For those studies included in the meta-analysis, teacher training interventions showed significant improvement in pupil ADHD-type behaviours compared to pre-intervention measures where SMD was 0.78 (0.37, 1.18); Figure 6)

but this improvement was not seen when the intervention groups were compared to ADHD controls, where SMD was 0.71 (-0.11, 1.52); Figure 8). The direction of effect did not differ when only RCTs were pooled. It is therefore difficult to ascertain whether there would have been symptomatic improvement without intervention (Loe & Feldman, 2007). These results are reflected in the complete set of included studies for the systematic review with a range of results from a significant deterioration in pupil ADHD-type behaviour (6), incomplete data from which to draw a conclusion (16, 23, 31), mixed results depending on the outcome measure used (29, 30), or a significant improvement in behaviour (14-16, 21, 25) with large effect sizes where reported. Only one study used a control group of typically developing children (17), whereas the control groups in the rest of studies comprised ADHD children. This study reported a significant improvement in pupil ADHD-type behaviours for ADHD children from pre-test to post-test measures in the measurement of on-task behaviour, but the intervention group did not reach the level of the normative comparison group even with these improvements (Mohammed, 2018), which has been seen in a range of ADHD behavioural interventions with participating children (Shaw et al., 2012). Furthermore, Mohammed (2018) noted that the results in his study might be due to contamination stemming from the typically developing children being in the same classrooms of participating teachers, or due to the improvement in the behaviour of the ADHD pupils resulting in less distractions and a more favourable classroom environment.

Importantly, six out of the eight studies reporting an improvement in pupil ADHD-type behaviours used a teacher self-report which is reflected in the overall high risk of bias for the included studies. The two studies which provided data on blinded measures (Bloomquist et al., 1991; Veenman et al., 2019) showed a significant deterioration in pupil behaviour.

Taken together, our findings suggest that whilst teachers who receive an ADHD training program may perceive some improvements in pupil behaviour in their classrooms, the findings are limited due to non-blinded measures and lack of appropriate, controlled, comparison. Therefore, there is currently no compelling evidence that teacher training interventions lead to a reduction in pupil ADHD-type behaviours.

Limitations

There are several limitations associated with this systematic review and meta-analysis. It was not possible to cover all existing literature as eleven requests for data were made to authors but only seven replies were received, and two sets of data were no longer available. It is possible that by selecting the outcomes to be investigated in advance, there is a risk of outcome reporting bias (Sedgwick, 2015). This risk was addressed by performing scoping searches and identifying common outcome measures used in studies investigating teacher training interventions. Differences in symptom lists, diagnostic terms, and diagnostic criteria were identified and reflected in the search terms compiled by the research team. Although the risk of reporting bias

was mitigated by removing all language or date restrictions from the systematic searches, by including both grey literature alongside published studies, and by including a wide range of study designs, it is possible that articles from less accessible databases were overlooked. However, the systematic searches were performed in six databases spanning medical, psychological, and educational research to ensure inclusion from the breadth of literature addressing ADHD. Researcher bias through implementing the search strategy, screening of studies, risk of bias assessments, and data extraction was minimised by ensuring two researchers completed each step independently, and all disagreements were resolved through discussion and consensus. There is some blurring of the lines between interventions with participating ADHD pupils, and those with participating teachers who are trained to implement behavioural strategies with pupils in their classrooms, but the inclusion criteria for this study specified that the recipients of the interventions were teachers only, and studies which reported recipients as being pupils were excluded. This may have led to some similar interventions to those included in this review being excluded according to the way in which the study was reported. It was not possible to examine differences between primary and secondary teachers due to four out of the five studies involving secondary teachers using a mixed sample of primary and secondary school teachers. This is an area that needs investigating in future research.

Conclusion

This systematic review with meta-analysis provides some support that ADHD teacher training interventions improve teachers' ADHD knowledge and positive behaviours towards pupils with ADHD-type behaviours, with no solid evidence to support improvements in pupil ADHD-type behaviours. The broad range of geographical locations for the included studies shows a consistency in results for different cultures and educational systems, but the high risk of bias and vast heterogeneity of interventions and measures, creates uncertainty in terms of confidence in the reported results. The strongest evidence relates to the improvement in teacher ADHD knowledge. In terms of future research, there is a strong need for high quality RCTs which investigate the specific interventions and their characteristics which produce positive outcomes for both teachers and pupils.

Chapter 3 School Staff Perspectives on ADHD and Training: Understanding the Needs and Views of UK Primary Staff

This paper was published in *Emotional and Behavioural Difficulties* in 2021.

3.1 Abstract

Teachers report feeling ill-equipped to meet the needs of ADHD children. Previous studies on ADHD teacher training have been largely quantitative, focused on measured gains in ADHD knowledge and use of behavioural strategies. Traditional training shows initial improvements which deteriorate over time necessitating a new approach. Staff perspectives identifying important factors in teaching children with ADHD and staff training are largely missing from the literature. Semi-structured interviews were conducted with 19 primary staff in England. Interviews were analysed using a reflexive thematic approach. Five themes are reported: being equipped to provide for the individual needs of children with ADHD; a joined-up approach which draws on the knowledge of others; creating the opportunity for every child to succeed; supporting all children in the classroom; training and support which meets the needs of all school staff. Findings will enable ADHD training to be better tailored to meet school staff's needs.

3.2 Introduction

Attention-deficit/ hyperactivity disorder (ADHD) presents significant challenges for both pupils and teachers in the school context (Daley & Birchwood, 2010). Dimensional traits of hyperactivity, impulsivity and inattention are classified as a neurodevelopmental disorder when they become severe and persisting, negatively affecting social and educational functioning across multiple contexts (American Psychiatric Association 2013).

Alongside behavioural challenges, children with ADHD may have difficulties accessing the curriculum due to impairments in working memory, organisational skills and self-regulation which can lead to lower academic achievement and compromised classroom performance (DuPaul & Stoner, 2014; Langberg & Becker, 2012; Loe & Feldman, 2007; Parker et al. 2013). To minimize risks for poorer outcomes, it is therefore important to enable early identification and effective support in schools of those children at risk (Daley & Birchwood, 2010; Montgomery et al., 2018).

No single cause of ADHD has been found but it is thought that individuals may develop the disorder through a complex interaction of biological and environmental risk factors (Russell et al., 2019; Thapar et al., 2013). It is important to understand that risks do not necessarily lead to adverse effects but enable an understanding of the multiple factors that may contribute to a diagnosis. Environmental risk includes such factors as severe neglect, low birth weight and prematurity, maternal stress in pregnancy and nutritional deficiencies, whereas biological risk stems from the highly heritable nature of ADHD and structural and functional differences in the brain (Bélanger et al., 2018; Rutter et al., 2007; Thapar et al., 2013).

It is also important to note that ADHD is a highly comorbid disorder with neurodevelopmental conditions that may also have an impact in the school context. Reale et al. (2017) reported that out of a sample of 1919 children and adolescents diagnosed with ADHD, only 34% of children and adolescents had a single diagnosis. Learning disorders were present in 56% of cases. A meta-analysis by DuPaul et al. (2012; Reale et al. 2017) reported a comorbidity rate of 45.1% for ADHD and learning disability. A diagnosis of autism spectrum disorder (ASD) had previously precluded an additional diagnosis of ADHD due to the overlap of some symptoms, but the publication of DSM-5 enabled multiple diagnoses to be made. Stevens et al. (2016) reported a comorbidity rate of 42% for ADHD + ASD and 17% for ADHD + ASD + ID (intellectual disability) giving an overall comorbidity rate of 59% for ADHD and ASD.

ADHD impacts a significant proportion of children attending school. A review of seven published systematic reviews reported a global ADHD prevalence of between 2.2-7.2% (Sayal et al., 2018). Figures in the UK are generally lower with the most recent figures from the National Health Service (NHS) reporting 1.6% of children diagnosed with a hyperactivity disorder. However, the reported range for boys at 2.6% would fall within this global range (NHS Digital, 2018). Both the NHS (National Health Service) and NICE also recognise these statistics relate to a diagnosis of

hyperactivity disorder using ICD-10 criteria and numbers of children with ADHD are likely to be higher when using DSM-5 criteria (American Psychiatric Association, 2013; NICE, 2019; World Health Organization, 2018).

There is concern that some subtypes of ADHD are underdiagnosed. Studies suggest inattentive subtypes are not always recognised by teachers who provide information for referral and diagnosis (Alloway et al., 2010; Moldavsky et al., 2013). These unrecognised symptoms may still create difficulties and impair learning, but the lack of diagnosis could result in no extra support being offered to these children. Crucially, ADHD diagnoses can only be made when symptoms transcend the threshold of the diagnostic criteria, and before this point, some symptoms may already be adversely affecting a child's schooling (Daley & Birchwood, 2010; Sayal et al., 2010). Similarly, subclinical levels of ADHD-type behaviours may also contribute to some degree of impairment (Alloway et al., 2010).

Teachers are recognized to play a significant role in children's development, both academically and socially (Daley & Birchwood, 2010), yet they report a lack of training to support and teach children with ADHD (Martinussen et al., 2011). Specifically, a survey of 803 UK teachers found that 89% of staff reported currently or previously teaching pupils with ADHD but nearly two thirds (63%) reported receiving inadequate training and support for pupils with ADHD (ComRes, 2017). Despite this perceived lack of training and support for ADHD, teachers are frequently involved in referrals and diagnostic questionnaires as they are viewed as reliable sources to recognise when a child is struggling with ADHD-type behaviours, have a key role communicating with parents, and are often required to implement school-based interventions (Corkum et al., 2019; Sciutto et al., 2016; Sherman et al., 2008). Importantly, teachers report higher levels of stress when teaching children with ADHD which can negatively affect teacher-student relationships and exacerbate conflict (Greene et al., 2002).

Previous literature has focussed on the efficacy of pre-existing ADHD teacher-training programmes aiming to increase teachers' ADHD-related knowledge, positive attitudes, and use of positive behaviour strategies in the classroom (Barnett et al., 2012; Latouche & Gascoigne, 2019; Miranda et al., 2002). A recent meta-analysis (Ward et al., 2020) reported that traditional ADHD teacher training programmes are effective in the short term but initial gains deteriorate over time, suggesting more effective longer-term solutions are needed. Much of the existing research assessing effectiveness of ADHD teacher training programmes is based on quantitative evaluation. Such an approach falls short of gaining an in-depth understanding of how and why training may or may not work.

Significantly, qualitative research exploring teachers' views and experiences of teaching children with ADHD and what might constitute effective training, remains largely unexplored in the literature. Two studies have explored educators' views on ADHD, focussed on ADHD aetiology

(Russell et al., 2016) or the strategies practitioners use to address ADHD in the classroom (Moore et al., 2017). A flexible approach using a range of strategies was reported, with an emphasis on skills for learning rather than addressing particular ADHD symptoms. Additionally, the importance of good teacher-student relationships was highlighted (Moore et al., 2017). Whilst strategies and teacher-student relationships are undoubtedly important for educators, there is a need for qualitative research to explore whether there are additional factors that are important to UK school staff when teaching children with ADHD and what training or resources they think would better equip them in this role. Given the culture of inclusivity and key role that school staff play in the provision for children with special educational needs (Ewing et al., 2018), it is important to consider UK school staff's views on what helps or hinders the educational experience and achievement of children with ADHD . Understanding staff perspectives of the perceived benefits of specific ADHD training, together with how this might best be constituted and delivered, is an important step towards designing effective resources to meet this need. Therefore, the present study aimed to capture the views of primary school staff in the UK regarding what they considered to be important when teaching children with ADHD, and their perspectives on the content and delivery of effective ADHD training.

3.3 Materials and Methods

Semi-structured interviews were used to gain school staff perspectives on ADHD, and staff training in ADHD. Individual interviews were preferred over focus groups for two reasons. Firstly, given the range of educational roles and hierarchies included in the sample, it is possible that some participants may have felt inhibited in sharing their views in a group setting, and may have deferred to those in more senior, or experienced, positions (Acocella, 2012). Secondly, purposive sampling was used to gather views from a wide variety of schools and geographical areas which would not have been practically possible if face-to-face focus groups had been used.

3.3.1 Sample

Nineteen UK primary school staff, with experience of teaching and supporting children with ADHD, were recruited and took part in semi-structured interviews with the lead researcher. A range of school roles were represented in the sample, comprising senior leadership team members (head teachers, assistant and deputy head teachers), SENCOs, and classroom teachers. Recruitment was extended to teaching assistants as several participants mentioned the important role teaching assistants played in supporting children with ADHD. The participants came from fifteen different schools in seven local authorities across England. Participants were predominantly recruited from mainstream schools, but as part of the iterative analytic process, two teachers from special schools were also recruited. They were included as one head teacher considered bringing in support from a local special school with expertise and advice on teaching children with ADHD.

School staff experience ranged from 3-28 years, and the number of ADHD children taught ranged from 3 to over one hundred (see Table 6).

Table 6
Participant Characteristics

Participant #	Gender	Role	Type of school	# years' teaching experience	Estimate # adhd children taught
1	Woman	Head teacher	Mainstream	15	9
2	Woman	Head teacher	Mainstream	21	10
3	Woman	Teacher/ deputy head teacher	Mainstream	18	10
4	Man	Head teacher	Mainstream	17	>10
5	Woman	Assistant head teacher/ SENCO	Mainstream	15+	20+
6	Woman	Teacher	Mainstream	12	15
7	Woman	Teacher	Mainstream	19	6
8	Woman	Teacher	Mainstream	4	5
9	Woman	Head teacher	Mainstream	20	10-15
10	Woman	Teacher	Mainstream	17	20
11	Man	Teacher	Mainstream	17	2
12	Woman	SENCO	Mainstream	19	10
13	Woman	Head teacher	Mainstream	18	50+
14	Man	Teacher	Special	4	3
15	Woman	Teacher	Mainstream	3	3
16	Woman	SENCO	Mainstream	28	30+
17	Woman	Teacher	Mainstream	15	100+
18	Woman	SENCO	Special	15	100+
19	Woman	Teaching assistant	Mainstream	10	8-9

3.3.2 Data Collection

Data were collected between April – November 2019. Individual interviews were conducted to understand the range of views and perspectives of school staff when teaching and supporting children with ADHD. A semi-structured topic guide was developed from a review of the literature (Franklin et al., 2012; Sciutto et al., 2000; Shelemy et al., 2019; Topkin et al., 2015; see Appendix G and Appendix H). This topic guide enabled consistency with flexibility for the interviews and covered three areas including ADHD and its symptoms, the diagnosis and treatment of ADHD, and, training and support for teaching children with ADHD. Interviewees were also explicitly given the opportunity to share any further views or thoughts at the end of the interview.

3.3.3 Procedure

An initial email was sent to all primary schools, both publicly and privately funded, in three south central local authority areas (N=123) where face to face interviews could take place. Additionally, adverts were placed on social media with telephone interviews offered for

participants in other areas. Once a school or staff member expressed interest, an information pack was sent. The lead interviewer ensured that signed informed consent had been returned prior to the interview, along with demographic information (shown in Table 6). The interviews were audio-recorded, transcribed verbatim by four undergraduate students on a voluntary research placement, and double-checked for accuracy by the first author. The average time per interview was 32 minutes (with a range of 18-62 minutes).

3.3.4 Ethical Considerations

Ethical approval was granted by University of Southampton Psychology Ethics Committee (ERGO ID: 47352). Digital data files were stored on password-protected computers with paper records kept in a locked cabinet accessible only by the research team. Confidentiality was assured, with audio files being deleted once anonymisation and transcription was complete. Additionally, participants were informed that direct quotes could be used in publications associated with the project but that it would not be possible to identify the participant or the school.

3.3.5 Analysis

A critical realist approach was taken in which staff views, perspectives and meanings were accepted as being based on real world experiences, relationships and events (Qu, 2020; Terry et al., 2017). School staff were able to describe and discuss their experiences of teaching and supporting children with ADHD, within the context of UK educational norms and discourses around inclusive education (Schuelka, 2018). Reflexive thematic analysis (Braun & Clarke, 2006; Clarke & Braun, 2016) enabled a rich, detailed analysis of the data using NVIVO (QSR International; release 1.3) and followed an iterative, cyclical approach.

Analysis began during the transcript checking process as transcripts were finalised alongside the audio recordings. Multiple readings led familiarisation with the data, considering topics of interest to participants, common ideas and early thoughts on possible areas of importance. For example, one early notion was of some teachers feeling overwhelmed by the competing demands of meeting the needs of all children in their care. Initial codes were generated as this process continued and sections of text were tagged with a meaningful description, for example, ‘wanting the best for every child’. Gradually, the coding process provided a structure to identify patterns and connected codes. The aims of the study were then used to guide the process of interpreting which codes were relevant for this analysis and themes were used to group together codes with a similarity or relationship to create one central idea. For example, the theme of ‘Giving every child every opportunity to succeed’ was used to bring together codes such as: ‘wanting the best for every child’, ‘giving every child every opportunity’, ‘meeting individual and whole class needs’. This process was iterative as codes and themes were reviewed alongside the coded extracts (see Appendix I). Visual thematic maps were used in this

process as themes were discussed within the research team and refined to build the overall narrative.

3.4 Results

Five main themes were formulated based on the views of staff working at primary schools. In summary, staff wanted better training and support in ADHD identifying this as a particular gap in their ability to support all children and creating opportunities for every child to succeed in school. Dedicated training should equip staff with better ADHD knowledge, confidence in knowing how best to support children with ADHD, and practical strategies. Training should be delivered to all staff, enabling a joined-up approach with a team-based ethos facilitating the sharing of knowledge.

3.4.1 Equipped with ADHD Knowledge, Confidence and Strategies to Provide for the Individual Needs of Children with ADHD

Staff wanted to be equipped with ADHD knowledge, confidence in teaching children with ADHD, and a toolkit of strategies.

3.4.1.1 Being Equipped with ADHD Knowledge. Overall, staff did not feel knowledgeable about ADHD and reported receiving very little, if any, specific training in ADHD. Being equipped with knowledge of ADHD was perceived to be key to being able to provide better support and educational decision making.

Most staff reported not knowing the causes of ADHD, with a small number attributing the condition to a possible chemical imbalance in the brain, trauma and neglect, or bad parenting. Teachers expressed that more knowledge about ADHD would help them better understand the reasons behind the child's behaviour.

> I do think, you know, having more awareness of ADHD would give teachers more ability, not to sympathise with them, but to understand where that child is at, and why they are behaving in the way they do. (002)

Some staff also mentioned that a greater understanding of the reasons behind certain behaviours for individual children had helped them to understand specific triggers or needs of the child. This was a powerful way of creating and developing greater empathy.

> I think they need to understand it's not just about being a bit hyper and all over the place. It's not just that. It might present as that, but it's going back a layer, looking at what is it like to be them. You know, the children will say, "My brain is so busy, it doesn't stop," and they find that using their hands makes their brain stop. I think almost getting them to reflect what it must be like for that child. I think that's what's worked here as the most powerful thing. (005)

Some staff felt greater understanding and empathy would enable teachers to adjust their expectations of behaviour and learning in the classroom.

> Understanding of what causes it, what is realistic to expect of a child and what isn't, what's fair to expect of them…an understanding that it's okay if this child achieves a different thing in this lesson, or less output, or something like that; kind of "What does success look like?" (003)

3.4.1.2 Being Equipped with Confidence in Teaching Children with ADHD. A lack of confidence was expressed in managing the classroom when it included a child with ADHD. Staff acknowledged the individuality of each child which raised challenges in knowing how to address specific behaviours. Concerns were derived from inexperience or because considerable time had passed since they had taught a child with ADHD. This led to a reliance on teaching assistants who may know the individual child better, and a further reduction in confidence when classroom support was removed.

> Suddenly you almost become scared to manage those children because…my LSA gently steps in to manage that …once you take your LSA away you have to then remind yourself how you did that and that's quite scary…Then you worry about, "Actually, what if I don't win the situation? Actually, if I come out of it and I feel like I've lost and you feel like you've won, I'm then going to be panicked about tackling you on anything again." (007)

Several teachers talked about previous experiences which had damaged their confidence and feeling isolated with an expectation to manage their own class. However, most teachers reported having knowledgeable SENCOs who they could turn to for advice and support. Teaching experience was also linked to confidence as staff were able to draw on situations in the past.

Confidence was related to effectively addressing problem behaviours and to successful provision of the best learning environment for individual children. Experienced teachers felt better able to be flexible in terms of setting individualised learning outcomes and more confident in explaining to the rest of the class why one child was learning differently.

> I think it's having that recognition and being brave to say, "Well actually, you're not in the right place for me to be able to pigeon-hole or shoe-horn you into what I want to do and I'm going to have the confidence to provide for you in the way that's needed." (002)

3.4.1.3 Being Equipped with a Toolkit of Strategies. Most staff wanted practical strategies over and above background knowledge about ADHD.

> I think practical strategies. Those are the things that are most important. Lots of people, I'm sure, would be interested in the theory or the understanding behind it but I would want, “Right, what am I going to take away and what I’m going to do with this?” (015)

Staff had different perspectives on effective strategies to support and teach children with ADHD. Most staff had ideas of what to do when children engaged in disruptive behaviours. Sensory strategies involved physical activity, such as throwing a ball against a wall in the playground or using a fiddle toy in the classroom. Distraction provided the child with a chance to calm down or change focus and included being sent to do a job for the teacher or playing with a favourite toy. Pre-emptive strategies aimed to avoid disruptive outbursts by ensuring equipment was ready in place or identifying times that were consistently difficult to plan proactively. Some strategies were based around consistency for the child by ensuring all staff followed a ‘script’ or by writing behaviour plans for individuals. A large selection of strategies to choose from was wanted, particularly as individual children responded to different approaches, or the same ideas might not work over time.

> What might work one day might not work the next day so you’ve, sort of, got to have a bag of tools with you to, sort of, keep them on track and try and keep them doing the right thing. Some children a fiddle toy will be enough. Some children will need to get up and go and stretch their legs...Another child, you know, would just be happy to sit and play with multilink and build things. (019)

A few teachers expressed the importance of the children learning self-regulation and coping strategies to help them to better manage challenging situations.

> Strategies to work with the child, kind of, to help the child come to terms…or kind of understand themselves, and to help them to know what is expected of them, and how to be successful in that is also useful, because I think they can be labelled as ‘naughty’, and they need the skills to be able to talk with an adult and put their side across – which is difficult for them. (003)

3.4.2 A Joined-Up Team Approach which Draws on the Knowledge of Others

A joined-up approach was used to describe how participants valued working together as a team and sharing knowledge.

3.4.2.1 Working Together as a Team. Effective communication and a consistent approach comprised the narrative of working together as a team. Information sharing between staff members was an important part of ensuring effective strategies were used with individual children. This included creating individual behaviour plans, reflecting on incidents, and following provision maps from year to year.

> Every term I would do a provision map just to detail all the interventions and day to day sort of thing… for example, a wobble cushion, the position in the classroom. (015)

A small number of teachers felt unable to ask for help from senior leaders when they were struggling. These teachers explained that SENCOs were busy with other children and there was an assumption that you needed to work it out for yourself. Others reported a sense of being a 'lone voice' and isolated. However, one teacher explained how appreciative she was of being able to discuss ideas with colleagues.

> I found discussion with TAs almost more helpful. You know, those daily discussions were more helpful in some ways because you're working it out with the child and with someone else. It's important to bounce I think when you've got a child like that. You can't just do it on…all on your own. (011)

Staff felt supported and better equipped when they had access to specialist behaviour teams or their SENCO was particularly knowledgeable and approachable. Open communication with others from the wider community was important to gain a broader perspective on the child across multiple contexts.

> I think communication is a big thing and it's working as part of a team you know with carers, teachers, SENCOs, school management, other community professionals. We've all got to work together. (016)

One head teacher described the approach as needing 'relentless consistency' (003), with behaviour plans and shared language to offer choices or redirect behaviour. This avoided confusion and signalled to the child that they could not try and manipulate staff by falsely stating they had permission for an action which was not in the agreed behaviour plan.

3.4.2.2 Drawing on the Knowledge of Others. A joined-up team approach was deemed to be most effective when expertise was shared so that school staff could draw on the knowledge of others. Staff recognised and relied on the breadth of experience across the whole school.

> The special needs team obviously had a bit more training and specialist knowledge, so I'd worked with them to, you know, develop good targets for him and then we review those. Definitely once a term, maybe a bit more regularly. (011)

One teacher with 18 years' experience described how she felt able to adapt lessons and targets 'on the fly' (006) but had noticed that a newly qualified teacher (NQT) needed help from colleagues. Another described the importance of ensuring there was a handover at the beginning of the academic year so that the child's previous teacher could share effective ways of working.

> I mentioned these, kind of, support plan meetings and the provision maps so I think the handover between teachers on that is absolutely vital I think. (015)

Teaching assistants were also included in this process.

> We can say, "Well, we've tried this, we've tried that, she likes this, he likes that", you know, and given, sort of, like, some advice that way. (019)

3.4.3 Creating the Opportunity for Every Child to Succeed

All staff, from senior leaders to teaching assistants, were committed to creating the opportunity for every child to succeed and wanted to provide the best education and support for the children in their care.

> It needs to be, "We've given every child, with ADHD, with any special educational need, or without, every opportunity to succeed." (004)

Staff training, good planning across the whole school community, and robust policies were identified as essential components. Providing emotional and behavioural support, as well as teaching the curriculum, was fundamental to being able to give every child every opportunity to succeed. For children with ADHD, the focus on changing disruptive behaviour stemmed from a desire to help the child access the learning and realise their potential. It was important to staff that they knew how best to help children change their behaviour because they highly prized this inclusive approach. However, this level of provision was recognised to be a heavy workload.

> I feel that, not that I'm letting the children down, but I feel like there's more that I could do for them. (008)

3.4.4 Supporting All Children in the Classroom

Staff emphasised the importance of supporting all children in the classroom, both the child with ADHD and the rest of the children in the class.

3.4.4.1 Building Relationships and Knowing the Child. Building relationships with children and knowing each child was identified as extremely important.

> I think the main thing, like with anything in the school, is knowing the child, knowing your child. I think that's very important. (019)

Although several children may have ADHD, individual differences emphasised the need for quality relationships between staff and pupils. Many of the staff shared how getting to know a child with ADHD had created opportunities to develop their approach and de-escalate emotionally charged situations or distract children from disruptive behaviours. A teacher recounted knowing one child so well that when he walked into the classroom, she could anticipate his behaviour.

> You'll know what type of day he's going to have because you can tell by his hair. And if he was going to have a bad day- if he had a bad day his hair would be standing up on the – here – on the crown of his head, which was always really interesting. So, you could tell. So, that gave a bit of an insight into prevention rather than cure with him. (018)

3.4.4.2 Supporting the Child with ADHD Requires Support and Education of Everyone Else in the Class. Staff discussed the impact of having a child with ADHD in the classroom and how they had found ADHD to have the most impact on other children.

> When things are not going particularly well, it has the biggest impact on the others, so with ADHD you're not just supporting the child, it's supporting everybody else to deal with the behaviours of that child. (006)

Peers were described as getting frustrated or scared when attempting group work with children whose behaviour was unpredictable. This also affected playtimes where children were reluctant to play together after prior incidences of impulsive behaviour. Although staff described most children as being aware of others who have certain difficulties, it could be difficult for the

rest of the class seeing rewards being given to one child for what is perceived as basic expected behaviour.

> The children have to learn to adapt basically to a child that doesn't necessarily conform in behaviour in the same way as they do. I mean, yes, they all have boundaries and yes, they all have to abide by the same rules but there has to be a bit of give and take for jumping around the classroom and that sort of thing…but within the kind of scope of learning as well. (010)

Staff described how they needed to educate peers of the child with ADHD so that they could understand why expectations or tasks may be altered for that child, and some teachers expressed how it would be beneficial to have help in speaking to the rest of the class.

Conversely, staff also praised the positive aspects of having a child with ADHD in the class, citing their energy and enthusiasm for projects, sparking creative ideas to tackle tasks, and often being humorous and likeable. Educating the rest of the class involved praising these positive behaviours from the ADHD child to show their peers the valuable contributions this child was making.

3.4.5 Training and Support which Meets the Needs of all School Staff

Participants expressed the desire for training and support which would address the other important factors that they had identified.

3.4.5.1 Teacher Training and Support Delivered on a Need-To-Know Basis. In-service training was mostly delivered at regular times through the year. There were very few opportunities to choose specific external training, and so training was limited to priorities set by senior leaders. Most staff reported having no, or very little, ADHD training even if the school had significant numbers of diagnosed children. However, the overwhelming reaction to training was that it was hard to remember information if it was not relevant immediately.

> It's almost, sort of, need-to-know basis isn't it, since it's hard to remember all the training if you have it in regular slots, I guess. Yeah, you know, if it's relevant, I don't know, it's a child that's coming up I think that's a good time like right now for me. (011)

3.4.5.2 Training Needs to be Delivered to All Staff. The need for training to be delivered to the whole school staff was identified:

> As senior leaders we would want the same training as teachers because you need to all be, you know, coming from the same viewpoint in terms of strategies. (013)

> I think it's really important for all - even teaching assistants - to have an understanding of where those children come from and why they display what they display. Particularly TAs actually, cause quite often they're the ones that are picking up the behaviour and having to deal with it. (002)

Children with ADHD had frequent interactions with staff outside their classrooms and so consistency was key, including in policies and individual behaviour plans that underpin strategies and expectations.

3.4.5.3 Opportunities to Try Strategies Out in a Plan-Do-Review Cycle. Training preferences centred on a plan-do-review type of programme where experts shared strategies that could be used, followed by an opportunity for staff to try these strategies in vivo and then come back to discuss.

> So, you tried that in your school or you tried that with your class? Did that work? How did you adapt it? Was that better? Can we, as a group, work out other ideas for how that might be managed differently if it wasn't working? That would be good. (007)

Working collaboratively with colleagues was also discussed so that staff working in similar contexts were able to discuss effective strategies.

> I think the most effective way to embed training, is to do it as much practically as possible, so having opportunities to go and try things out, or to think of a child and then come back and…that practical stage of being able to go and try things out and have a go and actually come back and almost like a support group. (002)

3.5 Discussion

This qualitative study explored the views and perspectives of primary school staff working with children with ADHD. Their accounts provide important insight into the factors they identify as being important to consider when developing ADHD resources and courses for school staff (Greenway & Rees Edwards, 2020). Findings suggest an overall desire for staff to be equipped with appropriate knowledge, a range of strategies, and confidence which would enable them to provide inclusive education that meets the needs of all children in the school. Such an inclusive approach is consistent with government policy in England which emphasises the same provision of opportunities, safeguarding, and choices for all children, and where necessary, to make reasonable adjustments to ensure this (Department for Education & Department of Health, 2014).

Being equipped with knowledge, strategies, and confidence was described as necessary to teach and support children with ADHD effectively. However, participants felt they lacked these elements. Previous literature highlights that teachers' knowledge of ADHD can be quite varied (Mulholland, 2016; Shroff et al., 2017). Moreover, little is known about the impact of improving knowledge and understanding of ADHD for other staff, including teaching assistants (Greenway & Rees Edwards, 2020) even though teaching assistants are considered to be essential sources of support to children with ADHD (Blatchford et al., 2012; Groom, 2006). Few studies have explored the association between levels of teacher knowledge of ADHD and their confidence in supporting children with ADHD. Sciutto et al. (2000) report a significant, but small, positive correlation between teachers' ADHD knowledge and self-efficacy. Arcia et al. (2000) reported primary teachers felt less confident in implementing evidence-based strategies when they felt less knowledgeable about ADHD. Having a range of strategies to hand was also identified as extremely important, whether to address difficulties with learning or to address disruptive behaviours. Overall, the accounts of staff interviewed in the present study highlight that they perceive the interaction of knowledge, confidence, and strategies and that all are key to staff feeling adequately equipped to teach and support children with ADHD.

Participants also talked about wanting to create the opportunity for every child to succeed. This was closely related to knowing the individual children well through building relationships and providing support to all the children in the classroom. Positive teacher-student relationships for children with ADHD have been shown to reduce conflict and increase cooperation (Ewe, 2019), and participants in this study underscored the importance of knowing the children well so that they could be proactive in anticipating triggers for disruptive behaviour and work with the child to build positive learning experiences.

Moreover, supporting and promoting good relationships with peers has also been shown to have benefits where good experiences of peer tutoring positively affected behaviour and academic success of children with ADHD (DuPaul et al., 1998). In contrast, other studies have shown that increased classroom disruption from children with ADHD can invite bullying or baiting by peers, aggravating behavioural symptoms (Gwernan-Jones et al., 2016; Singh, 2011). In this study, participants recognised the need to support the rest of the children in the classroom, addressing lack of understanding or fear of a child with ADHD. This support is crucial as Hong (2008) reports that teachers in her qualitative study described how peers of the child with ADHD did not understand why they were not following the same rules and did not believe teachers were able to address the problem behaviour.

Staff emphasised the importance of a joined-up approach endorsed by all staff with opportunities to share knowledge and expertise. Consistency in the use of strategies across contexts (e.g., home and school) to support children with ADHD has been highlighted as

important for the effectiveness of interventions (Mautone et al., 2012; Villodas et al., 2014). Similarly, the importance of consistency across school years has been highlighted (DuPaul et al., 2011). However, research into the effectiveness of a consistent approach by all staff across the school for children with ADHD is currently lacking. Many of the participants in this study described how teaching assistants spent the most time with the children with ADHD and were invaluable in supporting these children (Groom & Rose, 2005). Thus, creating opportunities for knowledge exchange across all staff will likely be of benefit.

Training and support were related to both the need for a joined-up approach and being equipped, with opportunities to discuss strategies together and try them out in a plan-do-review cycle. Training was reported to be minimal by most participants and yet the desire for training was high. This reflects other studies where between 68-70% of teachers and teaching assistants reported inadequate training and 92-96% want more training (ComRes, 2017; Greenway & Rees Edwards, 2020). Topkin et al.'s (2015) study of primary school teachers' knowledge of ADHD suggests training should be continuous to ensure teachers are prepared to address a range of behaviours in the classroom. However, the participants in this study identified wanting training to be accessible when needed rather than at arbitrary times in the school calendar. This echoes Hustler et al.'s (2003) report on teachers' professional development which identifies the barriers of time, cost, motivation, and relevance to successful professional development that improves practice.

3.5.1 Limitations

Given that teaching assistants were considered to be invaluable in supporting children with ADHD by the participants, reflecting views in the wider literature (Farrell et al., 2010), this study would have been strengthened if more teaching assistants could have been recruited. However, when requested, teaching assistants were not able to be released from classrooms during the school day and were not available after the school day. Future studies may be able to make use of INSET days or alternative methods to explore the views of teaching assistants.

There were only three male participants in the sample of 19 school staff. Although there is limited literature in this area, studies suggest that teacher gender does not influence attitudes towards children with ADHD (Anderson et al., 2017). There may, however, be teacher gender differences in terms of which specific ADHD symptoms are viewed as problematic in the classroom (Alter et al., 2013), and therefore which strategies are viewed as needed. It is not clear as to whether the dearth of studies examining gender differences in this area is due to the relative imbalance of gender in primary teachers and education research participants or a lack of interest in potential gender differences (GOV.UK, 2021; Zhang, 2017). Future research could investigate possible gender differences when identifying pedagogical and training needs for teaching children with ADHD.

This study was primarily focused on understanding staff perspectives around ADHD and ADHD training. However, given the comorbidity of other conditions such as autism and learning disorders, further research could be directed to understanding the impact of multiple diagnoses and complex needs. Although a small number of staff mentioned children with ADHD and a co-occurring condition, the perspectives shared on supporting children and receiving training tended to focus on one condition alone. There were a number of possible reasons for this. Participants talked about identifying the child's main or primary learning issue and addressing this need first. Another consideration was that diagnoses for ADHD came later in the child's schooling than, for example, autism, and so it is possible that staff focused on the prior diagnosis. And finally, given that staff talked about many undiagnosed children displaying ADHD-type behaviours, strategies and planning were targeted at more general behaviour or learning needs. In fact, staff explained that strategies that they had been given to address ADHD, e.g. more frequent breaks and physical exercise, had been beneficial for most, if not all, of the children in the classroom.

3.5.2 Implications and conclusions

The aim of this study was to hear from teaching staff at primary schools what they consider to be important when supporting children with ADHD and what training they view as useful to them. The findings highlight that staff training is needed and desired by school staff, but addressing the identified issue of timing and the inclusion of a plan-do-review model might go some way in addressing the longer-term deterioration of reported gains in ADHD teacher training interventions (Ward et al., 2020). Training that is timely, accessible, and available to staff at the time that they are supporting a child with ADHD would be more relevant and immediately used, rather than one-off training at an arbitrary time which may not be remembered when needed. Additionally, the ability to discuss and trial suggested strategies followed by a period of review and consultation would enable staff to adapt to individual children over time. Learning different strategies to support children have been identified as one of the most important and desired elements of training, viewed as crucial in building staff confidence and knowledge of how best to support children with ADHD. The findings also emphasise the need to make training available for all staff across the school, rather than teachers only, to ensure a consistent, joined up approach of team working and shared expertise. These insights should be considered as important targets of any future ADHD training development delivered to schools.

Chapter 4 Using a Collaborative Working Group Model to Develop an ADHD Resource for Primary School Staff

4.1 Abstract

Inclusive education for children with ADHD presents challenges for school staff and professional development is lacking. Training is not always available when needed, strategies suggested by external experts can be impractical, and staff lack autonomy in choosing the best way of being resourced. Additionally, the experience and knowledge of the range of school staff is not utilised. A collaborative working group of primary school staff and a researcher explored an alternative method of ADHD resourcing. Co-construction of knowledge defines how the group discursively identified actionable knowledge from the different perspectives and knowledge brought by individual group members. A systemic framework was used to critically reflect on the collaboration. The framework enabled reflection on four areas to understand how and why the collaboration led to a published web-based primary school staff ADHD resource. Firstly, starting conditions and assumptions were considered to identify and articulate the rationale for the resource. Secondly, the context and system dynamics enabled consideration of the socio-cultural and political landscape of the project, and the impact of COVID-19. Thirdly, the different voices of participants and power dynamics were reflected on. Finally, emergence was a frame in which to elucidate knowledge production and changes in practice. The collaborative working group addressed the research-practice gap and the need for diversity of voices to be heard across the school. Knowledge co-construction positions staff as knowledge-bearers, and together with different forms of knowledge, be empowered to create new, contextualised evidence-based knowledge.

4.2 Introduction

The education policies set forth by the UK government assert a commitment to inclusion, providing for children with SEN in mainstream school, with its principles for inclusive education enshrined in the SEND Code of Practice (*Children and Families Act*, 2014; Department for Education & Department of Health, 2014). The merits of inclusive education extend from issues of social justice and human rights to critiques of current pedagogy and educational practices (Botha & Kourkoutas, 2016; Miles & Singal, 2009). However, inclusive education is not without its challenges for both children and school staff, and although professional development in this area has been deemed critical for teaching children with SEN, it has also been described as lacking impact (Holmqvist & Lelinge, 2020). In the particular SEN area of ADHD, studies highlight the relationship between increased knowledge of ADHD and positive attitudes towards the inclusion of children with ADHD in mainstream education, together with increased confidence of staff teaching children with ADHD (Ohan et al., 2011; Toye et al., 2018). This is important as ADHD can lead to challenges with learning and social interactions through disruptive, off-task behaviour, inattention and working memory difficulties (Faraone et al., 2015; Greene & Barkley, 1996). Contrastingly, children with ADHD can also bring many adaptive strengths and characteristics to the classroom, such as creativity, enthusiasm and impulsivity resulting in quick-thinking and dynamic energy for projects and group-work (Climie & Mastoras, 2015; Sherman et al., 2006). Given the UK Government's directive that professional development should improve pupil outcomes, skills in addressing difficulties in the classroom need to be balanced with skills in creating opportunities for children with ADHD to utilise their strengths (Climie & Mastoras, 2015; Department for Education, 2016).

There is little research exploring the views of school staff on professional development in ADHD which may largely be due to the lack of training for practitioners in this area (ComRes, 2017; Martinussen et al., 2011). However, studies that have sought the perspectives of teachers and other school staff indicate a lack of relevant, practical professional development opportunities in ADHD (Ward et al., 2021). One perspective that has been reported is that professional development opportunities in ADHD are not timely; training is planned by school leaders at set times but staff may not be teaching a child with ADHD at that point and so struggle to recall or apply this information when needed in the future (Ward et al., 2021). Other issues that have been reported are the unrealistic suggestions made by external professionals for supporting children with ADHD in the classroom which show a lack of understanding of the classroom context (Braude & Dwarika, 2020). Additionally, difficult to understand jargon and over-medicalised language arises because of a gap between academic, clinical, and educational contexts (Braude & Dwarika, 2020).

Consistently, the research-practice gap in education is well documented and has been identified as a barrier to research informing practice and more tacit forms of knowledge informing research (Rynes et al., 2001; Watling Neal et al., 2015). Nonetheless, the benefits of bringing academics and practitioners together to bridge this gap are considerable; for example, greater diversity in knowledge and experience, potential for quicker impact on practice, design led by users grounded in everyday practice, and differing assumptions being exposed and challenged (Honingh et al., 2018; Lau & Stille, 2014; Nastasi et al., 2000; Rynes et al., 2001).

The literature examining the effects of ADHD training interventions for teachers shows that the majority of programs designed to 'train' teachers are written and delivered by academic or clinical staff, positioning them as experts and school staff as lacking in knowledge (Ward et al., 2020). This knowledge transfer model shows limited gains in teacher knowledge and when acquired, leads to skills which deteriorate over time (Ward et al., 2020). Additionally, research findings of benefits to children with ADHD are inconclusive. A survey of UK teachers in 2017 revealed that almost 90% of teachers have experience of teaching children with ADHD and so have tacit knowledge of supporting children with ADHD in the classroom (ComRes, 2017). Although research-practice partnerships in autism are discussed in the literature (Parsons et al., 2013), there does not seem to be a similar movement in the field of ADHD. Collaborations between psychologists and teachers have been discussed in terms of implementing behavioural interventions for pupils with ADHD (DuPaul et al., 2011) but there is little exploration of research-practice partnerships where research questions derive from practice, or for teachers' professional development resources in which sharing of knowledge takes place.

This paper describes an innovative approach to the production of educational professional development ADHD resources using a collaborative working group model designed to address this research-practice gap. This model enabled the co-construction of knowledge and was used to produce a web-based ADHD resource for school staff entitled ATTIC - ADHD Tips and Tricks In the Classroom: https://attic.org.uk. Analytically, I critically reflect on the collaborative working group model through the views and experiences of participating staff using a systemic framework which aims to elucidate how and why the collaboration led us to our ADHD resource. To situate this analysis, I firstly present my theoretical and methodological approach.

4.3 Co-Construction of Knowledge

Co-construction in education 'is conceptualised as teachers collaboratively constructing knowledge, using different sources, such as the practical knowledge of colleagues, educational research literature, knowledge of external experts, and/ or collaborative research activities' (van Schaik et al., 2019, p.31). It is important that I define my understanding of collaboration and the co-construction of knowledge for this study. The collaboration in this project was between educational professionals working in schools and an academic researcher (myself) specialising in

ADHD research. Collaboration was a deliberate action as a group in discussing and critiquing current knowledge and practices, defining goals and actions to meet them, and sharing of responsibilities to produce the resource.

The co-construction of knowledge builds on this collaboration to define the way in which the tangible elements of the final resource were produced and distributed. In the ATTIC project, each individual member brought their knowledge, experience, perspectives, and skills but it was as we met together, discursively identifying the actionable knowledge that would resource school staff to support children with ADHD, that new knowledge was constructed. Working group meetings were used to define the priorities of staff, identify the needs of children with ADHD, and set goals to create the resource. This collaboration was designed to reduce the research-practice gap by recognising the different yet complimentary and equal forms of 'expert knowledge' brought by the staff and the researcher, and to recognise that the interaction between these different forms of knowledge may lead to positive change in understanding and practice for all participants (Hamza et al., 2018; Paavola et al., 2004).

Co-construction does create challenges as competing agendas and perspectives are brought together and groups must navigate their unique path. Cornwall (2008, p.278) points out that 'being involved in a process is not equivalent to having a voice', and issues of power, access, confidence, capacity, and inclusion can inhibit participation or affect its results (Cornwall, 2008; Jones & Stanley, 2010; Nind, 2014). Outcomes may be valued differently by the various participants, shaped by those they are accountable to, their own motivations or the time they are able to give to the project (Jones & Stanley, 2010; Lau & Stille, 2014).

4.4 Critical Reflection of Collaborative Work Using a Systemic Framework

Fransman et al.'s (2021) systemic framework for critical reflection on collaborative work addresses many of these issues as well as raising others, such as understanding the specific local context and the effects of interaction across boundaries. Four areas of reflection are outlined comprising: starting conditions and assumptions; context and system dynamics; difference; and emergence. The framework is based on complexity theory and this theory-based approach is particularly suited to evaluating the working group model because it considers the complex nature of collaborations. Interactions between individuals are studied, recognising the importance of contexts, systems, and change over time (Callaghan, 2008; Fransman et al., 2021; Sanderson, 2000). The use of complexity theory aims to elucidate how and why the collaboration has led to the current situation in contrast to the traditional method of simply what works and 'seeking to draw direct and transferable 'rules' for practice' without understanding the importance of the local context and its history (Callaghan, 2008, p.409; Sanderson, 2000).

4.5 Empirical Context and Methodology

The purpose of the working group was to co-produce ADHD resources for primary school staff and was established by the researcher prior to the group being formed. A collaborative working group model was used to understand the benefits of bridging the research-practice gap to produce an evidence-based and practical ADHD resource for school staff. Eight school staff members were recruited to work alongside one researcher. Emails were sent to head teachers in two local authorities who had previously expressed interest in joining ADHD research projects. Adverts were also placed on social media. Roles included a head teacher, a deputy head teacher, SENCOs, class teachers, an inclusion lead, and a behaviour manager, with two staff members having dual roles. A short bio written by each member of the group is included in Table 7. This breadth of roles was important, recognising that different forms of knowledge were equally valued and important to build a usable resource for all school staff. Financial reimbursement was provided for school staff aiming to provide parity between the staff and the researcher who received funding whilst on the project.

Table 7
Working Group Bios

Deputy Head	I have 12 years' teaching experience and 7 years' leadership experience. I wanted to be involved in this project as I think there is a need for much more information for teachers of children with ADHD. I hope the resource will provide insights to help classrooms become more inclusive, and help education professionals better understand neurodivergent brains (including learning the best ways to harness their strengths and minimise their challenges).
Behaviour manager	I have 15 years' experience in education and have supported many young people with ADHD. Meeting SEMH needs is a very important part of the work we do and I wanted to be part of developing a resource that would make a difference to more children with ADHD.
Head teacher	I have been lucky to have spent nearly thirty years as a Headteacher and my career has often been defined by the child who required me to turn upside down and look at their needs from a different perspective. I would still say that 'inclusion' runs through me, like a stick of rock and from my work locally and nationally I know that it is often children's social, emotional and mental health needs that can have the biggest negative impact on educators in schools. Finding ways to support staff to recognise and respond to need and not react to behaviour makes such a difference for pupils with ADHD, enabling them to feel valued and able to learn. I hope the resources on this website will add to a school's toolkit.
SENCO	I have been teaching since 1997 when I qualified. I spent time working as an EY (Early Years) advisor, and Specialist SEN teacher before becoming a SENCO in 2019. I became involved in the project as we have a significant number of pupils in our school who have an ADHD diagnosis, and I felt it would be good to share

	our successes and also to learn from colleagues to ensure we explore all opportunities to enable our pupils to achieve their highest potential. This resource bank is an exciting tool for all of us to explore and learn more about our young people in a positive way.
SENCO/ class teacher	I have been teaching for 8 years and a SENCO for 5 years. I got involved to develop my own understanding of how to be more supportive and inclusive. I hope this project allows other professionals to feel more confident in an inclusive classroom and how an inclusive classroom is beneficial to each child in it.
SENCO	I have 5 years' teaching experience (both key stages 1 and 2), 11 years as a SENCO in 3 different schools. ADHD is becoming more widely diagnosed and therefore every teacher needs to be equipped with the knowledge and strategies to ensure that pupils in their class with ADHD are recognised and supported so they can reach their full potential. I wanted to be involved in a project that would provide practical advice and resources for teachers that can be used within the mainstream classroom on an everyday basis.
Inclusion manager	I have been a teacher for 28 years, working in a variety of schools. Over the last 20 years my leadership roles have involved me working closely with the school SENCOs and supporting staff with inclusion.
Class teacher/ SENCO	I have been teaching for 5 years and have been SENCO for 3 years. I wanted to be involved with this project as I felt that it would be so beneficial for our school and all schools, as ADHD can present so differently in each child. I wanted to help develop resources that would support staff to meet the needs of children with ADHD to reach their full potential in school, as well as allowing them to feel fully included in school life.
Researcher	I have supported children with ADHD for over 10 years and have been conducting research projects in ADHD since 2016. I previously worked as a youth worker and an alternative education teacher. Working with young people with ADHD, and hearing the challenges they faced throughout their education, inspired me to work with education professionals to find ways of resourcing school staff to support children with ADHD.

Participants were informed about the purpose of the research which was to develop an ADHD resource for school staff, and to explore staff experiences of taking part in this participatory research project (see Appendix J). The working group model followed a pattern of monthly online video calls using Microsoft Teams. The first meeting was planned by the researcher and then in subsequent meetings, through discussion, the group prioritised an area of content to be addressed at the next meeting. Participants used an online scheduling tool (http://doodle.com) to find a suitable date to meet. Prior to the first meeting, the researcher circulated a summary of two previous research projects that had led to the planning and design of the current project: a systematic review and meta-analysis of the effects of teacher training interventions in ADHD (Ward et al., 2020); and a qualitative study of school staff perspectives on ADHD and training (Ward et al., 2021). Staff participants were also asked to complete an initial questionnaire detailing their experience and confidence in supporting children with ADHD and asking about

their expectations for the project (see Appendix K). The first meeting comprised introductions and confirmation of the purpose of the group, followed by a discussion concerning the findings of the qualitative study (Ward et al., 2021). Next, the agenda for the following meeting was discussed and decided, and finally, reflective questions about the meeting (e.g., Were you able to contribute in the way you wanted? Why/ why not?; see Appendix L) were circulated by the researcher and participants were encouraged to email their answers to the researcher. The researcher also invited the rest of the group to edit or add to the reflective questions for the following meeting. After the meeting, the researcher circulated a summary of the meeting and invited any comments or edits from the rest of the group. A similar pattern was followed for each of the working group meetings. A week before each meeting, the researcher emailed an agenda and a discussion group starter (e.g., information from a website or journal article relating to the conversation in the previous meeting) with a reminder of the date and time of the next meeting. During the meetings, the agenda and discussion starters for the following meeting were agreed and time for reflection was created. It was also decided by the group that as the school staff had more limited time to give to the project, they would focus their time and effort on the content of the resource and the researcher would focus on developing the material side of the resource.

Staff participants identified the child's voice as an important component of the resource. The Ideal School activity was used to enable children with ADHD to contribute their knowledge to the project (Williams, 2014, 2016; Moran, 2001). In this activity, staff met individually with children and invited them to talk, write or draw their responses to a variety of questions that the staff asked. The children were asked about their idea of an ideal school and what the following aspects would be like: the outside of the school; the playground; the classroom; the children; the adults; the child themselves. They were then asked the following three questions: What is important at this school? What happens when you make a mistake? What can you do if you feel angry, anxious, or happy? Staff made notes during or immediately after the conversation to capture the child's responses or annotate their drawings. Three children, whose parents had provided consent and who themselves had provided assent, contributed to the project and their responses can be viewed at: https://www.attic.org.uk/a-child-s-perspective.

It was decided that a website would be the best medium to use. This was to ensure the resource was widely accessible and staff could access the information when needed. As I was responsible for the actual website build, I used Wix (wix.com) because I had previous experience of this software.

The current analysis is based on data collected between December 2020 – September 2021. This comprised the qualitative interviews following the final working group meeting, together with correspondence between school staff and the researcher, initial questionnaires that staff completed to describe their motivation to participate and their expectations, the working

group meeting videos, reflective question responses and the researcher's field notes (Ritchie et al., 2013). A semi-structured topic guide was used for the qualitative interviews which were conducted on Microsoft Teams (see Appendix M). The topic guide focussed on participants' experiences of being involved in the working group, evaluation of the ADHD resource, and reflection on the collaborative working group model. Staff were also explicitly invited to share any other thoughts at the end of the interview.

Overall, the analysis focused on the collaborative working group process, the lessons learned and the experiences of participating school staff. The focus of the analysis was shaped by the theoretical approach, exploring how the collaborative working group model enabled the production of an ADHD resource, and so the spotlight is on the process of co-construction of knowledge rather than the resource itself.

The critical reflection presented in this paper is derived from a deductive framework analysis using the systemic framework for exploring research collaboration (a detailed description can be found in Fransman et al., 2021). Initial codes were used to describe sections of data considering the relevance to each area of the framework. Whilst there is a false distinction when trying to separate the analysis into four areas given how interconnected and influential each area is on the others, the separation can help us tease out the ways in which co-construction was helped or hindered by the model. Through an iterative process, codes were considered within each area to find common ideas and patterns of thought to establish related themes (see Appendix N). Firstly, assumptions and starting conditions were considered. Identifying and articulating the assumptions for this project provided the rationale for the ADHD resource. Weiss (1995) explained how assumptions underpin all programmes and making them explicit helps to answer the question of why it has, or has not, worked. Starting conditions relate to nested systems of the broader educational system, local schools and policies, and the working group. Reflecting on the starting conditions was important to understand the paradoxical flexibility and stability needed in these systems to enable change. There needed to be enough flexibility to explore new ideas and allowable adaptations in practice but enough stability to create boundaries for the collaboration. Secondly, the context refers to the landscape in which the group worked, considering areas of policy, socio-cultural norms, resource availability and humanitarian events. Of note was the backdrop of COVID-19 and its impact on school systems and teacher responsibilities throughout this project. Thirdly, themes were formed relating to the different voices of participants and how the collaboration led to knowledge co-construction. The different voices were considered to reflect on how the working group model enabled each participant to have the opportunity to not only share their views and perspectives but also be heard as an equal member of the group as power dynamics were exposed and challenged. Finally, themes were

used to elucidate what was produced and what changes in practice and knowledge production were seen as a result of the project.

4.6 Ethical Considerations

Ethical approval was provided by the University of Southampton Psychology Ethics Committee (ERGO ID: 61926). Informed consent from school staff was obtained prior to the start of the study, followed by parental consent for participating children, and informed assent of participating children (see Appendix O and Appendix P). Collaborative research raises challenges in the ethical approval process as the nature of the collaborative working group model is that decisions are made by the group during the process. The initial ethics application was broad enough to allow for some flexibility e.g., in the meeting schedule, but other group decisions during the project required an amendment to be approved by the ethics committee. For example, once the staff had identified including the child's voice as important, which had not been planned prior to the start of the project, the group reviewed several methods that had been used in projects with children with SEN and chose the Ideal School method (Williams, 2014, 2016). The researcher then submitted an amendment to the ethics committee to include children in the project. The minimum time period in which an amendment could be approved and implemented after submission was two weeks which slowed the ability to respond to the working group ideas. Once ethical approval was granted, staff from the working group communicated with children and parents in their schools, collecting informed consent and assent for those willing to participate before undertaking the activity with the children.

Wider ethical issues concerned the role of the researcher in the working group and how equity could be achieved in the collaboration. Sciarro (1999) used the terminology 'expert vs learner' to describe the way in which the researcher can position themselves. He described how in his own work he used his position as 'expert' to gain entry to a group but then subsequently gave up this role to become a 'learner' within the group and understand participants' experiences. Similarly, I used my position as an 'expert' in ADHD to set up the collaborative working group and invite school staff to join the group. In this sense, 'expert' was used to signify one who specialises in this area. Once the group was formed, I relinquished the 'expert' position to become a learner to understand school staff experiences of being involved in the working group. I also took on the role of co-ordinator to facilitate the group by scheduling meetings, providing discussion starters based on previous meetings, and summaries following each meeting. Given the limited time and capacity that the school staff identified that they had relative to the researcher, this enhanced the democratic and empowering nature of the group by enabling knowledge-sharing and co-construction to be the focus of our time together in each meeting.

4.7 Exploring Research Collaboration in the ATTIC Working Group

It is difficult to capture the whole story of this collaboration but here I present my reflections using themes produced through a deductive analysis (see Figure 12 for the thematic map). I then provide a summative reflection in each area of the systemic framework to provide some understanding of how and why the working group were able to co-produce this resource. The framework spans the main journey of this project, so begins with the starting assumptions, moves into making sense of the context and dynamics throughout the project, considers how the participants' diversity influenced the project, and then reflects on what emerged from the collaboration.

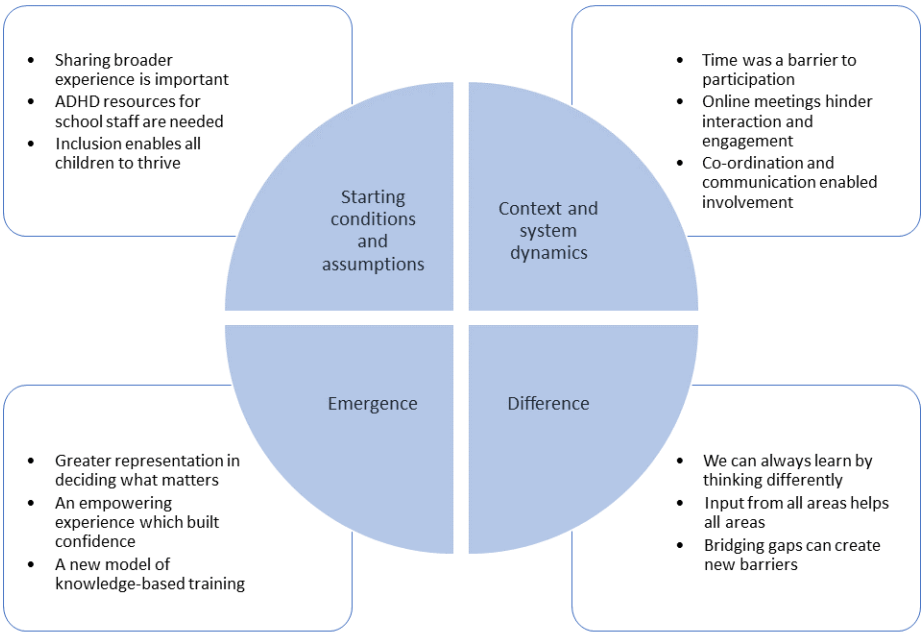


Figure 12
Thematic Diagram

4.7.1 Starting Conditions and Assumptions

This is the story of where the collaboration started. It considers what initially motivated people to get involved, what the purpose of the group was seen to be, and what would ultimately be achieved.

4.7.1.1 Sharing Broader Experience is Important. Group members described the value of meeting with other like-minded professionals, with diverse perspectives and experience, but a common interest in inclusive practice. Each thought they had valuable experience to share but would also benefit from hearing other perspectives.

> There's always something we can learn about SEN so you know it doesn't matter how much you study. There's always something new and there's always somebody else's perspective. (03)

The concepts of experience, knowledge, and skills were intertwined as participants described the collaboration between school staff and the researcher. Sharing was meaningful because it brought different forms of knowledge together, from research and in the field.

> It's educational professionals bringing their knowledge, but I think the link up with the University worked really well…The skills that people bring are all different, aren't they? University professionals bring that depth of knowledge about that particular field or about the process. (02)

However, there was acknowledgement that there can be barriers to enabling this experience-sharing to happen threatening democracy within the group. Opportunities to join research projects were perceived to be restricted to qualified teachers, rather than the wider school staff, even though teachers say they rely on support staff (Ward et al., 2021). Some participants raised concerns that they might be perceived to be less qualified or less experienced by others and, consequently, their contributions might not be equally valued. This emphasised the need to build a secure relationship of trust at the start. There was also a concern that the demands of staff roles or unexpected changes to their timetable would disrupt people's attendance at working group meetings.

4.7.1.2 ADHD Resources for School Staff are Needed. It was widely recognised that ADHD resources are needed but lacking for school staff.

> I think that there's a real dearth of information out there around ADHD for teachers. I don't…it's not something that's particularly covered in training, and it's not something that particularly much has been put in place for in school. (02)

Staff felt that ADHD was becoming more common and had a big impact on the class. ADHD resources would provide information and skills to recognise the needs of children so that better individualised support could be provided, both for staff in the classrooms and those advising them.

> I wanted to know more so that I can support staff, children, and families with more than just a gut instinct and felt the working group would be the way to do this. (08)

> I wanted it to kind of support me in supporting teachers to support the children with ADHD within our school. (07)

In fact, professional development was commonly talked about, both in terms of participating in the working group, but also ensuring that a useable, widely available resource would be produced. There was a shared assumption that bringing together research knowledge and tacit knowledge from practice would produce a better resource than one type of knowledge alone.

4.7.1.3 Inclusion Enables All Children to Thrive. A key motivator for participation was the sense that children were not being supported as well as they could be and that some children were not thriving at school because of their ADHD. It was recognised that meeting all the children's individual needs was a huge challenge and yet staff were committed to keeping inclusion at the heart of their school. One staff member wanted to support the production of a resource because of their own school experience of specialising in social, emotional, and mental health needs which could help others.

> I think, you know ADHD, obviously we specialise in children with social, emotional, and mental health needs, which includes ADHD, and I see so many children from so many other schools who fail to thrive really, and it just seems wrong. It makes me, actually, very very cross really, because I think…you wouldn't…teachers wouldn't do that with any other type of disability and difficulty, and yet it seems OK to do it when it is a social, emotional, and mental health need. So, I think anything that can support that. I do feel very passionately about it. (05)

At the core of the whole project, was the sentiment that this was for the benefit of the children, that it was about raising awareness and support for schools, so that children with ADHD would be better supported.

> I wanted to be part of developing a resource that would make a difference to more children with ADHD. (06)

4.7.1.4 Summary of Starting Conditions and Assumptions. These starting conditions and assumptions were the bedrock of this collaboration. They highlight that we recognised the democratic value that knowledge is situated in different places and a dynamic collaboration between those in research and in practice would address the need for staff resources. However, to achieve democracy, we knew we had to create a safe space in which different, and sometimes competing, ideas could be shared, considered, and discussed. This was important for ensuring the resource was co-constructed as each person's contribution, from both research and practice, was valued and shaped the resource. We anticipated that there would be barriers to participation,

particularly regarding time, and this influenced our working practices which I will elaborate on later. Our commitment to create a resource that would benefit children with ADHD provided a filter through which to review the resource at each stage.

4.7.2 Context and System Dynamics

There are several layers to understanding the context in which our project was situated. The wider context is that of inclusive education and this agenda provided the impetus and opportunity for staff to take action; joining the working group was one particular opportunity. Next was the background of COVID-19, which had a huge impact on the project in both positive and negative ways. From there was a layer of the availability of our resources, i.e. our group members, in terms of time and capacity. And within that, we were all grappling with a new way of working and challenges to find a consensus.

> It is hard initially whilst people get to know one another as well as get their heads round the focus for the project. (08)

4.7.2.1 Time was a Barrier to Participation. Time in a school context is always pressured and staff felt it was the type of profession where you can set aside time for things but something may happen without warning to disrupt your plans. The project took place between February – July 2021. The impact of COVID-19 meant that staff time was further reduced as, for example, extra gate and road duties were introduced to enable social distancing at the start and end of the school day. Additionally, staff were covering classes for self-isolating colleagues and providing both in-person and online teaching.

> COVID has affected some of the stuff that's going on in school, so I think potentially it's had a bit of a knock on effect and meant that people aren't available some of the time…we've had road closure duties, we've had gate closure duties, you know there there's all sorts of additional things that we are doing in school as a result of the fact that…COVID is around, so you have to change the way you're managing it, and that means a greater staff presence in order to ensure the safety of everyone. (03)

In fact, time was one of the biggest issues that affected staff participating in the working group. It was difficult to find a time of day that suited all staff given that some were in classes throughout the day, meetings with colleagues, external professionals and parents often happened at the end of the school day, those with multiple roles felt overwhelmed by demands, and the specific time of year included additional activities.

> I do just think it's about timing and about what a hectic year that we've had in school. A lot of the lockdown kind of played into it as well, in that I had no release time over the lockdown. I was teaching full time 'cause I had no TA. So then after lockdown finished, I had a backlog of work as well. So, there was just so many different factors that come into it. (07)

The issue of time was closely linked to support from the senior leadership in the school. Staff felt that having the support of senior leaders enabled them to prioritise the working group, even when school was busy and extra demands were being placed on them.

> Getting head teachers signed on board. So, I've been able to say to our head teacher, “Actually, I've got the ADHD project group meeting. Would you rather I missed that or would you rather I did this?” So, actually, putting that across and because we have a significant proportion of children with ADHD, I think, that was the bargaining chip. (03)

Having said that, this staff member also found that even with a supportive head teacher, they were not alone in experiencing instances when something else was prioritised over the ADHD project.

> School is constantly morphing and if there's a three-line whip, you can't argue, “I've got my ADHD project,” you just can't. And that happened to me on one evening and the head teacher just said, “No, I'm sorry, you are doing the training.” With two days’ notice. (03)

This issue of time underlines the threat to democracy mentioned earlier. One mitigating factor for this pressure on time was that COVID-19 forced us to meet online which saved time as there was no travel needed and staff could participate from school or at home.

4.7.2.2 Online Meetings Hinder Interaction and Engagement. However, in terms of space, the online format was generally perceived to hinder interaction and engagement. The group felt it took longer to get to know each other, it was hard to take a step back when you felt attention was on you throughout the call, and virtual meetings make it more difficult to interact and engage. Staff talked about the small, seemingly insignificant conversations when you enter a room or make a cup of tea, which help you to relax and get to know each other.

Some said they found it harder to concentrate online in comparison to being in the same room with others and felt they would have been more productive in person. Similarly, as building relationships was more difficult, factors such as body language to gauge other people’s opinions felt more important.

> I'd rather sit with people, so I struggle with that bit really. Yeah 'cause I just think it's… you can read people's body language and stuff when you're sat in a room with them. So actually, if you're talking utter crap, you can see that in somebody else. (06)

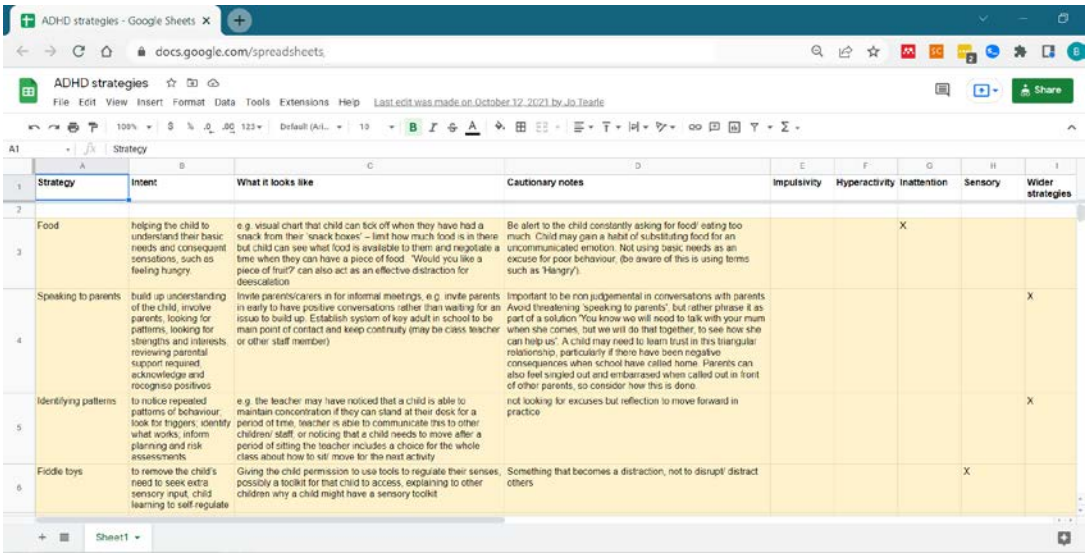
The technology itself was not a barrier and several staff explained that the rapid learning curve transferring to online learning in the first COVID-19 lockdown had stood them in good stead for online collaboration.

4.7.2.3 Coordination and Communication Enabled Involvement. As well as bringing my own expertise and knowledge as a researcher to the working group, I also saw a key part of my role as being a facilitator for the group. I had more time to write up agendas and meeting notes, source information, and manage schedules than the staff participants. This meant that, for the staff, meetings and any time given to the project between meetings, could be directed towards the resource and its development rather than administrative tasks. This was a deliberate decision to maximise the time the group had in the co-construction of knowledge.

> I think that the way that you were able to oversee and run it meant that it flowed a lot better. I think if it was just education professionals, I'm not sure it would have flowed quite that well, just in terms of you were able to send through agendas, sum up what we've done. (02)

The technology used also played a part in enabling full participation. Microsoft Teams had some useful features beyond the video calls by providing an online space in which to gather information, e.g. pinboards, embedded PowerPoint slides and shared files, and one teacher also set up a Google Doc which the group were able to access and use to collate information (see Figure 13). This had an added benefit that people still felt involved if they missed a meeting and could ensure they were up to date by the next meeting.

> So just being able to go into the Google Docs and add things if you needed to. Or you know, sharing the links and things so, in that way, I felt I was involved. And just having the summary of the meetings. It was done in a really good way. (04)



Strategy	Intent	What it looks like	Cautionary notes	Impulsivity	Hyperactivity	Inattention	Sensory	Wider strategies
Food	helping the child to understand their basic needs and consequent sensations, such as feeling hungry.	e.g. visual chart that child can tick off when they have had a snack from their 'snack boxes' – limit how much food is in there but child can see what food is available to them and negotiate a time when they can have a piece of food. "Would you like a piece of fruit?' can also act as an effective distraction for deescalation	Be alert to the child constantly asking for food/ eating too much. Child may gain a habit of substituting food for an uncommunicated emotion. Not using basic needs as an excuse for poor behaviour. (be aware of this is using terms such as 'Hangry').			X		
Speaking to parents	build up understanding of the child, involve parents, looking for patterns, looking for strengths and interests, reviewing parental support required, acknowledge and recognise positives	Invite parents/carers in for informal meetings, e.g. invite parents in early to have positive conversations rather than waiting for an issue to build up. Establish system of key adult in school to be main point of contact and keep continuity (may be class teacher or other staff member)	Important to be non judgemental in conversations with parents. Avoid threatening 'speaking to parents', but rather phrase it as part of a solution 'You know we will need to talk with your mum when she comes, but we will do that together, to see how she can help us'. A child may need to learn trust in this triangular relationship, particularly if there have been negative consequences when school have called home. Parents can also feel singled out and embarrased when called out in front of other parents, so consider how this is done.					X
Identifying patterns	to notice repeated patterns of behaviour, look for triggers, identify what works, inform planning and risk assessments	e.g. the teacher may have noticed that a child is able to maintain concentration if they can stand at their desk for a period of time, teacher is able to communicate this to other children/ staff, or noticing that a child needs to move after a period of sitting the teacher includes a choice for the whole class about how to sit/ move for the next activity	not looking for excuses but reflection to move forward in practice					X
Fiddle toys	to remove the child's need to seek extra sensory input, child learning to self-regulate	Giving the child permission to use tools to regulate their senses, possibly a toolkit for that child to access, explaining to other children why a child might have a sensory toolkit	Something that becomes a distraction, not to disrupt/ distract others				X	

Figure 13
Google Doc for Collating Strategy Information

4.7.2.4 Summary of Context and System Dynamics. The greatest potential barrier to democracy and co-construction was time. It was a challenge to ensure each person's voice and experience was heard when individual members were unable to attend a group meeting. However, the use of an online space, together with summary notes, did mean that staff who missed a meeting could still contribute online and catch up with the discussion before the next meeting. Although meetings were recorded for data analysis purposes, these recordings were not shared with members of the group if they missed a meeting, and this was never requested by members of the group. Meeting online, whilst not preferred in terms of engagement and interaction, was recognised to have this inclusive benefit.

In terms of dynamics, as the researcher I also noticed that working in this context led to some interesting shifts across the course of the project. Fransman et al. (2021, p.335) described change within collaborative groups as being 'episodic' and 'multiscaler'. These terms aim to capture the irregular magnitude and timing of change or shifts in the collaboration over time. One such shift that occurred early in the project was that of ownership. Although the purpose of the project, namely creating an ADHD resource, was established by the researcher prior to the start of the project, the aim was to enable co-construction of knowledge by the whole group to produce the content and design of the resource. This transfer of ownership from researcher to the group was initiated in our first meeting as we began to share knowledge and hear each other's perspectives. I shared a summary of an earlier qualitative study of staff perspectives on ADHD resources (Ward et al., 2021). The staff then added their own views and ideas, for example, including the child's voice as being crucial to shaping our resource. This discussion began the process of the group as a whole, ensuring both staff and children's perspectives were considered as we moved forward.

Another shift occurred later in the project in terms of knowledge co-construction. We wanted to include information on recognising ADHD in the classroom. I shared some clinical and research-based literature with the rest of the group who then shared their own experiences of supporting children with ADHD in the classroom. Through sharing this varied knowledge, one of the group members wrote a webpage specifically designed to enable staff to recognise ADHD in the classroom and shared this with the group for editing in our online space.

4.7.3 Difference

Within complex systems, change occurs when there is some instability or restructuring, as people adapt and construct new ways of working. However, such change must be neither too chaotic nor too rigid (Rose-Anderssen & Allen, 2008). 'It is the middle ground between these extremes, characterised by diversity and multiple possible pathways…where action can be taken' (Fransman et al., 2021, p. 333). The working group was designed to cross boundaries and bridge gaps as we sought to bring different types of knowledge together. We aimed to not only bring these diverse voices together, but also provide space for each voice to be heard and celebrated (Bakhtin, 1981). However, there also needed to be some common ground and some boundaries within which we could work.

4.7.3.1 We Can Always Learn from Thinking Differently. The benefit of joining a working group with staff from different schools and the University meant that multiple perspectives were brought to the table.

> There was a wide range of schools involved, and it wasn't even just schools from our cluster, it's from people who got really different experiences coming into it. So there's things on there that I would never have thought of, would never have thought to try, so it just gives a much wider perspective on it. (01)

By sharing and receiving from people with diverse experience, the group was able to look at issues in multiple ways, consider different approaches and bring ideas together. Of particular note to the staff was listening to different school practices, talking with people that they would not normally cross paths with, and considering suggestions that they may have previously dismissed. Staff felt reassured that other professionals experienced similar challenges – that common ground - which not only encouraged them in their day-to-day practice, but also contributed to the feeling of the group being a safe space in which they would be understood.

> When you've got perspectives from other schools, it does really help. You know, schools in different environments as well. You know, it's nice to see it's not just us. (03)

4.7.3.2 Input From All Areas Helps All Areas. By bridging the gap, not only between research and practice but also, by bringing together school staff with different roles within a school (e.g., head teachers, SENCOs, teaching assistants, class teachers), we were able to think more widely about the needs of children and the multiple ways in which different staff support them. The working group demonstrated that all were involved, and all voices were valued, contributing together to the actionable resource that was produced. Some staff noted that, in their experience, opportunities to take part in research projects were limited to teachers and lacked the diversity we had.

> The joy, if you like, of having a more multifaceted group of people is that it doesn't exclude people. People don't look at the list of who was involved and think, 'Oh that's just the Head so yeah, actually they've got nothing they can tell me,'…it gives a wider appeal but also it does bring different perspectives and is important because, in truth, something like supporting a child with ADHD, everybody does have a very different perspective, don't they? From the parent to the LSA, to the class teacher to the NQT. So…I think…it can be very levelling and actually [we have] …a resource that has drawn on a wider range of people. (05)

Staff thought that this crossing of previously held boundaries would lead to wider appeal for school staff because users of the resource would see that they were represented in the group that created it. Additionally, the group saw the importance of bridging the research-practice gap, bringing research-based evidence together with educational professionals' knowledge, to inform changes in practice.

> I think it's really valid that it's educational professionals bringing their knowledge, but I think the link up with the University worked really well…The skills that people bring are all different, aren't they? (02)

> It's so important that we do still have that…commitment to evidence-based learning and using that evidence to inform improvements in practice. It's vital, isn't it? (05)

Similarly, we discussed the importance of the language that is used when bringing academic knowledge into a practitioners' resource. The language used on the website needed to be readily understood and relatable to the school context in which it would be used.

> Working with a headteacher who is so knowledgeable and has such an academic understanding of things can sometimes make you feel that what you say and understand isn't academic/professional enough but through the discussions and creation of resources I was able to see that that it's a balance and also as a teacher resource, how a teacher puts it is sometimes more accessible for professionals, especially when in need of support. (08)

4.7.3.3 Bridging Gaps Can Create New Barriers. It was a deliberate decision to bridge the gaps that we have identified and yet we found that barriers emerged in their place. We have mentioned time as one of the biggest barriers in this project, and attempting to bridge different roles, schools, part-time and full-time staff, made it difficult to get everyone together. Staff described feeling disappointed when individuals missed meetings because they wanted to hear their perspectives on particular issues. Similarly, those that missed a meeting felt like they had let the group down.

> I don't like letting people down and I really feel like I let the whole team down. So yeah, I would [do a project like this again], but I would want to make sure that I have the time to do it. (07)

The online environment contributed to this as the group felt it took longer to get to know each other online and so if someone missed a meeting, it felt more significant in the development of relationships.

Schools have relatively fixed identities attached to roles and hierarchies within the system. The challenge was to see whether we could set these aside and be more dynamic in our interactions.

> A lot of it is my issue because I have to get my head around, actually when it comes to a lot of this, I do probably know as much if not more than others but I always think people are instantly judging [me] …because that's what's happened in the past, and does happen. Now instantly I think, “Well, they’re gonna be judging on that there.” (06)

In fact, this staff member found that their confidence grew over time because they did feel they were treated equally. But it does highlight that reflection throughout the project, not simply at the end, was vital to continuously identify any barriers as they emerged and find ways to overcome them.

Interestingly, barriers created by bridging research and practice were less evident. One explanation may be that individuals also bridged that gap. Several school staff had completed

postgraduate qualifications, including at Master's and Doctoral levels, and the researcher was a qualified teacher who had extensive experience of supporting children with ADHD.

4.7.3.4 Summary of Difference. Difference is described as necessary to create the spark that leads to innovation (Boulton et al., 2015). Collaboration needs to cross boundaries and the dynamic interaction of diverse people creates change within the system. We brought together different perspectives, with input from multiple areas, and sought to bridge gaps. What is important to recognise is that not only was there dynamic interaction within the group, change also occurred within each individual, which in turn fed back into the group. Differences themselves are not static and so throughout the project, ideas and interactions worked as continual feedback to shape the final outcome. For example, the staff member who expected to be judged negatively felt powerless at the start. Through positive interactions with the group, her confidence grew, and her contributions increased which in turn influenced group interactions. Whilst each person experienced change over the course of the project, the nature and magnitude of it was different for everyone. One staff member was surprised that a certain strategy, the use of fidget toys, was used by others and explained how it was not accepted in their setting. Through challenge, discussion and listening to alternative explanations, information for strategies in the resource was shaped with clear explanation of intent, practice, and cautionary notes reflecting the contributions of all members. Difference was also expressed through each person's reflections on the project, considering how and why our collaboration brought us to our published resource, and the lessons we learned along the way.

As different voices were heard, challenged, considered, and compared, the group moved forward as the resource was co-constructed but also individuals moved in their ideas and perspectives, which in turn fed back into the group. This ever-evolving cycle improved the breadth and depth of our resource. In our group of nine people, there were also neurodivergent members and parents of neurodivergent children. However, we recognized that there were still gaps and space for greater diversity. We were all women and although there was some demographic variation in school settings, we only drew from two neighbouring local authorities in the south of England. In terms of experience, only two school staff members reported having received prior ADHD training. The group also felt that including the voice of children with ADHD was important, but we were only able to include three children using the Ideal School activity (Williams, 2014, 2016; Moran, 2001). Given the individualistic nature of ADHD (Sonuga-Barke & Thapar, 2021), the voice of the child may have been better represented with more child participants.

4.7.4 Emergence

Emergence describes the process during which the roles of the individual participants, resources and tools are developed within the working group. This process was interactive in nature and culminated in a new pattern of growth and sustainability which led to the published

resource. Firstly, I examine representation within the working group and the effects of widening diversity. Then I reflect on the empowering nature of the group as power dynamics changed over time, and the effects of these changes, particularly for those with less experience or less senior positions. And finally, I consider the resource built through co-construction of knowledge and the lessons learned along the way.

4.7.4.1 Greater Representation in Deciding What Matters. We discussed the importance of diversity in the working group to be able to bring together multiple perspectives and create a resource that is usable by a variety of school staff. Staff described their disappointment when they, or other members of the group, were unable to attend meetings because they wanted the resource to be developed by a representative group of staff. Additionally, capturing children's voices in the Ideal School activity demonstrated to the children that staff were wanting to find ways to support them.

> The voice…the Ideal School…that's something that's really beneficial for them, especially…and lots of our children, especially the older ones, they know that they've got a diagnosis of ADHD, so I think it's helpful to them to know that we've got an understanding and that we all we want to put strategies in place to help support them. And looking at strategies that they think work for them. (04).

There was also greater representation in deciding what matters when evaluating the resource. On a practical level, the group were concerned with the usability of the site, as the layout was designed to ensure quick and easy navigation to relevant information. However, discussion about evaluation was closely linked to the aims of the resource and centred around how staff might use the website in practice. The group wanted to develop a resource that placed agency with the user, so that visitors to the site were empowered to choose which information was needed when supporting a child rather than having a more prescriptive approach given to them. This resonated with the aim of giving more ownership to staff rather than relying on one 'expert' within the school to prescribe strategies and approaches.

> Because, at the moment, sometimes I feel like I'm in a meeting and someone comes to me, and I just tell them how to do it. Whereas this puts the ownership back on to people that are with that child, and rather than me saying, 'Oh I had a little one who was a bit similar, so this is what we did, give that a try.' And this is saying like, these are loads [of strategies]…some of these I haven't tried, some of these I don't want to try, some of these I've done lots

> of. And then putting it back on to them, because ultimately [they are] there every day with the child. (01)

Alongside this sense of ownership, staff also wanted to know how useful the resource would be to staff with different levels of experience and supporting individual children who may present with a diverse range of needs.

4.7.4.2 An Empowering Experience Which Builds Confidence. Identifying and reflecting on the power dynamics within the group highlighted the hierarchy that exists within a school context. We had members of the group from the senior leadership team as well as non-teaching staff. Years of experience in education ranged from five to over 35 years and staff ranged from feeling 'not very' to 'very' confident in their ADHD knowledge and support of children with ADHD. For staff to be able to take ownership, they need to feel empowered and confident in their roles. This was illustrated in the experiences of the members of the working group. Several staff described their motivation to join the project being rooted in a desire to build confidence in themselves, both for their own practice and to be better able to support other staff members. Several staff explained how their confidence in the working group developed over time. This was an important aspect of the working group model which highlighted the need for planning multiple meetings spaced apart to cultivate relationships.

> It's about self-confidence really, not wanting to say or suggest the wrong thing. Over time, as with any group, self-confidence, and trust builds. (08)

This confidence was not only about feeling comfortable in a new group but confident in the knowledge and experience that they were bringing to the group. Members of the group described how they often felt unable to challenge school policies or give a strong enough rationale for the strategies they were suggesting, but having their ideas and suggestions validated by a group of professional peers was empowering.

> What I did learn was things about myself that, actually, I do know more than what sometimes I give myself credit for. (06)

This was particularly important for staff members with fewer years of experience or those that were in less senior positions who sometimes felt they had less power in decision-making because of their status. Staff explained that being on the project has given them currency and confidence to provide evidence as a rationale for their proposals.

> I think my transition handover to his year one teacher will be really strong because I can say I've done this [project]. Like the food - he wants to eat all the

> time and this [picture card] really helps him to understand that he has eaten, or he writes better when he's got his shoes off. And that's not because, you know, I'm just airy fairy like, "Oh yeah, take your shoes off!" but actually it really does work for those sensory needs he's got and how he feels when he's sitting in the chair. And so, I feel like being able to say I was part of this [project], I can say, well actually it's backed up. (01)

4.7.4.3 A New Model of Knowledge-Based Resourcing. The co-construction of knowledge in developing this resource challenged traditional knowledge bases to recognise that knowledge was situated in practice and in research literature. Knowledge was also situated throughout the hierarchy and diversity of roles within the school which provided the understanding that all the different roles of school are bringing knowledge.

> You know the input was there from other areas [of school]…I think making it exclusively teachers would almost be disastrous in the sense of ...what does it look like from learning support ways? How does that affect them? (06)

Co-construction also provided a way of bringing the broader research or clinical knowledge into focus for scrutiny of how this compares to the knowledge gained through experience of supporting children with ADHD in school. Staff were able to create the resource in a way that took the different forms of knowledge and applied it into the school context.

> I think sometimes a lot of the things that you look up online can be kind of more from a medical point of view, but what's going to work practically in school, and that's, I think, that's what I quite liked about the strategies, is there are things that are workable in the classroom because sometimes you look at the advice and you think, "Well, that's impossible for me to manage that. I'm like one teacher and one teaching assistant. I can't do that." (04)

There was also a challenge to traditional training from a deficit-based model (i.e. an expert to a 'non-expert' practitioner) to a bank of resourcing that can be used in ways needed by the practitioner (Clarke & Hollingsworth, 2002). Staff were involved as knowledge bearers producing a resource for other knowledge bearers, yet mindful that there is always more to learn or a different perspective to consider.

> Some of the ideas and sources are great launch pads for staff to use and then do further research about…they could take some of the information on it on

> board, change their approach to the provision they provide and make a difference to that child. (08)

> I love that we've developed something that I as a professional would find like, even now, even now with my wealth of experience [laugh], would still find useful. I think that's great. Really exciting. (02)

A consideration for future development would be to incorporate some form of collaborative space where visitors to the resource could discuss their practice and share ideas on an ongoing basis.

However, the model was not infallible, and lessons were learned along the way. The decision to work online was pragmatic in the face of a global pandemic and brought both positive and negative impacts. A hybrid model was suggested, in which the benefits of initial interpersonal face-to-face connection for building relationships would be combined with a series of online meetings to save time. Additionally, the online space provided a repository to collate information, a different forum for discussion and development of ideas, and a way of keeping people informed when they did miss a meeting. Pre-establishing meeting times may ensure dates are in the diary far in advance but do not take into account the 'things come up' nature of school life. However, we felt it would be a worthwhile change to trial in future. We felt the group would have benefitted from greater diversity which could be addressed through broader recruitment processes with a longer lead time and targeting of specific roles across the school.

4.7.4.4 Summary of Emergence. The collaborative model aimed to bring transformative change to the way in which school staff resources in ADHD are constructed and function. To this end, diverse representation enabled a breadth of voices including the voice of the child to be heard in not only the content of a resource, but also in determining what matters to staff when evaluating it. Alongside this, the resource was designed to give ownership to staff in their support of children with ADHD through their engagement with the material. Transformation also happened in terms of power dynamics. Members of the working group felt empowered to share their knowledge and took pride in promoting the resource to colleagues. This was particularly noticeable for those who, traditionally, have less power due to their lower status on the staff team or less experience than others. Over time, as confidence grew, staff recognised that each person's knowledge and experience was important to bring breadth and depth to the discussion. There was also transformative change in the nature of the resource. The information brought together knowledge from research and practice, contextualised, and tailored to the school environment. Additionally, the resource would enable staff to take and use information as they needed it, whatever their previous experience.

4.8 Discussion

In this paper I critically reflect on the experiences and perceptions of a collaborative working group guided by the principles of co-construction to create an ADHD resource for school staff. The ATTIC collaborative working group was built on the following starting conditions and assumptions: sharing broader experience is important; ADHD resources for school staff are needed; and inclusion enables all children to thrive. The context in which this collaboration took place was inclusive, primary education in the UK, heavily influenced by the COVID-19 pandemic. Time was a barrier to participation, the necessity for online meetings hindered interaction and engagement, but co-ordination and communication overcame some of these barriers and enabled involvement. Diversity within the working group produced the context in which co-construction could be realised and the group shared values that we can always learn from thinking differently, input from all areas helps all areas, yet bridging gaps can produce new barriers. Overall, we reflected on achieving greater representation in deciding what matters in developing and evaluating the resource, it was an empowering experience which built confidence and we developed a new model of knowledge-based resourcing.

Given the merits yet challenges of inclusive education, and the lack of timely and appropriate professional development opportunities, this study aimed to explore this new model of collaborative resourcing. Employing co-construction of knowledge by school staff and a researcher bridged the research-practice gap as well as addressing the need for readily accessible and practical professional development resources. Co-construction also confronted the traditional notions of where knowledge is situated and recognised that knowledge resides in both research and practitioner domains, and across the breadth of practitioner roles. The challenges of co-construction were overcome through our shared motivation for developing confidence and resourcing for supporting children with ADHD, although time remained a significant hurdle throughout.

The systemic framework enabled reflection on the working group model and provided insight into how collaboration shapes and is shaped by bringing together diverse voices to co-construct knowledge (Fransman et al., 2021). The lessons learned are practical outcomes that can be applied to future working groups, recognising that this framework helps us to understand how and why this particular collaboration worked rather than providing a strict set of rules that can be applied elsewhere. However, identifying questions to be considered and practices to be refined will be useful in planning for other groups.

One strength of the working group model was empowering school staff to present their knowledge and challenge the status quo in how staff professional development resources are created. More than this, the working group gave agency to school staff in producing a resource that gives ownership to the practitioner as they use it; crucial elements in producing contextually-

based best practice (Ketelaar et al., 2012; Lambirth et al., 2019). Ownership is thought to lead to a change in practice because it signifies a psychological investment as the owner of an innovation (Ketelaar et al., 2012). As an owner, the professional then links their identity to the innovation and personally invests time and energy in their own practice and their communication with colleagues (Breiting, 2008; Ketelaar et al., 2012). Although the literature, and government directives, concentrate on teachers in its focus on school improvements, I wanted to include the wider staff team who often provide more support to children with ADHD (Department for Education, 2016; Groom & Rose, 2005; Lambirth et al., 2021). Additionally, including the voice of children with ADHD through the Ideal School activity has not been reported previously in the literature exploring development of teacher training resources (Williams, 2014, 2016; Moran, 2001). This was very important to the school staff who wanted to ensure that children would benefit from the resource and that children would know that staff are wanting to learn how to better support them. The fact that staff members already known to the children were able to do this activity meant that children were already familiar with the adult and made both recruitment and sharing information about school experiences easier. This extends the 'nothing about us without us' construct from the school staff participating in resource development, to children with ADHD who will benefit from the resource (Charlton, 2000). Co-construction was facilitated through creating the safe and democratic space where knowledge from all areas of school was welcomed and discussed. This stimulated the sharing of knowledge from all group members and the construction of new knowledge as adaptation to the school context was made. Group members had the opportunity to reflect on the working group process week by week, and at the end of the project, to refine the model and identify the way in which the collaboration worked. Contemporary learning theory provides an explanation of how this cyclical process of knowledge construction, enaction and reflection, leads to change through personal and professional development (Clarke & Hollingsworth, 2002). By including representatives across the range of school roles, all school staff can then see how their own professional practice can be developed.

There were some limitations to this study which could be addressed in future projects. School staff were involved in many aspects of this project e.g., making decisions about the content and design of the resource, writing sections of the resource, reflection on the process, together with evaluation and dissemination of the resource. However, given the time constraints for the project and the demands of their school roles, they were not involved in the initial design of the project and had limited opportunity to contribute to the writing of this paper. Future projects could explore ways of enabling staff and researchers to work together through all phases of the work. Several staff members talked about their lack of confidence in the first few working group meetings due to their sense of their own professional capital (Nolan & Molla, 2017). This inhibited their contributions at first and towards the end of the project, they felt that they were

now able to contribute more and were disappointed that the group would no longer be meeting. Self-efficacy is known to be strengthened by participation in career-development activities and validation by colleagues, which would explain why confidence grew over the project (Maurer, 2016). A context-specific factor which may have contributed to this hesitance was the nature of online meetings which slow the development of trusting relationships in comparison to face to face meeting (Mallen et al., 2003). To overcome this, a hybrid set of meetings was suggested by staff, with initial meetings being face to face to begin the process of fostering relationships, followed by online meetings to maintain efficiency and good use of limited time. Although there were nine members of the working group, numbers attending each meeting ranged from three to nine each time. On reflection, staff identified various reasons for this e.g. the nature of school life and unanticipated meetings, duties or cover requirements significantly increased by COVID-19. This was anticipated during recruitment. Size of group is closely linked to productivity and group dynamics with a group of three to four people have been shown to be more productive than larger groups (Wheelan, 2009). However, this was balanced with a desire to enable the difference discussed earlier produced by a diverse set of voices. Together, these factors led to us recruiting eight school staff to work with one researcher. However, this raises the question of whether a smaller group would have made it easier to reschedule meetings quickly to ensure all could attend and may have meant individual group members would feel their contribution was more necessary.

Financial reimbursement for time was offered to all participating group members but was felt by school staff to be unnecessary as they saw their participation as part of their school role. More than that, some staff felt it was inappropriate as the children were supposed to be benefitting from the project and so several staff decided to put the money towards resources for children in their schools.

The ATTIC project provides a useful model for collaborative working groups comprising school staff and university researchers. This model addresses both the research-practice gap and the need for diversity of voice across the school. Knowledge co-construction positions staff as knowledge-bearers, bringing their expertise to the table where other forms of knowledge are present, and through discussion and reflection, create new, contextualised, evidence-based knowledge. Consistently, the traditional knowledge-transfer model is challenged due to its limited time effects, little impact on educational outcomes for children, and lack of contextualised resourcing for school staff. The resource is designed to give ownership to staff with material that they can adapt to their own context and individual children. The model raises questions around how we empower staff at all levels to feel confident in sharing their knowledge and address barriers to involvement, and specifically addresses the need to go beyond teachers to the wider

school staff. Although this resource is focused on ADHD, the model could be used to develop any aspect of educational practice in a collaborative way.

Chapter 5 General Discussion

The aim of the research conducted within this thesis was to explore how best to resource school staff so that children with ADHD can thrive in school. This chapter provides further insight into the programme of research as a whole and aims to explore the implications that derive from each study. Contributions to practice and the broader field of research are considered, and concepts of co-construction of knowledge, voice, and power are brought into focus and reflected upon.

The first two papers contribute to our understanding of current practice, views and needs related to ADHD and teacher training. Firstly, the evidence shows that ADHD knowledge is important for school staff, but the knowledge transfer model of training is not working. Additionally, exploring ways to impact behaviour is essential. Secondly, school staff perspectives need to be heard so that resources can directly meet those needs. Resources need to build knowledge, confidence, and provide a range of practical strategies to equip school staff in supporting children with ADHD. To this end, staff perspectives need to be included in the design and construction of training resources for ADHD. Specifically, ADHD resources need to be accessible, with the flexibility of facilitating an autonomous approach, enabling staff to make use of them when required, and in a manner that they deem to be most appropriate for the children they are supporting. The third paper in this thesis demonstrates how a collaborative working group model addressed these issues and resulted in the production of the ATTIC resource.

5.1 The Knowledge Transfer Model of Training Is Not Working

Initially, it was important to understand the current fields of research and practice relating to ADHD teacher training. The first step in this programme of research was to examine the literature and understand the effects of ADHD teacher training as published in research studies. This was accomplished through a systematic review and meta-analysis (Ward et al., 2020; Paper 1). The included studies within this review showed that ADHD teacher training interventions were based on a knowledge transfer model in which experts (academics and clinicians) provided information on ADHD, including aetiology, symptoms, treatments, and classroom strategies. Although teacher training within schools is not typically delivered as part of a research intervention, the mode of delivery matches what is most often provided, both in terms of the knowledge transfer model, and the heterogeneity of approach (see section 1.6.1). Therefore, this study achieved the aim of understanding the current style of ADHD teacher training and the probable outcomes for changes in teacher knowledge, teacher behaviour, and pupil behaviour.

The evidence provided suggests that the knowledge transfer model of ‘expert’ academic or clinical delivery of ADHD training has limited success. Immediately following training, teacher knowledge of ADHD increases. However, within three months, levels of knowledge deteriorated

for most teacher participants. The two studies which showed sustained knowledge retention either delivered a booster session or provided a significantly more intensive training programme overall. The rest of the studies delivered one session of between two and two and a half hours. This session length seems to be representative of typical school training, often delivered on school INSET days. There is a lack of published evidence regarding the amount of ADHD training UK school teachers might receive as part of their professional development. However, during interviews for my qualitative study (Ward et al., 2021; Paper 2) many staff reported having received no specific ADHD training, with those that had experienced training reporting one session at most. The short duration of training is supported by online advertisements for ADHD school training sessions offering a one-off two hour session (Simply Education, 2020; Somerset County Council, 2022). Booster sessions or more intensive programmes may be one solution to increasing the success of training but probably impractical amongst all the other training needs identified for school staff or as recommended by Ofsted (Ofsted, 2021; TES, 2020). This raises implications for a staff member whose training occurs several months, or possibly, years removed from when they are required to support a child with ADHD. It is likely that they will not have retained sufficient ADHD knowledge to provide high quality support for that child. Given the importance of teacher ADHD knowledge previously discussed (see section 1.5.1), this current model is not satisfactory. Consistently, 29% of teachers from a national UK survey agreed that they did not receive an adequate level of ADHD training and support, and it has been identified as a training need by the All Party Parliamentary Group for ADHD (ComRes, 2017; House of Commons, 2018). The evidence from this research suggests an alternative approach is needed which ensures knowledge can be obtained and used as and when it is needed.

It is worth commenting on a key element of the meta-analysis. Understanding the risk of bias is good practice for ensuring the credibility of syntheses, providing confidence in the conclusions, and enabling careful consideration of the study's contribution to the field (Higgins et al., 2016; Page et al., 2018). In this study, the risk of bias was medium to high overall which might lead to a lack of confidence in the results, and dismissal of its contribution to our understanding of the effects of ADHD teacher training interventions. However, it is possible to have confidence in the results for ADHD knowledge. One of the main contributors to this medium to high rating was a failure to control for confounding variables. Confounders for teacher outcomes included previous training or knowledge of ADHD, years of teaching, experience in teaching children with ADHD, and characteristics of training delivery. In line with good practice, it is helpful to understand each study's limitations, and it would be useful to identify how particular confounding variables might have affected outcomes. Although the confounders limited understanding of which teachers benefitted most from the training, it was still clear that knowledge improved overall. A second contributor to the risk of bias rating was the lack of blinding in those studies

which measured teacher and/ or pupil behaviour. This does raise concerns for confidence in these outcomes. Teacher behaviour is an important factor in a child's education, particularly affecting the teacher-pupil relationship (Ewe, 2019). Additionally, if pupil behaviour is a barrier to their learning, training programmes need to consider how to resource teachers to help children and learn ways to adapt the classroom environment or their pedagogy (Gwernan-Jones et al., 2016). Nonetheless, these factors do not impact on the objective ADHD knowledge measures, and so these syntheses did provide useful initial evidence for this thesis.

When considering the results of this study, it is also important to recognise that it provides evidence for the effects of ADHD teacher training interventions which, although bear some resemblance to the type of typical training schools receive, do have some different characteristics. This may affect our understanding of the effects of typical ADHD training for school staff and its application to this programme of research. Awareness of participating in a research trial has been shown to affect people's behaviour, particularly in terms of wanting to comply with the wishes of the researchers (McCambridge et al., 2014; Wickström & Bendrix, 2000). The motivation to engage with the training for participating teachers in the research projects may have been higher due to being a research participant. It is not possible to say with any certainty whether this effect was seen in these studies, but it is important to consider this possibility when applying the learning. The question which arises is whether similar increases in knowledge and behaviour would be seen for teachers taking part in typical school training. It is worth noting two characteristics which address this question.

Firstly, one similarity likely to be applicable for both research projects and typical school training is that of timing. An issue raised by school staff in Paper 2 of this thesis (Ward et al., 2021) is that the timing of ADHD training is determined by the school leadership; similarly, the timing of ADHD teacher training interventions is likely determined by the researchers in consultation with school leadership. This training may not be delivered at the time when staff most need it; for example, when they are supporting a child with ADHD. Training which is seen to be irrelevant reduces teachers' motivation to engage and learn which, consequently, lowers its success in being translated into action or changed behaviour (Shulman & Shulman, 2007; Van Eekelen et al., 2006). Given the similarity in timing issues for both research projects and typical school training, this is not a factor that is likely to cause differences in results.

Secondly, a potential difference between a research project and typical school training is the autonomy that staff have for attending the programme. School staff have autonomy in choosing whether to participate in a research project, whereas typical school training is likely to be compulsory for employed staff. Using self-determination theory, and in line with previous research, Gorozidis and Papaioannou (2014) demonstrate greater intentions to implement innovations and change teaching style when teachers have chosen to attend professional

development training rather than being compelled to attend (Shulman & Shulman, 2007; Van Eekelen et al., 2006). Given the importance of motivation to engage in learning, and intentions to act on professional development training, it is possible that compulsory, typical school training is not as effective as a research-based training intervention.

The systematic review and meta-analysis indicate the limitations of a knowledge transfer model of resourcing. They show the problems in retention of ADHD knowledge associated with one-off training sessions and raise questions about the effectiveness of the strategies being included. Further issues of timing and autonomy linked to typical school training suggest this may be even less effective than research-based training interventions and addressing these issues could be valuable in providing a better solution.

5.2 School Staff Perspectives Need to be Included in the Production of ADHD Resources

Following this investigation in the literature, the next step was to explore practice and speak to school staff about their experience of ADHD and training. The qualitative interview study (Ward et al., 2021; Paper 2) was used to understand school staff perspectives of what is important when supporting children with ADHD, and what would constitute effective training. Although there are studies which have explored the views of school staff in relation to supporting children with ADHD (Moore et al., 2017), and conceptualisations of the aetiology of ADHD (Russell et al., 2016), no previous studies had explored school staff views on ADHD training.

School staff discussed their desire to be better equipped with knowledge, confidence, and strategies. The importance of increasing ADHD knowledge for school staff has been discussed previously. Specifically, in this study, school staff wanted to know more because they thought this would be helpful in understanding the reasons behind a child's behaviour. They felt that this would lead to greater empathy and better understanding of a child's needs, which in turn, would enable them to adjust their expectations in the classroom. This suggests that continuing to supply comprehensive information about ADHD is an important facet of training for school staff. A broad range of strategies was required as school staff recognised that different children, or different times and different contexts, may need alternative approaches. Evidence from the literature suggests that behavioural strategies are likely to be included in ADHD training, given that strategies were reported in all but one of the interventions in Paper 1 of this thesis (Ward et al., 2020). When strategies are recommended by external experts for supporting children with ADHD, one of the main criticisms is that they are not contextualised or suitable for use in the classroom (Curtis et al., 2006; Power et al., 2003). There was not enough detail in the included studies of Paper 1 to know if this contextualisation was an issue, but certainly those studies which did show improvements in teacher behaviour created a problem-solving approach with time for teachers to try out strategies and subsequently discuss with colleagues. This also mirrors the joined-up approach and shared expertise that was verbalised in this study (Ward et al., 2021). In terms of

confidence, the school staff described this as being able to effectively support a child with ADHD and to support individual children with specific behaviour. Studies investigating these attributes have used the term self-efficacy, and shown that confidence derives from knowledge about ADHD and understanding how strategies may work to support a child with ADHD (Frohlich et al., 2020; Latouche & Gascoigne, 2019; Sciutto et al., 2000).

A strength of this qualitative interview study was hearing from a range of school staff to gain a broad range of perspectives. This provides a firm foundation for designing effective training that meets their needs. Although training interventions in the literature are mostly targeted at teachers, typical school training is provided to the broad range of staff within the school. Therefore, the recruitment for this study included senior leadership, teachers, and teaching assistants. This meant that the views of all those who support children with ADHD, and would take part in typical school training, would be heard. Although this type of qualitative research is not designed to seek findings that can be generalised to other contexts, it was important to include staff from a variety of local authorities and regions in England to represent the breadth of experience across the country. This is useful to build a broader picture of commonalities across a range of schools rather than focusing on one school which may have a unique approach (Carlson, 2010). However, one of the limitations of this study is the inclusion of only one teaching assistant participant. This was a recruitment problem as teaching assistants were required to support children throughout the school day and were reluctant to meet after the school day. Given the amount of support that teaching assistants provide to children with SEN, we may have missed valuable insights on what is needed to support children with ADHD (Greenway & Rees Edwards, 2020; Groom, 2006).

This qualitative study contributed direct understanding of how school staff support children with ADHD and how they feel they would be best equipped in that role. It was important to understand the insights of those doing the work so that training meets their needs. The findings highlighted the type of information that school staff need, as well as suggesting ways in which this could be achieved. By including a range of school staff, both in teaching and wider roles, multiple perspectives were heard and ensured future ADHD resources could meet the full range of needs.

Several important factors regarding ADHD training were raised through the first two papers, including timing, contextualised strategies, and autonomy. Timing relates to the issue of when training or resources are available. Motivation to engage with training is often associated with a felt need for professional development; for example, if school staff do not currently support a child with ADHD, they find an ADHD training session to be irrelevant, subsequently decreasing their motivation to engage (McMillan et al., 2016; Ward et al., 2021). Additionally, any gains in knowledge may have been lost by the point at which this information is required in the

future. This indicated the need to create a resource where relevant information was readily available on a need-to-know basis and could be accessed by staff when it is most pertinent. This would also provide autonomy for school staff in selecting which information to access as well as when to access it. Strategies need to be practical for a classroom context and the available staff, and this provides a strong case for including the perspectives of school staff, who can select strategies that have been tried and tested in a variety of contexts and with different individual children, when using and developing the resource (Braude & Dwarika, 2020; Nastasi et al., 2000).

5.3 The Benefits of an Alternative Approach to ADHD Resourcing

Based on the knowledge and insights gained from the first two studies, the third study in this thesis explored an alternative approach to ADHD training for school staff. It was clear that staff perspectives needed to be embedded in the programme with a focus on improving outcomes for children with ADHD. Therefore, the model of collaborative resourcing involving school staff and researchers was set up to develop an ADHD professional development resource.

The big question that began to form over this project was: what happens when you bring school staff together with researchers to co-produce ADHD resources to meet staff needs? This raised further epistemological and ontological questions around what constitutes knowledge, where can it be found, how can it be used, and what will be produced when different forms of knowledge are brought together?

The collaborative working group project was values-driven, based on participatory models that value sharing of power, creating space and opportunity for voices that often go unheard (Nind, 2014; Parsons, 2021). As has been described, ADHD training is often written and delivered by professionals removed from the everyday classroom context, including academics and clinicians. This can result in training not meeting staff needs (Braude & Dwarika, 2020; Ward et al., 2021). By conducting the qualitative study to explore and understand school staff perspectives on ADHD, this third study aimed to facilitate further expression of staff voices as they co-constructed the knowledge needed to support children with ADHD in school. In describing education, Freire (2021, p.93, italics original) used the word authentic when it is not ‘“A” for “B” or by “A” about “B”, but rather by “A” with “B”’. He described a process in which dialogue opens up an awareness and respect for the people’s view, and a need for mutual reflection within any action. It is this premise on which the collaborative group worked. The voices of those who live in the world of education and work to help children with ADHD thrive, spoke into the resources that they need to do this. Throughout the project, mutual reflection provided a critique from multiple perspectives, and most notably from school staff themselves. This model sends a message of how valuable school staff knowledge is in the production of their own professional development resources. This is not a new message and yet it does not seem to have permeated the way in which ADHD training is produced (Hargreaves, 1994; Ostinelli, 2016).

Even where there is a call to include school staff, the emphasis is on the need to engage in teacher-researcher partnerships, pointing the focus of practitioner engagement to teachers alone (Ostinelli, 2016; Wyse et al., 2018).

> 'I think for me, one of the problems I've got or one of the issues I have is that I'm not a teacher and sometimes that…gives me less opportunities really, and because lots of things like this are teacher-led but I probably have more experience with the behavioural side of ADHD, without a doubt, you know. I've been doing my job for fifteen years. So not a short time and probably work with some of the most challenging children and have done different environments…but have less opportunity with things like this because everything comes with a label of being a teacher.'
>
> Member of Collaborative Working Group, 2022

The voices of non-teaching staff often go unheard in discussions of inclusion, which may be considered surprising given the key role they play in supporting children with SEN (Mackenzie, 2011; O'Brien & Garner, 2001). Although, perhaps less surprising when the low status of support staff is observed (Dunne et al., 2008; Hammett & Burton, 2007). The term support staff encompasses a range of roles and titles, including teaching assistants, higher level teaching assistants, and learning support assistants (Hammett & Burton, 2007). They may be required to take on various roles within the school, including teaching classes, facilitating specialist interventions, and supporting access to lessons for individual children with SEN (Hammett & Burton, 2007; O'Brien & Garner, 2001; Paliokosta & Blandford, 2010). In Paper 2, one of the teachers described their reliance on support staff for including the children with ADHD in their class, and teaching assistants are often reported to be essential for enabling inclusive education (Mackenzie, 2011; O'Brien & Garner, 2001; Ward et al., 2021). These roles require skills and expertise and yet support staff are often treated as 'an extra pair of hands,' rather than a professional colleague (Kerry, 2005; Mackenzie, 2011, p.68). Support staff may not be invited to staff meetings or training sessions, or if they are, may not be paid for the time in which they attend (Mackenzie, 2011). Therefore, support staff have little, or no, power to influence practice and pedagogy even though they may have valuable insight and knowledge to share (Lehane, 2015; Mackenzie, 2011). The inclusion of support staff in the collaborative working group was an emancipatory step to amplifying their voice and their knowledge in the co-construction process (O'Brien & Garner, 2001). This sends a deeper message of how valuable all school staff knowledge is in the production of their own professional development resources. It challenges power dynamics and whose voice is heard and acted upon.

However, an opportunity to speak does not necessarily result in being heard. As quoted earlier in this thesis, 'being involved in a process is not equivalent to having a voice' (Cornwall, 2008, p.278). This project presents a challenge to those with power to examine the culture and context in which people may want to speak up (Reitz & Higgins, 2021). Studies show that people may be reluctant to speak up if they do not think they will be heard, if they are fearful of negative consequences, or if there are a limited range of opportunities (Bennis et al., 2008; Morrison, 2011; Wilkinson et al., 2018). The values underpinning the collaborative working group included safety and democracy and provided opportunities for all staff to contribute and for their voice to shape the resource. There is a message here for those in educational leadership to address cultural or contextual barriers which limit the possibility of voices being heard (Reitz & Higgins, 2021).

The collaborative working group model also challenges the notion of evidence-based and what constitutes evidence. Biesta (2007) traced the path of evidence-based educational research from its origins in a medical-style, positivist, top-down approach to determining policy and practice. He argued that this approach is not appropriate for education. This concept of evidence-based suggests a causal relationship that uses a particular intervention to achieve a desired effect, like a specific drug will treat a specific condition. Rather than a technical process of cause and effect, education is a moral process of considering what are valuable or desirable outcomes and how they can be achieved. The professional judgements and actions of a teacher are tailored to meet different students' needs and provide opportunities for learning. Students, in turn, respond to and interpret what is presented, and in this way, education is a transactional process (Biesta, 2007). The question in education is not limited to what will work but 'what is appropriate for these children in these circumstances' (Sanderson, 2010, p.341). The use of complexity theory in the systemic framework was designed to explore how and why this collaboration led to the published resource rather than attempting to create a rulebook of what works to simply be applied to a different context (Biesta, 2007; Fransman et al., 2021).

As an alternative to the technical style of an evidence-base, Edge (2013, p.231) described 'a teacher-focused tacit-knowledge evidence base.' This is the type of evidence-base that co-construction builds; although I would, again, challenge the limits of the term teacher to a broader concept of school staff. Tacit knowledge is formed through a type of experimentation as school staff repeatedly engage in interactions with different children and colleagues, and activities within the school, building capacity for an intelligent approach to the next interaction or situation. This understanding is shaped by John Dewey's (1938) theory of transactional knowledge which explains how repeated interactions build knowledge that enables the next interaction to make use of this prior experience. In this way, what worked previously provides possibilities of what might work in this new situation. The staff member then uses their professional judgement to

make use of their knowledge and provide the opportunity for learning appropriate for the child or children at that time. This is reflected in Ralph Stacey's concepts of things being unpredictably predictable or predictably unpredictable (Komponent, 2015). A staff member cannot be sure of how a particular interaction with a child will play out, but through their experience, they will choose from a range of options that they expect to produce a desirable outcome.

Perhaps, knowledge-based rather than evidence-based would capture this nuanced approach. This does not negate the role of explicit knowledge, for example, academic or clinical knowledge about ADHD. I have demonstrated the value of ADHD knowledge in shaping staff attitudes and behaviours towards children with ADHD. However, this study demonstrates how different forms of knowledge contribute to a deeper and broader understanding of how best to support children with ADHD. Co-construction in this study provided a framework in which tacit knowledge and explicit knowledge were brought together to produce a resource rather than an intervention aiming to produce a pre-determined effect. In this way, staff can use their professional judgement and make use of the resource to provide 'what is appropriate for these children', or this child with ADHD, 'in these circumstances' (Sanderson, 2010, p.341).

One of the strengths of this study was the inclusion of a range of school staff, particularly non-teaching staff. The theme of 'Input from all areas helps all areas' highlighted that including different members of the school community would result in wider appeal as the resource would be relevant to all, rather than a select few. This inclusion also challenges the traditional hierarchical boundaries of the school community and democratises knowledge brought by staff with different status. However, the diversity could have been greater. All members of the working group were women, and there is some evidence to suggest gender differences may exist in relation to ADHD behaviours in the classroom (Alter et al., 2013). Most of the group were also qualified teachers, although several had roles based outside of the classroom. Given the vital role that support staff fulfil in supporting children with ADHD, and the lack of opportunity for support staff to contribute their knowledge, the working group would have greatly benefitted from more support staff involvement (Mackenzie, 2011; O'Brien & Garner, 2001).

Towards the end of the project, the school staff decided that they wanted to share the resource with their own colleagues and get some initial feedback before distributing it more widely. In September 2021, staff circulated the website link together with an anonymous feedback survey. The feedback survey link also appeared as a pop up when leaving the website. The feedback survey was created using Qualtrics (www.qualtrics.com/uk) and comprised questions developed by members of the working group (see Appendix Q). These questions broadly fitted into two categories: the content of the site; and the user experience. Questions regarding content were primarily written by the school staff participants and designed to capture whether users felt more knowledgeable and more confident in supporting children with ADHD

after using the site, and whether the suggested strategies were practical and workable in the user's school context. Questions regarding user experience were written by the researcher and focused on issues of usability, trust, loyalty, and performance as recommended by Sauro (2015). The aim of this initial feedback was to identify any immediate changes or improvements that would enhance the ability for users to access the website and find useful information. There were only three responses to the feedback survey in the six months following publication of the website although 522 unique visitors were reported to have visited the site. Members of the working group received verbal feedback from colleagues which was broad and non-specific, e.g., 'I love it.' Given the issues of timing, contextualisation, and autonomy that were addressed by the website, evaluation needs to be considered as part of a longer-term process. If a staff member does not currently support a child with ADHD, they may not use the resource at this time. However, feedback would be useful in the future if they subsequently do support a child with ADHD. For those staff members that are currently supporting a child with ADHD, it would be valuable to hear their perspectives on how well the resource supported them in their role. In Paper 2, school staff reported wanting to be equipped with knowledge, strategies, and confidence (Ward et al., 2021). A longer-term evaluation could be planned to capture school staff perspectives on how the resource contributes to these needs and any gaps that have been identified.

On a technical level, when analysing website sessions by device, 573 sessions were by mobile or tablet, and 317 sessions were via desktop. Although the website is accessible via all three types of devices, the layout is best optimised for desktop. This is an area for development as mobile access seems to be the preferred option.

Overall, the collaborative working group model enabled exploration of an alternative method of ADHD resourcing for school staff. This model challenged traditional understandings of where knowledge is situated, both in terms of within research and practice, but also throughout the hierarchical structure of the school. Co-construction provided an opportunity for school staff to shape and create a resource that reflected their knowledge and perspectives. Staff members described the project as empowering as the voices of staff across the spectrum of roles, including support staff, were heard and acted upon. This sends a message of how valuable staff knowledge, at all levels, is when producing professional development resources.

5.4 Implications for Practice

The research conducted as part of this PhD has resulted in an accessible, high quality, co-produced ADHD resource that addresses the expressed needs of mainstream school staff. This provides an alternative model of resourcing school staff to support children with ADHD. School staff can freely access information when they need it, addressing issues of timing and autonomy that have previously been raised. Staff can also have confidence that the strategies and

information about ADHD have been chosen and written by school staff and are suitable for a classroom context. Additionally, the resource used a strengths-based approach to provide strategies to develop children's strengths alongside tools to support them in their challenges. This challenges the deficit approach which solely targets problem behaviours or symptoms.

A key characteristic that defines the collaborative working group model is the diversity of participants, but the model could be explored in different ways. For example, one school could create a collaborative working group which comprises staff with differing roles to address a need in a particular year group or department. Alternatively, several schools could create a collaborative working group to bring together staff from different contexts to explore a particular topic. The ability to conduct a group face to face or online greatly expands the possibilities of participation. In both cases, inviting collaborators from the wider community, including researchers, clinicians, and parents, would enable co-construction drawing on different forms of knowledge to take place. Certainly, this type of collaborative work is 'not the norm in educational research' and yet is identified as an area much needed for improving practice (Parsons, 2021, p.5; Wyse et al., 2018).

The website could be expanded to provide information and support in different ways. Staff members may be given information about a child before they begin working with them. This information may come in the form of diagnoses or be more descriptive relating to the child's needs. Alternatively, a staff member may be working with a child and identify some needs that are not currently being addressed. There may not be a diagnostic label that points the staff member towards a particular strategy or pathway of support. In this way, development of the website could support these needs. Firstly, other diagnoses could be addressed, e.g. dyslexia, autism, with working groups brought together to co-construct information and strategies to resource school staff. Secondly, the website could be set-up to enable a needs-based approach to be taken. Here, a search function could be enabled so that school staff could identify a particular need, e.g. difficulties with attention, type in keywords, and information or strategies would be brought from all sections of the site regardless of diagnosis.

This research has shown the value of expanding the range of representative voices that are heard and shape practice. This sends a message to schools and policy makers that engaging with all school staff, including support staff, is valuable and increases the breadth and depth of knowledge that can be utilised. However, this does also challenge those in positions of power to hear these voices and value the input of all staff, regardless of their place in the hierarchy of the school.

5.5 Implications for Research

Although the systematic review and meta-analysis provided some useful evidence for the effects of ADHD teacher training on changes in teacher ADHD knowledge, effects on teacher and

pupil behaviour are certainly areas requiring high quality research. This is especially important given the purpose of this type of training is based on improving outcomes for pupils with ADHD, with teacher behaviour being highlighted as a key factor to achieve this (Aguiar et al., 2014; Barnett et al., 2012; Corkum et al., 2019). Consideration should be given to the recruitment process and blinding of participants, along with more objective measures.

Designing a qualitative study that enables more support staff to share their perspectives and views on ADHD training is important to hear their voices and expand the breadth and depth of school staff perspectives. There may be several reasons why support staff were reluctant to participate in both the second and third studies. Firstly, I have mentioned challenges for those with low status who may not believe their voice will be heard (Morrison, 2011). Secondly, support staff were not able to be released during the school day and were reluctant to participate after work. Thirdly, recruitment channels may not have been the most effective for reaching teaching assistants. In terms of reassuring support staff that their voice is valuable and will be heard, an effective solution might be to ask senior leadership staff to invite support staff individually and demonstrate the leadership's commitment to listening to support staff voices. Although financial reimbursement was felt to be unnecessary by those in the collaborative working group, this is a potential area to explore for support staff who are paid strictly according to the hours they work and may find it difficult to join meetings outside of these working hours (Mackenzie, 2011).

The third study in this project took a first step to including the child's voice when co-constructing an ADHD resource. The UK have signed and ratified the United Nations Convention on the Rights of the Child (UNCRC; Department for Education, 2010). Article 12 stipulates that a child must be supported to express their views in all matters affecting them, and that those views must be given due weight (UNICEF UK, 1989). Therefore, providing opportunity for children to participate in a meaningful way is not only good practice but a legal requirement (Lundy, 2007). The United Nations General Assembly also identifies the need to ensure disadvantaged and marginalised children are given adequate opportunity to participate (United Nations General Assembly, 2002). This is affirmed in the SEND Code of Practice (Kennedy, 2015) which specifies the need to involve and consult with children with SEN, although there are challenges to be overcome in doing this. Each child brings a unique and individual perspective, and it is important to recognise the diverse experiences and views of each child rather than attributing one voice to all children with ADHD (Mazzei & Jackson, 2009). Children may not speak at all if they do not think they will be heard or that their views matter, or do not have confidence that sharing their views can actually lead to change (Cook-Sather, 2015; Lundy, 2007). To this end, researchers have a responsibility to listen well, hear what the child is saying, and then act on that knowledge (Flynn, 2013). Lundy (2007) proposed a model with four elements to ensure that the rights of the child with respect to their voice are upheld: space to express a view; facilitation to support a child in

expressing their views; an audience that will listen; and the view to be acted on as appropriate. Further research could explore ways of enabling children's perspectives of helpful practice by school staff to shape policies and processes which support their ability to thrive in school. This also chimes with the strengths-based perspective described in the introduction to this thesis. By inviting children to share a positive view of what their ideal school looks like, it focuses attention on constructive practice and favourable aspects of the environment which highlight protective factors and hopeful actions which support their flourishing (Climie & Mastoras, 2015).

5.6 Conclusion

The systematic review and meta-analysis indicated the need for alternative methods of ADHD teacher training to be explored, to improve retention of ADHD knowledge and support changes in behaviour for teachers and pupils with ADHD-type behaviours. Hearing the perspectives of school staff enabled an understanding of what is important when supporting children with ADHD in school, and how training could meet their needs. Three important areas to address were timing, contextualisation, and autonomy.

The third study has demonstrated an alternative method to resource school staff so that children with ADHD can thrive. It has challenged traditional methods and proposed a need to address the gaps in ADHD school professional development training that currently exist. Producing a website reduced the barriers of timing and autonomy. Including school staff in a process of collaboration and co-construction has enabled their voices to be heard and acted upon, empowering staff to participate in a meaningful way and ensure the resource is appropriate for a school context.

Knowledge resides in different places and people, and co-construction provides a way of utilising this breadth and depth of knowledge. This process sends a message of how valuable school staff knowledge is, the full range of school staff, and how opportunities for people to speak up and participate need to be provided. However, challenges have also arisen throughout this process. Bridging gaps can create new barriers to deal with, but collaboration brings multiple perspectives to overcome these obstacles.

Facilitating the participation of people from different backgrounds with different perspectives in collaborative research and practice promotes democratisation of knowledge and values the breadth of voices available. Exploring ways to improve the inclusion of children's voices and pursue a strengths-based approach will lead to even greater impact and outcomes.

Appendix A Systematic Review and Meta-Analysis Study Characteristics

Study no.	Author(s)	Design		Content		Mode	Duration	Provider	Follow-up	Participants		Teacher				Pupil behaviour				
		RCT	Non-Randomised	Psychoeducation	Behavioural strategies					Experimental group	Comparison group	Primary/ Secondary	Knowledge measure (teacher self-report)	Behaviour measure (teacher self-report)	Behaviour measure (blinded observation)	Observation	Teacher report	Parent report	Child self-report	Actigraphy
1	Aguiar et al. (2012)		Uncontrolled before-and-after design	Y	Y	Face-face	6hr session	Authors	N	37 teachers	0	Primary	Y							
2	Anto & Jacob (2014)		Uncontrolled before-and-after design	Y	Y	Self-instructional	NR (1 week duration)	Subject experts'	N	50 teachers	0	Primary	Y							
3	Barbaresi & Olsen (1998)		Uncontrolled before-and-after design	Y	Y	Face-face	2.5hr session	Authors	N	44 teachers	0	Primary	Y							
4	Barnett (2010)		Uncontrolled before-and-after design	Y	Y	Online self-instructional	7 sessions	Authors	N	19 teachers	0	Primary	Y	Y						

Appendix A

Study no.	Author(s)	Design		Content		Mode	Duration	Provider	Follow-up	Participants		Teacher				Pupil behaviour				
		RCT	Non-Randomised	Psychoeducation	Behavioural strategies					Experimental group	Comparison group	Primary/ Secondary	Knowledge measure (teacher self-report)	Behaviour measure (teacher self-report)	Behaviour measure (blinded observation)	Observation	Teacher report	Parent report	Child self-report	Actigraphy
5	Barnett et al. (2012)		Uncontrolled before-and-after design	Y	Y	Online self-instructional	7 sessions	Authors	N	19 teachers	0	Primary	Y	Y						
6	Bloomquist et al. (1991)	RCT (multiple-armed)		Y	Y	Face-face	2 x 1hr training, 6 x 45-60min consultations (over 10 wks)	Authors	Y	12 ADHD children (clinical)	11 ADHD children (multi-component condition), 13 ADHD children control	Primary				Blinded	Y		Y	
7	Both et al. (2016)		Uncontrolled before-and-after design	Y	Y	Face-face	2.5hrs	ADHD specialist	Y	44 teachers	0	Primary & Secondary	Y							
8	Corkum et al. (2019)	RCT		Y	Y	Web-based	6 sessions (over 6 weeks)	Authors	Y	28 teacher-ADHD student dyads (clinical diagnosis)	30 teacher-ADHD student dyads waitlist control	Primary					Y	Y		

Study no.	Author(s)	Design		Content		Mode	Duration	Provider	Follow-up	Participants		Teacher				Pupil behaviour				
		RCT	Non-Randomised	Psychoeducation	Behavioural strategies					Experimental group	Comparison group	Primary/ Secondary	Knowledge measure (teacher self-report)	Behaviour measure (teacher self-report)	Behaviour measure (blinded observation)	Observation	Teacher report	Parent report	Child self-report	Actigraphy
9	Froelich et al. (2012)		Non randomised controlled trial	Y	Y	Face-face	12 x 2hr sessions	Child & Adolescent Psychiatrist	N	8 teachers, 25 ADHD children (teacher report)	8 teachers, 17 ADHD children	Primary					Y			
10	Gormley & DuPaul (2015)		Multiple baseline		Y	Face-face	Bi-weekly meetings (across 2 years)	Behavioural consultant	N	3 teacher-student dyads (research diagnosis)	0	Primary				Blinded				
11	Kołakowski et al. (2009)		Uncontrolled before-and-after design	Y	Y	Face-face	15 hrs over 3 months	NR	Y	150 teachers	0	NR	Y							
12	Lasisi et al. (2017)	RCT		Y	Y	Face-face	1 x 2.5hr session	Author	Y	84 teachers	75 teachers waitlist control	Primary	Y							
13	Latouche & Gascoigne (2019)		Non-randomised controlled trial	Y	Y	Face-face	1 x 2hr session	Author	Y	109 teachers	161 teachers	Primary	Y							
14	Lauth-Lebens et al. (2016)		Uncontrolled before-and-after design	Y	Y	Face-face	7 x 90mins	Trained psychology students	Y	25 teachers	0	Primary & Secondary					Y			

Appendix A

Study no.	Author(s)	Design		Content		Mode	Duration	Provider	Follow-up	Participants		Teacher				Pupil behaviour				
		RCT	Non-Randomised	Psychoeducation	Behavioural strategies					Experimental group	Comparison group	Primary/ Secondary	Knowledge measure (teacher self-report)	Behaviour measure (teacher self-report)	Behaviour measure (blinded observation)	Observation	Teacher report	Parent report	Child self-report	Actigraphy
15	Lessing & Wulfsohn (2015)		Uncontrolled before-and-after design		Y	Face-face	NR	NR	N	1 teacher, 10 ADHD children (clinical diagnosis)	0	Secondary					Y			
16	Miranda et al. (2002)	RCT		Y	Y	Face-face	8 x 3hr session (over 4 months) + weekly interviews	Research team	N	29 teachers, 29 ADHD children (research diagnosis)	21 teachers, 21 ADHD children	Primary	Y			Y	Y	Y		
17	Mohammed (2018)		Non randomised controlled trial	Y	Y	Face-face	6 x 6hrs (over 6 weeks), 6 x 15min coaching session weekly	Author	N	9 ADHD children (research diagnosis)	9 normative children	Primary				Y				
18	Nadeau et al. (2011)		Non randomised controlled trial	Y	Y	Face-face	6 x 2hr individual coaching meetings (over 18 weeks)	Psycho-education professionals	N	11 teachers	0	Primary		Y						
19	Obaidat (2014)	RCT		Y	Y	Face-face	8 x 2hr sessions (over 2 weeks)	Author	Y	40 teachers	40 teachers	NR	Y							

Study no.	Author(s)	Design		Content		Mode	Duration	Provider	Follow-up	Participants			Teacher			Pupil behaviour				
		RCT	Non-Randomised	Psychoeducation	Behavioural strategies					Experimental group	Comparison group	Primary/ Secondary	Knowledge measure (teacher self-report)	Behaviour measure (teacher self-report)	Behaviour measure (blinded observation)	Observation	Teacher report	Parent report	Child self-report	Actigraphy
20	Owens et al. (2017)	RCT			Y	Face-face	1 x 3hr workshop + 8 30 min consultations	Author & trained facilitators	N	31 teachers	27 teachers	Primary			Y					
21	Park & Park (2017)		Non randomised controlled trial	Y	Y	Face-face	8 x 1hr sessions	Author & team of health professionals	N	35 teachers, 35 ADHD children (clinical diagnosis)	35 teachers	Primary	Y	Y			Y			
22	Procaccini (2014)		Uncontrolled before-and-after design	Y		Online self-instructional	1 x 45min training session	Author	N	35 teachers	0	Primary	Y							
23	Rossbach & Probst (2005)		Uncontrolled before-and-after design	Y	Y	Face-face	3 x 4hr sessions	Author	PY	6 teachers, 6 ADHD children (research diagnosis)	5 teachers, 5 ADHD children	Primary	Y				Y	Y		
24	Sarraf et al. (2011)	RCT		Y	Y	Face-face	2 x day sessions	Assistant professor & subspecialist of psychiatry	N	35 teachers	35 teachers	Primary	Y							

Appendix A

Study no.	Author(s)	Design		Content		Mode	Duration	Provider	Follow-up	Participants		Teacher				Pupil behaviour				
		RCT	Non-Randomised	Psychoeducation	Behavioural strategies					Experimental group	Comparison group	Primary/ Secondary	Knowledge measure (teacher self-report)	Behaviour measure (teacher self-report)	Behaviour measure (blinded observation)	Observation	Teacher report	Parent report	Child self-report	Actigraphy
25	Shaban et al. (2015)	RCT			Y	Face-face	8 x 3hr sessions	NR	Y	32 ADHD children (clinical diagnosis)	35 ADHD children	Primary					Y	Y		
26	Shehata et al. (2016)		Uncontrolled before-and-after design	Y	Y	Face-face	15 x 45-60min sessions (over 5 weeks)	Authors	N	60 teachers	0	Primary	Y	Y						
27	Syed & Hussein (2010)		Uncontrolled before-and-after design	Y	Y	Face-face	5 x 2hr session (over 1 week)	Authors	Y	49 teachers	0	Primary & Secondary	Y							
28	Tahiroğlu et al. (2004)		Uncontrolled before-and-after design	Y	Y	Face-face	1 x 2hr session	Child Psychiatrist & school nurse	N	104 teachers	0	Primary	Y							
29	Veenman et al. (2017)	RCT		Y	Y	Face-face	18 week programme	NR	N	58 ADHD children (research diagnosis)	56 ADHD children	Primary					Y	Y		Y
30	Veenman et al. (2019)	RCT		Y	Y	Face-face	18 week programme	NR	N	58 ADHD children (research diagnosis)	56 ADHD children	Primary				Y				

Study no.	Author(s)	Design		Content		Mode	Duration	Provider	Follow-up	Participants		Teacher				Pupil behaviour				
		RCT	Non-Randomised	Psychoeducation	Behavioural strategies					Experimental group	Comparison group	Primary/ Secondary	Knowledge measure (teacher self-report)	Behaviour measure (teacher self-report)	Behaviour measure (blinded observation)	Observation	Teacher report	Parent report	Child self-report	Actigraphy
31	Zentall & Javorsky (2007)	RCT		Y	Y	Face-face	2 day sessions	University research team	N	24 teachers, 96 ADHD children, 96 normative children (research diagnosis)	11 teachers, 44 ADHD children, 44 normative children	Primary & Secondary			Y		Y			

Appendix B Hierarchy of ADHD Measures for Meta-analysis

Study	Measure	Abbreviation	Sub-scales	Scales/subscales on ADHD core symptoms considered for the meta-analysis
			Observational measures	
Mohammed (2018)	Behavioural Observation of Students in Schools	BOSS	On-task/ active; on-task/ passive; off-task behaviour	On-task behaviour; if not available, active on-task, passive on-task, passive off-task, disruptive off-task
Veenman et al. (2017)	Classroom Observation Code	COC	Interference; off-task; gross motor-all	ADHD composite score
Bloomquist et al. (1991)	Structured behavioural observations	-	On-task, off task/ passive, off-task/disruptive	Total; if not available, on-task behaviour
Miranda et al. (2002)	Classroom behaviour observations	-	Off-task; disobedience; restless; disturbing teacher or peers; standing up; aggression	Total; if unavailable, off-task behaviour
			ADHD Rating Scales	
Corkum et al. (2019)	Conners 3-T teachers	Conners 3-T	Inattention; Hyperactivity-Impulsivity; Learning problems; executive function; aggression; peer relations	Inattention and/or impulsivity-hyperactivity
Lessing & Wolfsuhn (2015)	Conners Teacher Rating Scale Revised	CTRS-R	Hyperactivity/ Impulsivity, Perfectionism; Inattention/Cognitive Problems; Social Problems; Oppositionality; Anxious/Shy factor	ADHD index; if not available: Hyperactivity/ Impulsivity; Inattention/Cognitive Problems
Lauth-Lebens & Lauth (2016)	ADHD Symptoms using DSM-IV-TR analog symptom list	ADHD from DSM-IV-TR	Inattention, hyperactivity, impulsivity	Total; if unavailable, inattention, hyperactivity, impulsivity
Froelich et al. (2012)	Yale Children's Inventory	YCI	Hyperactivity; inattentiveness; impulsivity; oppositional defiant behaviour problems	ADHD score (combined score for hyperactivity, inattention & impulsivity)
Shaban et al. (2015)	Teacher Report Form	TRF	ADHD types: Inattentive; hyperactive/ impulsive; combined type	Total; if not, Inattentive; hyperactive/ impulsive; combined type
Park & Park (2017)	Korean ADHD Rating Scale	K-ARS	Inattention; hyperactivity-impulsivity	Total ADHD score

Appendix C Additional Information on Interventions and Measures

Scale name	Abbreviation	Reference	Measure	Sub-scales	Rater
Behavioural Observation of Students in Schools	BOSS	Shapiro, E. S. (2011). *Academic skills problems workbook* (4th ed.). New York, NY: Guilford Press.	ADHD symptoms	On-task/ active; on-task/ passive; off-task behaviour	Blinded/ non-blinded observer
Classroom Observation Code	COC	Abikoff, H., and Gittelman, R. (1985). Classroom observation code-a modification of the Stony-Brook code. Psychopharmacol. Bull. 21, 901–909.	ADHD symptoms	Interference; off-task; gross motor-all	Blinded/ non-blinded observer
Conners 3rd Edition Teacher Rating Scale	Conners 3-T	Conners, K. C. (2008). *Conners* (3rd ed.). Toronto, Ontario, Canada: Multi-Health Systems.	ADHD symptoms	Inattention; Hyperactivity-Impulsivity; Learning problems; executive function; aggression; peer relations	Teacher
Conners Teacher Rating Scale Revised	CTRS-R	Conners, C.K., Sitarenios, G., Parker, J.D. & Epstein, J.N. (1998). Revision and restandardization of the Conners Teacher Rating Scale (CTRS-R): Factor structure, reliability, and criterion validity. *Journal of Abnormal Child Psychology, 26*(4), 279–291.	ADHD symptoms	Hyperactivity/ Impulsivity, Perfectionism; Inattention/Cognitive Problems; Social Problems; Oppositionality; Anxious/Shy factor	Teacher
DSM-IV-TR symptom list	DSM-IV-TR	Lauth, G.W. & Minsel, W.R. (2014). Kölner ADHS-Test für Erwachsene (KATE). Göttingen: Hogrefe.	ADHD symptoms	Inattention, hyperactivity, impulsivity	Teacher
DSM-IV symptom list	DSM-IV	Rossbach, M. (2002). Entwicklung und Evaluation *eines Lehrer-Gruppentrainings zue Aufmerksamkeitsdefizit/ Hyperaktivitätsstörung (ADHS).* Unveröff. Diss., Fachbereich Psychologie, Universität Hamburg.	ADHD symptoms	Inattention, hyperactivity, impulsivity	Teacher
Yale Children's Inventory	YCI	Shaywitz SE, Schnell C, Shaywitz BA, Towle VR. (1986). Yale Children's Inventory (YCI): an instrument to assess children with attentional deficits and learning disabilities. I. Scale development and psychometric properties. *Journal of Abnormal Child Psychology,14*(3), 347-364. doi:10.1007/BF00915431	ADHD symptoms	Hyperactivity; inattentiveness; impulsivity; oppositional defiant behaviour problems	Teacher
Teacher Report Form	TRF	Achenbach, T. M. (1991). *Child behavior checklist/4-18.* Burlington: University of Vermont.	ADHD symptoms	ADHD types: Inattentive; hyperactive/ impulsive; combined type	Teacher
Korean ADHD Rating Scale	K-ARS	Kim, Y. S., So, Y. K., Noh, J. S., Choi, N. K., Kim, S. J., Koh, Y. J. (2003). Normative Data on the Korean ADHD Rating Scales(K-ARS) for Parents and Teacher. *Journal of Korean Neuropsychiatric Association, 42*(3), 352-359.	ADHD symptoms	Inattention; hyperactivity-impulsivity	Teacher
Knowledge of Attention Deficit Disorders Scale	KADDS	Sciutto, M. J., Terjesen, M. D. and Frank, A. S. B. (2000), Teachers' knowledge and misperceptions of Attention-Deficit/hyperactivity disorder. *Psychology in the Schools*, 37(2), 115-122. doi:10.1002/(SICI)1520-6807(200003)37:2<115::AID-PITS3>3.0.CO;2-5	ADHD knowledge	Symptoms/ diagnosis of ADHD, treatment of ADHD, general information about the nature, causes, and outcome of ADHD	Teacher
Self-report ADHD Questionnaire	SRAQ (derived from KADDS)	Sciutto, M. J., Terjesen, M. D. and Frank, A. S. B. (2000), Teachers' knowledge and misperceptions of Attention-Deficit/hyperactivity disorder. *Psychology in the Schools*, 37(2), 115-122. doi:10.1002/(SICI)1520-6807(200003)37:2<115::AID-PITS3>3.0.CO;2-5	ADHD knowledge	Symptoms/ diagnosis of ADHD, treatment of ADHD, general information about the nature, causes, and outcome of ADHD	Teacher
The Behavior Questionnaire	TBQ	Kos, J. (2008). *What do Primary School Teachers Know, Think, and Intend to Do About ADHD?* Presented at Teaching and Learning and Leadership: Australian Council for Educational Research.	Teacher behaviour	NA	Teacher

Appendix C

Scale name	Abbreviation	Reference	Measure	Sub-scales	Rater
Practice Scale of Educational Intervention Activity	PSEIA	Kim, H. J. (2012) *Problem recognition, coping styles and educational intervention activity of teachers for the children with attention deficit, hyperactivity disorder* [master's thesis]. Suwon: The University of Suwon.	Teacher behaviour	Adjustment of classroom environment, adjustment of teaching method	Teacher
The Behavioral Strategies Scale	TBSS	Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior.* Englewood Cliffs, NJ: Prentice-Hall.	Teacher behaviour	NA	Teacher
Classroom Behavior Tally Checklist	CBTC	Zentall, S. S., & Javorsky, J. (2007). Professional Development for Teachers of Students With ADHD and Characteristics of ADHD. *Behavioral Disorders, 32*(2), 78-93.	ADHD symptoms	NA	Teacher

Appendix D Summary of Follow-Up Effect Sizes

Summary of Results by Outcome for Post-Follow Up Test Measures using Most Proximal Assessment with Effect Sizes where reported

Outcome measures ›		Teacher measures				Pupil measures	
		Teacher knowledge (n=17)		Teacher behaviour (n=6)		Pupil behaviour (n=16)	
Study (first author & date)	**Length of follow up**						
Bloomquist (1991)	6wks						nr
Both (2016)	3mnths	-	*d*=0.77				
Corkum (2019)	6wks						nr
Kolakowski (2009)	3mnths	=	nr				
Lasisi (2017)	2.5wks booster	=	nr				
Latouche (2019)	1mnth	-	nr				
Obaidat (2017)	1mnth	=	nr				
Rossbach (2005)	6mnth						nr
Shaban (2015)	3mnth						nr

Summary of Results by Outcome for Pre-Follow Up Test Measures using Most Proximal Assessment with Effect Sizes where reported for those studies which report Pre-Follow Up

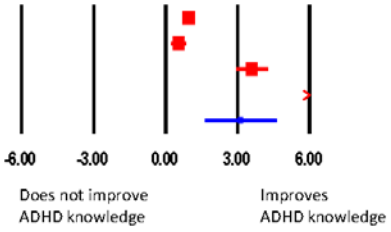
Outcome measures ›		Teacher measures				Pupil measures	
		Teacher knowledge (n=17)		Teacher behaviour (n=6)		Pupil behaviour (n=16)	
Study (first author & date)	**Length of follow up**						
Bloomquist (1991)	6wks						nr
Both (2016)	3mnths	+	*d*=0.77				
Kolakowski (2009)	3mnths	+	nr				
Latouche (2019)	1mnth	+	nr				
Syed (2010)	6mnths	+	nr				

Appendix E **Teacher and Pupil Knowledge for RCTs and Non-Randomised Studies**

Teacher Knowledge for RCTs and non-randomised studies

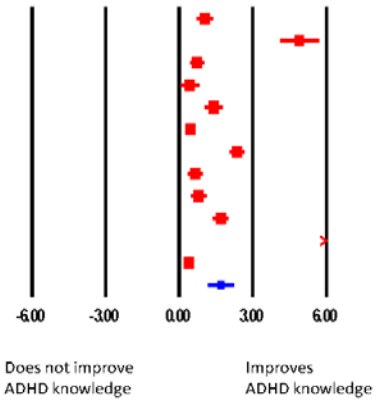
RCTs TK Within Pre-Post

Study name	Std diff in means	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value
Lasisi et al. (2017)	0.967	0.108	0.012	0.756	1.178	8.985	0.000
Miranda et al. (2002)	0.538	0.154	0.024	0.237	0.840	3.498	0.000
Obaidat (2014)	3.604	0.335	0.112	2.947	4.261	10.749	0.000
Sarraf et al. (2011)	8.924	0.861	0.742	7.235	10.612	10.359	0.000
	3.134	0.755	0.570	1.653	4.614	4.149	0.000



non-RCT TK Within Pre-Post

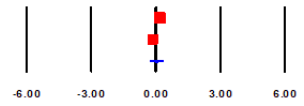
Study name	Std diff in means	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value
Aguiar et al. (2014)	1.037	0.160	0.026	0.723	1.351	6.479	0.000
Anto & Jacob (2014)	4.900	0.395	0.156	4.126	5.675	12.404	0.000
Barberesi & Olsen (1998)	0.732	0.131	0.017	0.474	0.990	5.567	0.000
Barnett (2010)	0.427	0.186	0.034	0.064	0.791	2.302	0.021
Both et al. (2016)	1.398	0.182	0.033	1.042	1.754	7.701	0.000
Kdakowski et al. (2009)	0.450	0.086	0.007	0.282	0.618	5.255	0.000
Latouche & Gascoigne (2019)	2.356	0.144	0.021	2.074	2.639	16.343	0.000
Park & Park(2017)	0.648	0.144	0.021	0.366	0.930	4.500	0.000
Procaccini (2014)	0.793	0.150	0.023	0.498	1.087	5.281	0.000
Shehata et al. (2016)	1.696	0.156	0.024	1.390	2.002	10.862	0.000
Syed & Hussein (2010)	8.047	0.639	0.409	6.794	9.301	12.587	0.000
Tahiroglu et al. (2004)	0.390	0.079	0.006	0.235	0.544	4.944	0.000
	1.694	0.265	0.070	1.176	2.213	6.406	0.000



Teacher Knowledge for RCTs and non-randomised studies

RCTs TK Within Post-Follow Up

Study name	Std diff in means	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value
Lasisi et al. (2017)	0.192	0.090	0.008	0.015	0.369	2.130	0.033
Obaidat (2014)	-0.142	0.123	0.015	-0.383	0.099	-1.154	0.249
	0.036	0.167	0.028	-0.291	0.363	0.213	0.831

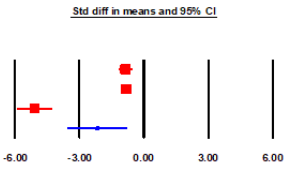


Does not improve ADHD knowledge

Improves ADHD knowledge

non-RCT TK Within Post-Follow Up

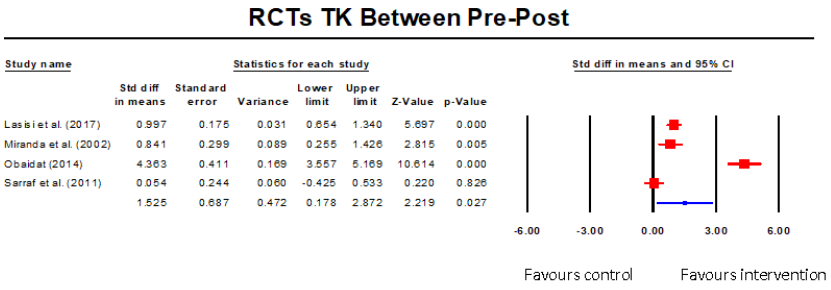
Study name	Std diff in means	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value
Both et al. (2016)	-0.863	0.156	0.024	-1.168	-0.558	-5.546	0.000
Latouche & Gascoigne (2019)	-0.817	0.094	0.009	-1.001	-0.634	-8.715	0.000
Syed & Hussein (2010)	-5.068	0.412	0.169	-5.874	-4.261	-12.310	0.000
	-2.157	0.707	0.500	-3.543	-0.771	-3.050	0.002

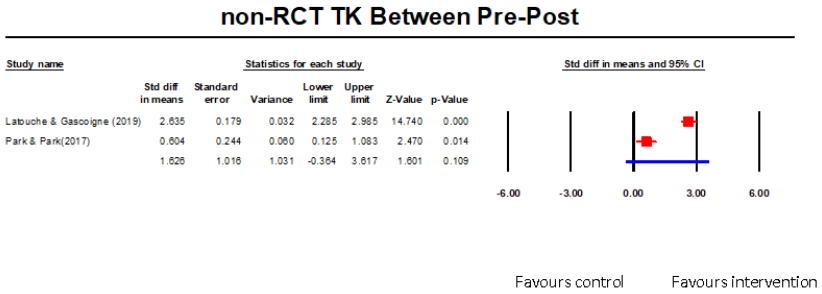


Does not improve ADHD knowledge

Improves ADHD knowledge

Teacher Knowledge for RCTs and non-randomised studies

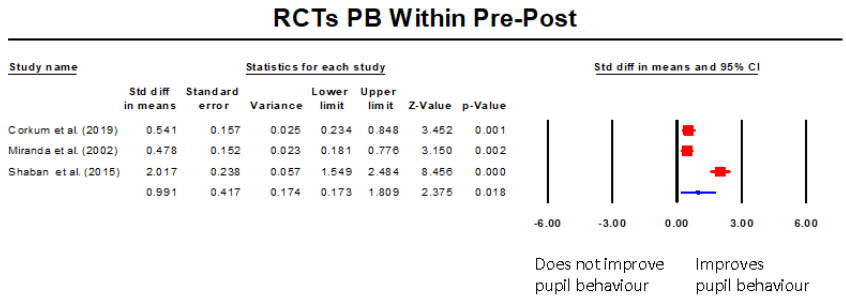


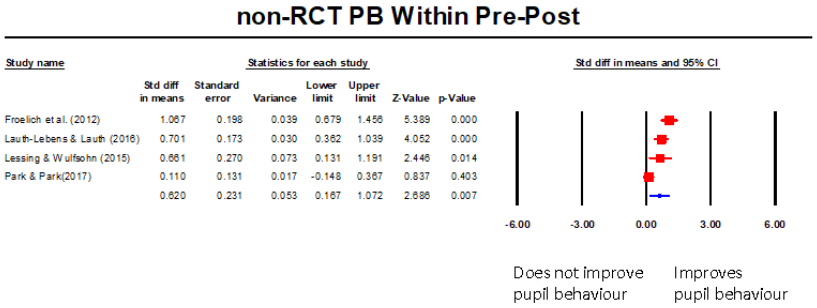


Teacher Knowledge for RCTs and non-randomised studies

No studies available for meta-analysis of teacher knowledge for Post-FollowUp measures

Pupil behaviour for RCTs and non-randomised studies





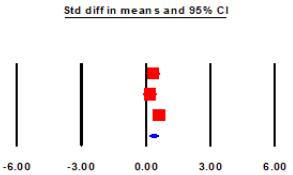
Pupil behaviour for RCTs and non-randomised studies

RCTs PB Within Post-FollowUp

Study name	Std diff in means	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value
Corkum et al. (2019)	0.342	0.151	0.023	0.047	0.637	2.269	0.023
Shaban et al. (2015)	0.612	0.149	0.022	0.319	0.904	4.101	0.000
	0.478	0.135	0.018	0.213	0.742	3.538	0.000

All Studies Within Post-FollowUp – only 1 non-RCT

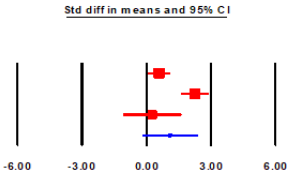
Study name	Std diff in means	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value
Corkum et al. (2019)	0.342	0.151	0.023	0.047	0.637	2.269	0.023
Lauth-Lebens et al. (2016)	0.201	0.156	0.024	-0.106	0.508	1.285	0.199
Shaban et al. (2015)	0.612	0.149	0.022	0.319	0.904	4.101	0.000
	0.388	0.121	0.015	0.152	0.624	3.220	0.001



Pupil behaviour for RCTs and non-randomised studies

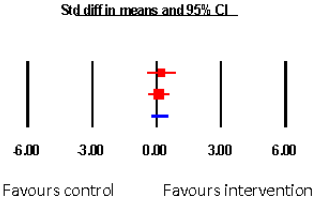
RCTs PB Between Pre-Post

Study name	Std diff in means	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value
Corkum et al. (2019)	0.585	0.268	0.072	0.059	1.111	2.180	0.029
Shaban et al. (2015)	2.244	0.319	0.102	1.618	2.869	7.031	0.000
Veenman et al. (2017)	0.268	0.692	0.479	-1.088	1.625	0.388	0.698
	1.094	0.655	0.429	-0.190	2.378	1.670	0.095



non-RCT PB Between Pre-Post

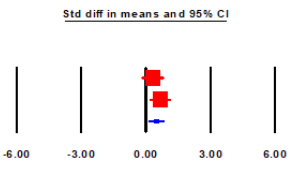
Study name	Std diff in means	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value
Froelich et al. (2012)	0.217	0.337	0.114	-0.444	0.878	0.644	0.519
Park & Park (2017)	0.106	0.239	0.057	-0.363	0.575	0.444	0.657
	0.143	0.195	0.038	-0.239	0.526	0.735	0.462



Pupil behaviour for RCTs and non-randomised studies

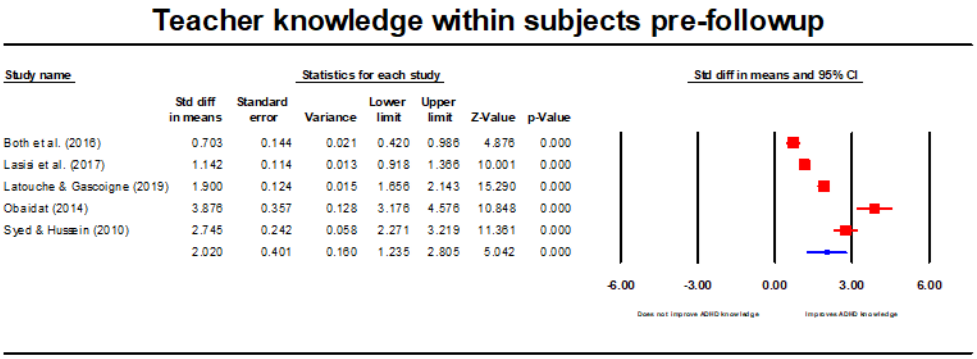
RCTs PB Between Post-FollowUp

Study name	Std diff in means	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value
Corkum et al. (2019)	0.324	0.264	0.070	-0.194	0.843	1.227	0.220
Shaban et al. (2015)	0.673	0.257	0.066	0.169	1.176	2.618	0.009
	0.504	0.184	0.034	0.142	0.865	2.732	0.006



No Non-RCT studies for Between Post-FollowUp

Appendix F Teacher ADHD Knowledge Pre-Follow-Up



Meta Analysis

Appendix G Interview Protocol for Head Teachers and SENCOs

Teacher perspectives on ADHD training: Understanding the needs and views of primary school teachers.

Ergo number: 47352

ADHD head teacher and SENCO interview

Thank you for giving your time to be interviewed today. The overall aim of this project is to understand head teachers'/ SENCOs' perspectives and opinions on ADHD and any training needs you or teachers in your school may have. We'll also be interviewing teachers to hear from them about their perspective on ADHD training and how they can be supported by their senior leadership and SENCOs.

The aim of the interview is hear your views and opinions so there are no right or wrong answers. Everything you say will be strictly confidential. No one from your school or any other school will be able to identify you or your contributions from any reports or articles that come out of this study.

I will be recording the interview so that I can transcribe it afterwards. When it's transcribed, I will assign you a pseudonym (which you're welcome to suggest) so that your name does not appear anywhere on the transcription. In any published reports or articles, we may use anonymised excerpts but again, there will be no way for anyone to identify you or your school.

Do you have any questions about the study or this interview before we start?

Are you happy for me to start the recorder? OK, it's now recording.

GENERAL INTRODUCTION	**INTERVIEWER NOTES/INSTRUCTIONS**
I WOULD LIKE TO TALK TO YOU ABOUT YOUR PROFESSIONAL EDUCATIONAL EXPERIENCE.	Aim to relax interviewee, gain impression of school experience.
COULD YOU TELL ME A LITTLE ABOUT YOUR GENERAL SCHOOL EXPERIENCE AND THE DIFFERING ROLES YOU HAVE HAD? **How many years, different roles?**	

1. ADHD AS A DISORDER AND ITS SYMPTOMS

WE ARE PARTICULARLY INTERESTED IN HEAD TEACHERS'/SENCOS' PERCEPTIONS OF ATTENTION-DEFICIT/ HYPERACTIVITY DISORDER OR ADHD AND UNDERSTANDING THE IMPACT OF ADHD ON CLASSROOM BEHAVIOUR.

We want the head teachers/SENCOs to give their opinions on ADHD – its causes and symptoms.

We are interested to get at how head teachers/SENCOs define ADHD and the symptoms they have seen in the children they have taught and supported

HOW WOULD YOU DESCRIBE ADHD?

WHAT DO YOU THINK CAUSES ADHD?
What makes you think this? Where have you found information about the causes of ADHD?

COULD YOU DESCRIBE THE TYPE OF BEHAVIOURS YOU ASSOCIATE WITH ADHD?

COULD YOU DESCRIBE ANY EXAMPLES OF CHILDREN IN YOUR SCHOOL OR CHILDREN YOU HAVE WORKED WITH WHO HAVE ADHD?
What differences have you seen between different children with ADHD?
What similarities have you seen between different children with ADHD?

Impact on school

COULD YOU DESCRIBE THE IMPACT OF HAVING A CHILD WITH ADHD IN THE SCHOOL?
For you, for other children, for support staff?
What were the challenges? Can you describe any benefits?

Impact on teaching practice and planning

COULD YOU DESCRIBE SOME OF THE STRATEGIES YOU HAVE USED WHEN SUPPORTING/ TEACHING CHILDREN WITH ADHD?
How has it affected your planning, classroom management or other things?

2. THE DIAGNOSIS AND TREATMENT OF ADHD

We want the head teachers/ SENCOs to describe their experiences of involvement with ADHD diagnosis

I'M NOW GOING TO TURN TO ASKING SOME QUESTIONS ABOUT YOUR EXPERIENCES OF THE DIAGNOSIS PROCESS AND TREATMENTS FOR ADHD

HOW, IF AT ALL, HAVE YOU BEEN INVOLVED IN THE DIAGNOSIS OF ADHD FOR A CHILD?
E.g. completing rating scales for child behaviour, filling in questionnaires, interviews with clinicians?

Experience of involvement in diagnostic process

How did you feel about providing any information?

Experience of involvement in treatment

HOW, IF AT ALL, HAVE YOU BEEN INVOLVED IN THE TREATMENT OF ADHD FOR A CHILD?
E.g. managing behavioural interventions, managing administration of medication?

Previous experience of ADHD training

3. TRAINING AND SUPPORT FOR TEACHING CHILDREN WITH ADHD

Helpful elements of training

I'M NOW GOING TO BE ASKING SOME QUESTIONS ABOUT YOUR OPINIONS ON ADHD TRAINING FOR PRIMARY TEACHERS

Unhelpful elements of training

COULD YOU DESCRIBE ANY TRAINING YOU HAVE HAD TO BE ABLE TO SUPPORT AND TEACH CHILDREN WITH ADHD?
e.g. during training or on the job; compulsory or voluntary; provided by the school or outside agency?

Further training desired

CAN YOU DESCRIBE THE FORMAT OF THE TRAINING?
How was it delivered? How many sessions were involved?

Desirable format of training

COULD YOU DESCRIBE WHAT YOU FOUND HELPFUL OR EFFECTIVE IN THAT TRAINING?

Views on the type of support needed and examples of previous support offered

COULD YOU DESCRIBE ANY ELEMENTS THAT WERE UNHELPFUL OR INEFFECTIVE?

WHAT FURTHER TRAINING, IF ANY, DO YOU THINK WOULD HELP TEACHERS IN YOUR SCHOOL BE BETTER ABLE TO TEACH CHILDREN WITH ADHD?
E.g. Knowledge about ADHD, its causes, symptoms, treatments; behavioural techniques

to enable ADHD children to manage their emotions and behaviour etc.

HOW DO YOU THINK THIS TYPE OF TRAINING WOULD BE BEST DELIVERED?
E.g. inset days, online training, self-help manual, face-to-face training, one-off, semi-regular etc.

HOW DO YOU SUPPORT STAFF WHO TEACH CHILDREN WITH ADHD IN YOUR SCHOOL?
Can you describe an example of how you have offered support and how this was received?

CAN YOU DESCRIBE ANY OTHER SUPPORT YOU COULD OFFER OR HAS BEEN REQUESTED FOR STAFF IN YOUR SCHOOL?

5. CONCLUSION

IS THERE ANYTHING ELSE YOU WOULD LIKE TO SHARE THAT WE HAVEN'T COVERED?

Prompts

In what way
Can you expand on that
Can you give me more details
Tell me more about

Debriefing statement

That concludes our interview. Thank you for taking part in this study and being willing to share your perspectives and opinions with me. As I said at the start, the study is designed to gain head teachers'/SENCOs' perspectives on training for ADHD in primary schools. Your contribution today will greatly help in understanding the impact of ADHD in the classroom and the training needs of teachers so that effective training materials can be developed in the future.

Is there anything you would like to ask me before we finish the interview?

IF ON THE PHONE: I will be sending you a debriefing form that says a little bit more about the study in the next day or so. This contains contact details of the researchers, and also gives

you contact details in case you want to raise any concerns or make a complaint.
Thank participant and end call.

End recording

Appendix H Interview Protocol for Teachers and Teaching Assistants

Teacher perspectives on ADHD training: Understanding the needs and views of primary school teachers.

Ergo ID: 47352

ADHD teacher interview

Thank you for giving your time to speak with me today. As you have read in the information sheets, the overall aim of this project is to understand teachers' perspectives and opinions on ADHD and any training needs you have so that effective ADHD training materials can be developed in the future. We'll also be interviewing head teachers and SENCOs to hear from them about how they can support teachers in this area so it would be great to hear about the ways in which you think they could support you.

The aim of the interview is hear your perspective and opinion so there are no right or wrong answers. And everything you say will be strictly confidential. No one from your school or any other school will be able to identify you or your contributions from any reports or articles that come out of this study.

I will be recording the interview so that I can transcribe it afterwards. When it's transcribed, I will assign you a pseudonym (which you're welcome to suggest) so that your name does not appear anywhere on the transcription. In any published reports or articles, we may use anonymised excerpts but again, there will be no way for anyone to identify you or your school.

Do you have any questions about the study or this interview before we start?

Are you happy for me to start the recorder? OK, it's now recording.

QUESTIONS & PROBES	INTERVIEWER NOTES/INSTRUCTIONS
GENERAL INTRODUCTION	
I WOULD LIKE TO TALK TO YOU ABOUT YOUR TEACHING EXPERIENCE AND PROFESSIONAL OPINIONS OF TEACHING A VARIETY OF CHILDREN IN ONE CLASSROOM.	Aim to relax interviewee, gain impression of teaching experience.
COULD YOU TELL ME A LITTLE ABOUT YOUR GENERAL TEACHING EXPERIENCE? **How many years, different roles?**	
CAN YOU DESCRIBE A TYPICAL CLASSROOM AND THE VARIETY OF CHILDREN YOU MAY EXPECT TO BE TEACHING?	
1. ADHD AS A DISORDER AND ITS SYMPTOMS	

WE ARE PARTICULARLY INTERESTED IN TEACHERS' PERCEPTIONS OF ATTENTION-DEFICIT/ HYPERACTIVITY DISORDER OR ADHD AND UNDERSTANDING THE IMPACT OF ADHD ON CLASSROOM BEHAVIOUR.

We want the teachers to give their opinions on ADHD – its causes and symptoms.

HOW WOULD YOU DESCRIBE ADHD?

We are interested to get at how teachers define ADHD and the symptoms they have seen in the children they have taught

WHAT DO YOU THINK CAUSES ADHD?
What makes you think this? Where have you found information about the causes of ADHD?

COULD YOU DESCRIBE THE TYPE OF BEHAVIOURS YOU ASSOCIATE WITH ADHD?

COULD YOU DESCRIBE ANY EXAMPLES OF CHILDREN IN YOUR CLASSROOM OR CHILDREN YOU HAVE WORKED WITH WHO HAVE ADHD?
What differences have you seen between different children with ADHD?
What similarities have you seen between different children with ADHD?

Impact on classroom

COULD YOU DESCRIBE THE IMPACT OF HAVING A CHILD WITH ADHD IN THE CLASSROOM?
For you, for other children, for the class as a whole, for support staff?
What were the challenges? Can you describe any benefits?

Impact on teaching practice and planning

COULD YOU DESCRIBE SOME OF THE STRATEGIES YOU HAVE USED WHEN TEACHING CHILDREN WITH ADHD?
How has it affected your planning, classroom management or other things?

ONE OF THE STRATEGIES THAT'S BEEN EFFECTIVE FOR PARENTS OF CHILDREN WITH ADHD IS…

2. THE DIAGNOSIS AND TREATMENT OF ADHD

We want the teachers to describe their experiences of involvement with ADHD diagnosis

I'M NOW GOING TO TURN TO ASKING SOME QUESTIONS ABOUT YOUR EXPERIENCES OF THE DIAGNOSIS PROCESS AND TREATMENTS FOR ADHD

HOW, IF AT ALL, HAVE YOU BEEN INVOLVED IN THE DIAGNOSIS OF ADHD FOR A CHILD?

Experience of involvement in diagnostic process

E.g. completing rating scales for child behaviour, filling in questionnaires, interviews with clinicians?

Experience of involvement in treatment

How did you feel about providing any information?

HOW, IF AT ALL, HAVE YOU BEEN INVOLVED IN THE TREATMENT OF ADHD FOR A CHILD?
E.g. managing behavioural interventions, managing administration of medication?

We want to know teachers' opinions on ADHD training

How did you feel about being involved in this treatment?

Previous experience of ADHD training

3. TRAINING AND SUPPORT FOR TEACHING CHILDREN WITH ADHD

I'M NOW GOING TO BE ASKING SOME QUESTIONS ABOUT YOUR OPINIONS ON ADHD TRAINING FOR PRIMARY TEACHERS

Helpful elements of training

Unhelpful elements of training

COULD YOU DESCRIBE ANY TRAINING YOU HAVE HAD TO BE ABLE TO TEACH CHILDREN WITH ADHD?
e.g. during training or on the job; compulsory or voluntary; provided by the school or outside agency?

Further training desired

CAN YOU DESCRIBE THE FORMAT OF THE TRAINING?
How was it delivered? How many sessions were involved?

COULD YOU DESCRIBE WHAT YOU FOUND HELPFUL OR EFFECTIVE IN THAT TRAINING?

Desirable format of training

COULD YOU DESCRIBE ANY ELEMENTS THAT WERE UNHELPFUL OR INEFFECTIVE?

WHAT FURTHER TRAINING, IF ANY, DO YOU THINK WOULD HELP YOU BE BETTER ABLE TO TEACH CHILDREN WITH ADHD?
E.g. Knowledge about ADHD, its causes, symptoms, treatments; behavioural techniques to enable ADHD children to manage their emotions and behaviour etc.

Teachers' views on support offered in school by senior staff and SENCO

HOW DO YOU THINK THIS TYPE OF TRAINING WOULD BE BEST DELIVERED?
E.g. inset days, online training, self-help manual, face-to-face training, one-off, semi-regular etc.

HOW DO SENIOR STAFF AND THE SENCO SUPPORT YOU IN TEACHING CHILDREN WITH ADHD?

Can you describe an example of when you have needed support and how this was offered?

CAN YOU DESCRIBE ANY OTHER SUPPORT YOU WOULD LIKE FROM SENIOR STAFF OR THE SENCO?

5. CONCLUSION

IS THERE ANYTHING ELSE YOU WOULD LIKE TO SHARE THAT WE HAVEN'T COVERED?

Prompts

In what way
Can you expand on that
Can you give me more details
Tell me more about

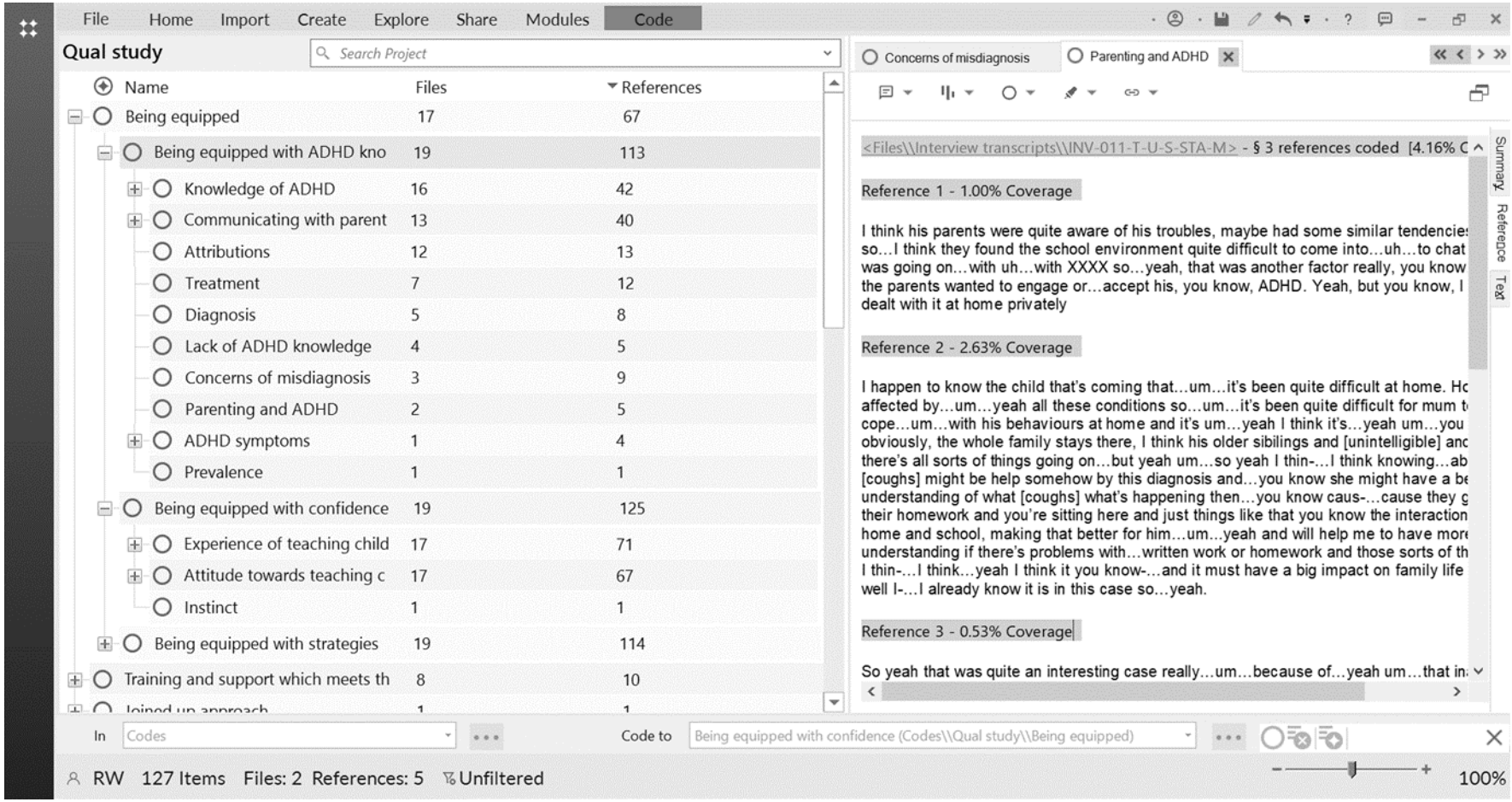
Debriefing statement

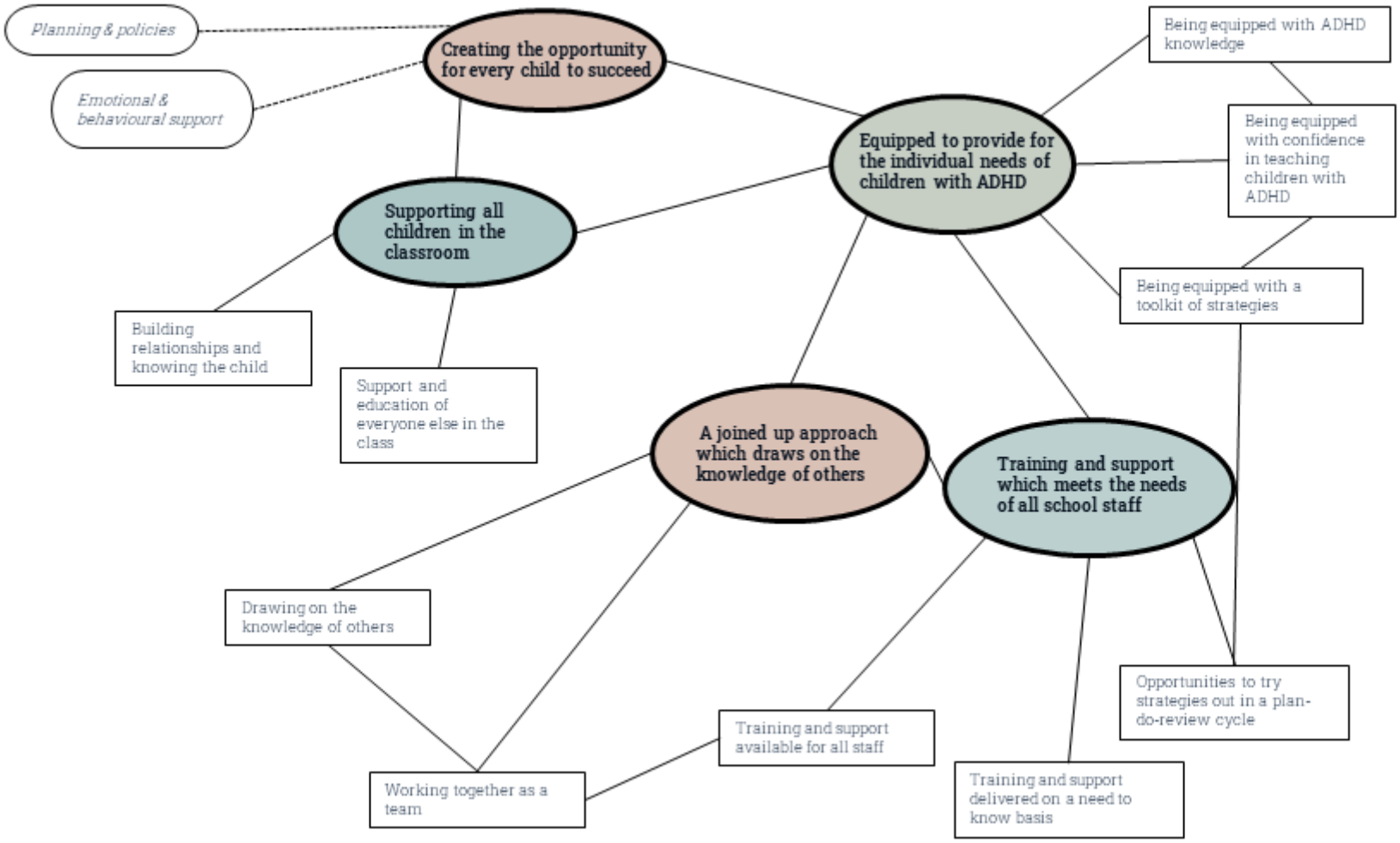
That concludes our interview. Thank you for taking part in this study and being willing to share your perspectives and opinions with me. As I said at the start, the study is designed to gain teachers' perspectives on training for ADHD in primary schools. Your contribution today will greatly help in understanding the impact of ADHD in the classroom and the training needs of teachers so that effective training materials can be developed in the future.
Is there anything you would like to ask me before we finish the interview?
IF ON THE PHONE: I will be sending you a debriefing form that says a little bit more about the study in the next day or so. This contains contact details of the researchers, and also gives you contact details in case you want to raise any concerns or make a complaint.
Thank participant and end call.
End recording

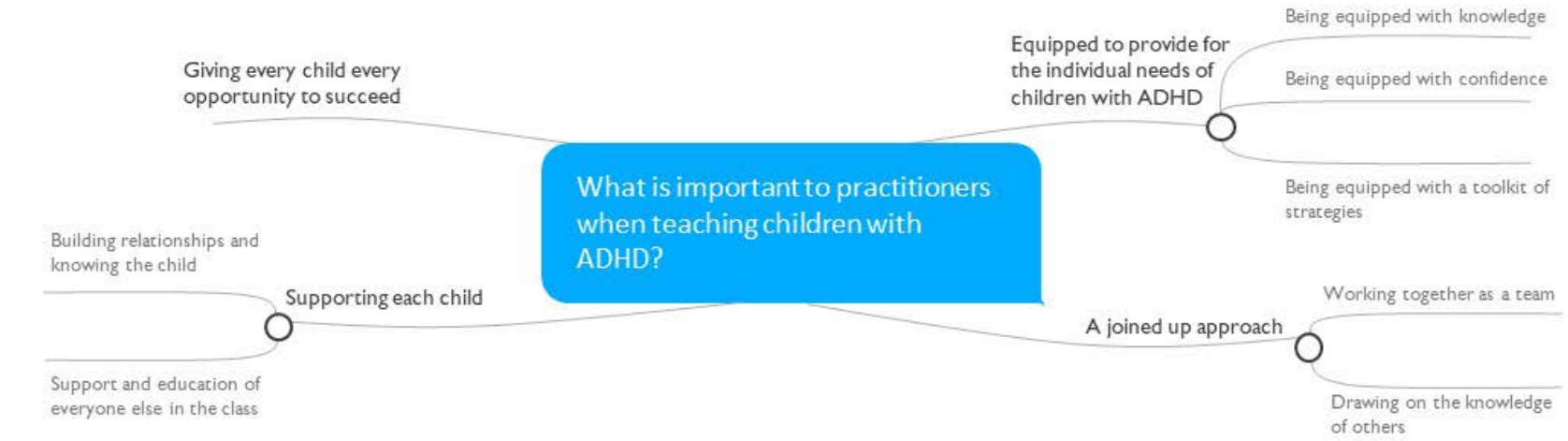
Appendix I Coding Extracts from Interview Study

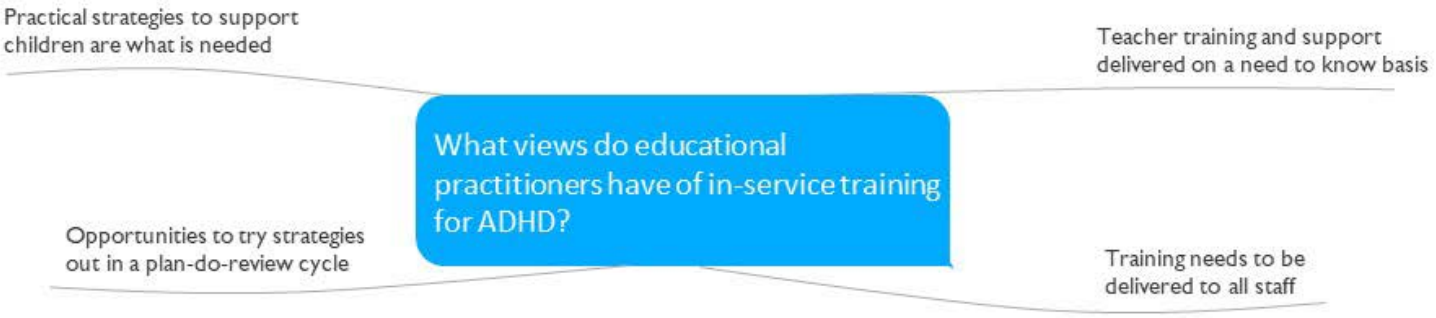
Name	Files	References
ADHD symptoms	1	4
Effect on classroom	1	1
Symptom changes	1	4
Attributions	12	13
Behaviour strategies	19	119
Aims	6	11
Effort required	7	18
Individual	1	1
Proactive	6	14
Remove from classroom	2	2
Sharing with other staff	1	1
Trial and error	8	14
CAHMS	0	0
Concerns with CAHMS	2	2
Roles assigned by CAHMS	2	4
Communicating with parents	13	40
Communication with parents	2	7
Diagnosis	5	8
Head teachers' perspective	1	4
Joined up approach	1	1
Learning strategies	1	1
Mutual support	2	3
Peer relationships	2	2
Prevalence	1	1
Prioritising training	1	2
Role of SENCO	2	5
Teachers' needs	6	11
Teachers' perspectives on ADHD	3	3
Attitude towards teaching children with A	17	67
Likeable	3	3
Misunderstanding	1	2
Not my job	1	1
Problematic	1	1
Wanting the best for the child	2	2
Concerns of misdiagnosis	3	9
Experience of teaching children with ADH	17	71
ADHD children's feelings and experie	1	2
Can learn while moving	1	1
Confidence	1	2
Experience valuable	1	1
Extra work or effort	3	5
Implementing interventions	8	15
Thrown in at the deep end	1	2
what children need	2	2
Instinct	1	1
Knowledge of ADHD	16	42
Attributions	1	1
Behaviour as communication	1	1
Behaviours	16	120
Aggressive	1	2
Attention or concentration issue	14	27
Hyperfocus	1	2
Barrier to learning	2	2
Can't filter	1	3
Creative	1	1
Defiance	1	1
Developmental differences	7	10
Disorganisation	1	1
Doesn't conform	2	2
Effect on classroom	16	68
Positive	5	7
Effect outside of classroom	2	2
Emotional reactions	8	12
Hyperactive	10	22
Impulsive	10	21
Can't sit still or settle	12	22
Individual differences	14	36
Involuntary	5	7
Lack of sleep	1	1
Lethargic	1	1
No obvious signs	2	2
Not limited to ADHD	1	1
On medication	3	4
Peer relationships	4	7
Processing difficulties	3	3
Recognition	3	5
Referral	14	37
Concern	4	4
Repetitive behaviours	1	1
Self-harm	1	1
Self-management	3	4
Self-understanding	1	1
Sensory needs	2	2
Shouting out	5	7
Symptom changes	6	20
Take to space to retreat or calm	2	4
Triggers	2	4
Underlying issue	2	2
Understanding the behaviour or	6	11
Unpredictable	3	4
Unsafe or destructive	5	6
Walking out	3	3
Wants adult support	1	1
Work avoidance	4	7
Importance for helping child	1	2
Not 'naughty'	3	4
Source	0	0
Lack of ADHD knowledge	4	5
Parenting and ADHD	2	5
Upskill the child	4	16

Teachers's ADHD training experiences	15	27
difficulties in implementation	1	3
generic	7	10
Independent work	3	5
lack of opportunity	9	27
too generic	1	1
too theoretical	0	0
ways to improve training	2	5
what has helped	1	1
Training	8	10
Aims	3	3
Content	16	55
Using staff	1	1
Cost	3	3
Delivery	15	35
Need	10	22
Treatment	7	12
Understanding and knowing the child	9	23
Wider staff team	15	38
SLT support	7	14


File Home Import Create Explore Share Modules Code
Qual study
Search Project
Name Files References
Being equipped 17 67
Being equipped with ADHD kno 19 113
Knowledge of ADHD 16 42
Communicating with parent 13 40
Attributions 12 13
Treatment 7 12
Diagnosis 5 8
Lack of ADHD knowledge 4 5
Concerns of misdiagnosis 3 9
Parenting and ADHD 2 5
ADHD symptoms 1 4
Prevalence 1 1
Being equipped with confidence 19 125
Experience of teaching child 17 71
Attitude towards teaching c 17 67
Instinct 1 1
Being equipped with strategies 19 114
Training and support which meets th 8 10
Concerns of misdiagnosis
Parenting and ADHD
<Files\\Interview transcripts\\INV-011-T-U-S-STA-M> - § 3 references coded [4.16% C
Reference 1 - 1.00% Coverage
I think his parents were quite aware of his troubles, maybe had some similar tendencies so...I think they found the school environment quite difficult to come into...uh...to chat was going on...with uh...with XXXX so...yeah, that was another factor really, you know the parents wanted to engage or...accept his, you know, ADHD. Yeah, but you know, I dealt with it at home privately
Reference 2 - 2.63% Coverage
I happen to know the child that's coming that...um...it's been quite difficult at home. Hc affected by...um...yeah all these conditions so...um...it's been quite difficult for mum t cope...um...with his behaviours at home and it's um...yeah I think it's...yeah um...you obviously, the whole family stays there, I think his older sibilings and [unintelligible] anc there's all sorts of things going on...but yeah um...so yeah I thin-...I think knowing...ab [coughs] might be help somehow by this diagnosis and...you know she might have a be understanding of what [coughs] what's happening then...you know caus-...cause they g their homework and you're sitting here and just things like that you know the interaction home and school, making that better for him...um...yeah and will help me to have more understanding if there's problems with...written work or homework and those sorts of th I thin-...I think...yeah I think it you know-...and it must have a big impact on family life well I-...I already know it is in this case so...yeah.
Reference 3 - 0.53% Coverage
So yeah that was quite an interesting case really...um...because of...yeah um...that in
Summary
Reference
Text
In Codes
Code to Being equipped with confidence (Codes\\Qual study\\Being equipped)
RW 127 Items Files: 2 References: 5 Unfiltered
100%


Planning & policies
Emotional & behavioural support
Creating the opportunity for every child to succeed
Supporting all children in the classroom
Building relationships and knowing the child
Support and education of everyone else in the class
Equipped to provide for the individual needs of children with ADHD
Being equipped with ADHD knowledge
Being equipped with confidence in teaching children with ADHD
Being equipped with a toolkit of strategies
A joined up approach which draws on the knowledge of others
Drawing on the knowledge of others
Working together as a team
Training and support which meets the needs of all school staff
Training and support available for all staff
Training and support delivered on a need to know basis
Opportunities to try strategies out in a plan-do-review cycle


What is important to practitioners when teaching children with ADHD?
Giving every child every opportunity to succeed
Equipped to provide for the individual needs of children with ADHD
Being equipped with knowledge
Being equipped with confidence
Being equipped with a toolkit of strategies
Supporting each child
Building relationships and knowing the child
Support and education of everyone else in the class
A joined up approach
Working together as a team
Drawing on the knowledge of others


What views do educational practitioners have of in-service training for ADHD?
Practical strategies to support children are what is needed
Teacher training and support delivered on a need to know basis
Opportunities to try strategies out in a plan-do-review cycle
Training needs to be delivered to all staff

Appendix J <u>Project Summary for Collaborative Working Group</u>

ADHD working group summary sheet

full information in following pages

University of Southampton

What is the research about?

- A working group to develop an ADHD resource for primary teachers
- Teachers' experiences of taking part in this participatory research project

What will happen to me if I take part?

You will attend a series of working group meetings in 2021 using Microsoft Teams. It is anticipated that the first meeting will take place in Spring 1 (between January – March 2021), the final meeting will take place in Summer 2 (between June-July 2021), that a maximum of 6 meetings will take place and that each meeting will last approximately one hour. These meetings will be both video and audio recorded to assist with later project development and research analysis.

Are there any benefits in my taking part?

The overall benefit in taking part will be to contribute to the development of an ADHD resource for teachers which reflects the experience and perspectives of qualified teachers.

Each participating teacher will be reimbursed for their time in accordance with the National Institute of Health Research guidelines at a rate of £25 per meeting up to a maximum payment of £150.

Each participating teacher will be offered the opportunity to have their name in the resource as a member of the working group or in any publications associated with the resource if they wish.

Prior to the first meeting you will be asked to complete a consent form and an initial questionnaire.

At the end of each meeting, you will be asked to answer a few questions about your experience of the project so far, which may be completed with written or recorded responses. This will enable an understanding of the working group process to be recorded.

Towards the end of the project, you will be asked to take part in a qualitative interview with the researcher to discuss your experiences of the project. This interview will take approximately 30 minutes and will be conducted via Teams.

Appendix K Initial Questionnaire and Personal Information Sheet

Initial questionnaire

Part 1: demographic information

Please circle your response or write on the dotted line as appropriate

Name ……

Age …… prefer not to say

Man/ woman/ other …… prefer not to say

Years of teaching …… prefer not to say

Number of children currently/ previously taught displaying hyperactive/ impulsive/ inattentive behaviours:

0 0-5 6-10 >10 don't know prefer not to say

Number of these children who have an ADHD diagnosis:

0 0-5 6-10 >10 don't know prefer not to say

Number of these children who were receiving ADHD medication:

0 0-5 6-10 >10 don't know prefer not to say

Prior training in ADHD:

Yes No prefer not to say

If yes, approx. how many hours? ……

How would you rate your knowledge about ADHD?

Very knowledgeable somewhat knowledgeable not very knowledgeable unknowledgeable

prefer not to say

How would you rate your confidence in teaching children with ADHD?

Very confident somewhat confident not very confident unconfident

prefer not to say

Part 2: participatory information

Please write in the space provided

How did you hear about this project?

What made you want to get involved?

What are your expectations of:

being involved in this project?

what we will achieve?

the challenges we will face?

Before you received the information about this project, what was your understanding of the term participatory research?

Thank you for taking the time to answer these questions, and for taking part in this project as a whole 😊. Please email your completed questionnaires to Rebecca Ward: r.j.ward@soton.ac.uk

Personal Information Sheet

Name

……

Identified gender (please circle)

Man Woman Other…….. Prefer not to say

School name

……

Role

Class teacher Head teacher SENCO

Other……

Number of years' teaching experience

……

An estimate of how many children with ADHD you have taught over your career

……

Appendix L Reflective Questions

Reflective questions for the end of our meetings

Please write in the space or record yourself answering the questions and email the responses to Rebecca Ward (r.j.ward@soton.ac.uk)

What worked well in today's meeting, and why?

How could our next meeting be improved?

Were you able to contribute in the way you wanted? Why/ why not?

How do you feel about the decisions made today?

If you think the reflexive questions for the end of the meetings could be improved, please make suggestions to Rebecca Ward (by email r.j.ward@soton.ac.uk or via Teams) in the next week. I will circulate these to the group, and any changes will be decided by the group at the beginning of our next meeting. Thank you 😊

(From meeting 2 onwards, an additional first question could be added: Is there anything you would like to say about the last meeting having had time to reflect on it?)

Appendix M Interview Protocol for Working Group Participants

Qualitative interview questions

Thinking about the experience of being involved in this project

Why did you take part in this project?

Did you enjoy taking part in this project? Why/ why not?

Would you take part in a similar project in the future? Why/ why not?

How have you benefitted from being involved in this project?

How do you think the children you teach/support might have benefitted from you taking part?

Can you see how you have contributed to the project and how it has benefitted from your contributions?

What are your thoughts on the participatory research process? What are the benefits? What are the challenges? What difference do you think COVID-19 made to this? How could a similar project in the future be improved?

What, if any, influence did the offer of financial reimbursement for your time have on your desire to take part in the project? Did this reimbursement have any influence on how valued you felt? Why/ why not?

Can you describe how using Teams affected your experience of this project?

Thinking about the resource we have developed

What are your thoughts on the ADHD resource that we have produced? What are its strengths? What are its weaknesses?

How would you like to be represented on the resource? Would you like your name, school name (or type), role, short bio?

What difference do you think having a working group of teachers and researchers has made to the development of this resource?

How do you think the resource could be updated and developed in the future?

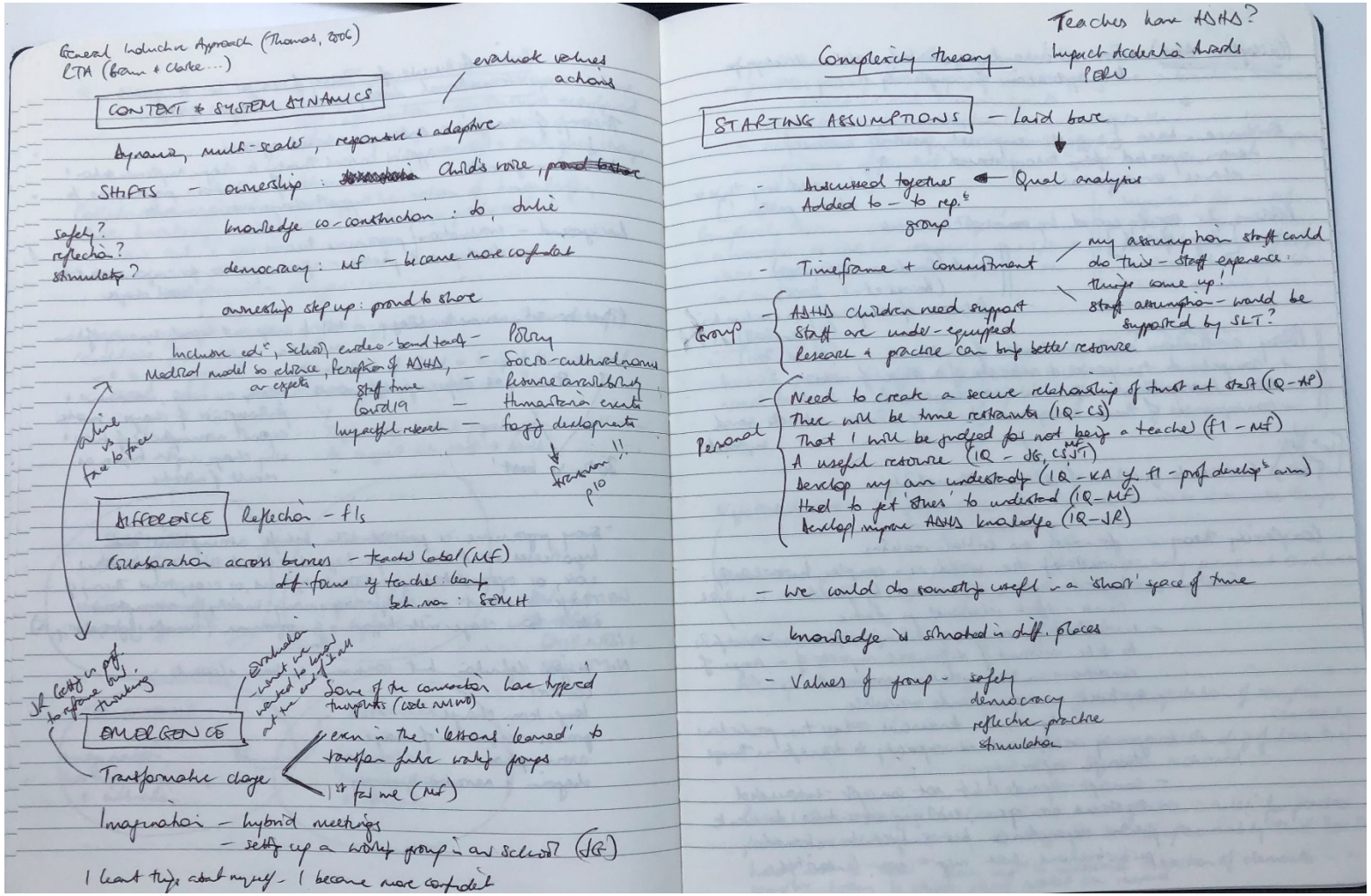
Would you like to be involved in this in any capacity?

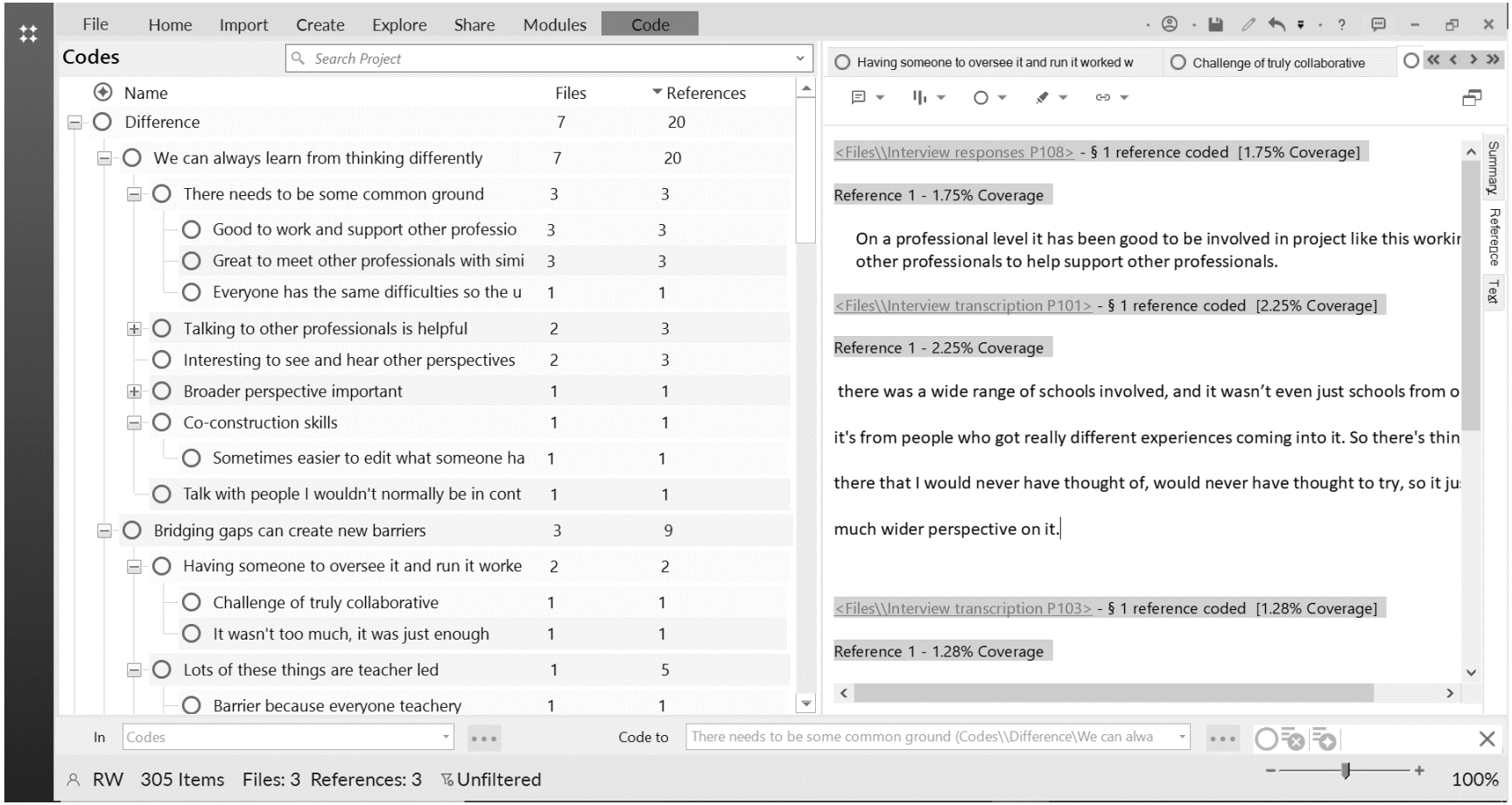
When we share the resource with school staff and perform an evaluation, what questions do you think we should ask to evaluate the resource?

Is there anything else you would like to add about your experience of this project?

Thank you! 😊

Appendix N <u>Coding Extract from Collaborative Working Group</u>




File
Home
Import
Create
Explore
Share
Modules
Code
Codes
Search Project
Name
Files
References
Difference 7 20
We can always learn from thinking differently 7 20
There needs to be some common ground 3 3
Good to work and support other professio 3 3
Great to meet other professionals with simi 3 3
Everyone has the same difficulties so the u 1 1
Talking to other professionals is helpful 2 3
Interesting to see and hear other perspectives 2 3
Broader perspective important 1 1
Co-construction skills 1 1
Sometimes easier to edit what someone ha 1 1
Talk with people I wouldn't normally be in cont 1 1
Bridging gaps can create new barriers 3 9
Having someone to oversee it and run it worke 2 2
Challenge of truly collaborative 1 1
It wasn't too much, it was just enough 1 1
Lots of these things are teacher led 1 5
Barrier because everyone teachery 1 1
Having someone to oversee it and run it worked w
Challenge of truly collaborative
<Files\\Interview responses P108> - § 1 reference coded [1.75% Coverage]
Reference 1 - 1.75% Coverage
On a professional level it has been good to be involved in project like this workir
other professionals to help support other professionals.
<Files\\Interview transcription P101> - § 1 reference coded [2.25% Coverage]
Reference 1 - 2.25% Coverage
there was a wide range of schools involved, and it wasn't even just schools from o
it's from people who got really different experiences coming into it. So there's thin
there that I would never have thought of, would never have thought to try, so it ju
much wider perspective on it.
<Files\\Interview transcription P103> - § 1 reference coded [1.28% Coverage]
Reference 1 - 1.28% Coverage
Summary
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There needs to be some common ground (Codes\\Difference\We can alwa
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Appendix O <u>Parent Participant Information Sheet</u>

Your child is being invited to take part in a project about ADHD.

The project is being organised by Rebecca (Becky) Ward from The University of Southampton together with …… from your child's school.

This information sheet tells you all about the project and what happens if you and your child are both happy for your child to take part.

If you have any questions you can email Becky on r.j.ward@soton.ac.uk or call on 07812 988036, or speak to ……

What is the research about?

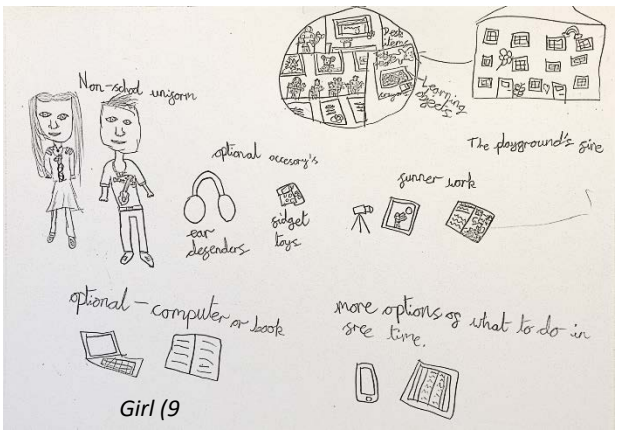
This project is creating an ADHD resource for school staff, including information about what ADHD is, how ADHD might have an impact on your child at school, and ways in which school staff can help to support and teach children with ADHD really well.

Why has my child been asked to take part?

We want to include some information in our resource from a child's point of view and so we are planning to include some writing or drawings of what children with ADHD think an ideal school looks like, as well as what a school that they don't want to go to would look like.

What will happen to my child if they take part?

Your child will have some one-to-one time with a school staff member during the school day. They will be offered the choice to talk, draw or write about their **ideal** school, and then to talk, draw or write about the sort of school that they would **not** like to go to. If they choose to talk, the staff member will write down the descriptions they give and check these with your child to make sure they have captured them correctly. It will take about 15-20 minutes altogether.



An example of an Ideal School picture by a primary aged pupil

Girl (9

Are there any benefits in my child taking part?

We think that any children that take part will enjoy the activity and the chance to share their ideas. We also think that the drawings and writing will help school staff to

understand what ADHD children would like school to be like and what they do not want school to be like.

Are there any risks involved?

We don't think there are any particular risks in taking part. If you child wants to stop at any point during the activity, they can ask to do so.

What data will be collected?

Your child's drawing or writing (or the written version of your child's verbal explanation) is part of the 'data' that will be collected. We will also record your child's age and gender.

How will we safeguard your data?

Your participation and the information we collect about you during the course of the research will be kept strictly confidential. The staff member who works with your child will only share information with the research team and will not discuss your child's participation with anyone else.

Appendix P <u>Child Participant Information Sheet</u>

UNIVERSITY OF Southampton

Do you want to join in a project about ADHD?

[teacher's name] from your school is working with Rebecca (Becky) Ward from The University of Southampton together to find out more about ADHD.

This sheet tells you all about the project and what will happen if you want to join in.

What is the project about?

We are helping school staff to learn more about ADHD and how to help children with ADHD.

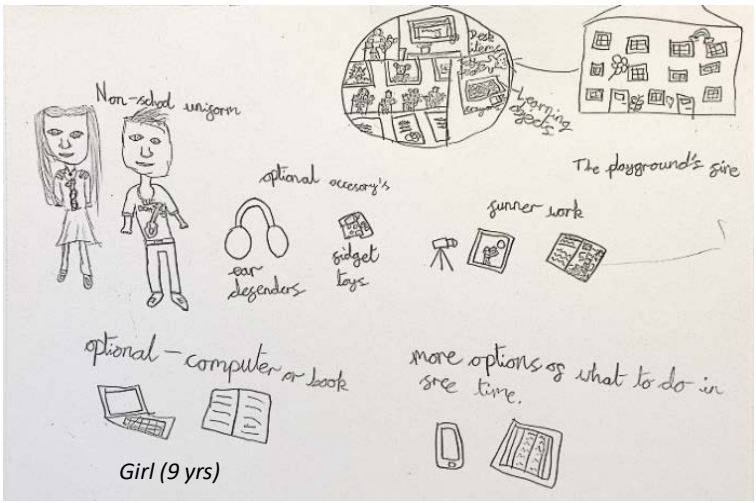
Why have I been invited to join in?

We want school staff to learn about ADHD from a child's point of view.

What will happen to me if I join in?

One day at school, you will be offered the choice to talk, draw or write about your **ideal** school, and then to talk, draw or write about the sort of school that you would **not** like to go to. If you choose to talk, the staff member will write down the descriptions you give and check these with you to make sure they got it right!

It will take about 15-20 minutes. There's an example that someone else did below.



Girl (9 yrs)

Why might I want to join in?

We think that you will enjoy it and enjoy the chance to share your ideas. We also think that the drawings and writing will help school staff to understand what ADHD children would like school to be like and what they do not want school to be like.

Why might I not want to join in?

You might not want to think about a school that you do not want to go to. Or you might feel unsure about what it will be like to the activity.

Will you show other people what I have done?

Yes, a bit like the drawing on this sheet, we will show other people your drawing or writing or what the staff member wrote down when you talked to them. We won't put your name on it though, so nobody else will know that you did it.

Will other people know that I've joined in?

The only people that will know that you've joined in are your parent/ carer, [teacher's name], [staff member who does the task if this if different from above], Becky Ward

Do I have to join in?

No, only if you want to. If you want to join in, you will need to write your name on a piece of paper and your parent/carer will need to do this too.

What if I change my mind?

During the activity, you can ask to stop at any time. Afterwards, you can ask your parent to tell Becky that you don't want to be included anymore. You can do this until 15 July 2021 without needing to give a reason and we will not use your drawing or writing.

Where can I find out more?

If you have any worries about this project or any questions, you can talk to [teacher's name] or ask your parent to contact Becky.

Thank you!

Appendix Q Qualtrics Evaluation Survey

ATTIC

Start of Block: CSAT

I consent to taking part in this survey and understand my answers will be anonymous. (14)

Q1 Overall, how satisfied are you with your most recent interaction with our company?

Extremely satisfied (1)

Somewhat satisfied (2)

Neither satisfied nor dissatisfied (3)

Somewhat dissatisfied (4)

Q2 Based on your most recent interaction with our company, how likely are you to purchase our products or services again?

Extremely likely (5)

Very likely (4)

Moderately likely (3)

Slightly likely (2)

Not at all likely (1)

Q3 The website is attractive in appearance.

Strongly agree (1)

Agree (2)

Neither agree nor disagree (3)

Disagree (4)

Strongly disagree (5)

Q4 Based on your most recent interaction with our company, would you recommend our products or services to a friend or family member?

0 1 2 3 4 5

Definitely would ()	
Probably would ()	
Not sure ()	
Staff skills - strategies ()	
ADHD positives ()	
Probably would not ()	
A staff perspective ()	
Medication ()	
Definitely would not ()	

Q5 If you would like to share any additional comments about your most recent interaction with our company, please enter them below.

Strongly agree (1)

Agree (2)

Neither agree nor disagree (3)

Disagree (4)

Strongly disagree (5)

Q6 I feel more confident in supporting children with ADHD after using this site.

Strongly agree (1)

Agree (2)

Neither agree nor disagree (3)

Disagree (4)

Strongly disagree (5)

Q7 The strategies suggested are practical and workable in my school context.

Strongly agree (1)

Agree (2)

Neither agree nor disagree (3)

Disagree (4)

Strongly disagree (5)

Q8 I would prefer to choose from the grid of strategies on this website than for a colleague e.g. the SENCO, to suggest strategies for me to try.

Strongly agree (1)

Agree (2)

Neither agree nor disagree (3)

Disagree (4)

Strongly disagree (5)

Q9 I can trust the information provided on this site.

Strongly agree (1)

Agree (2)

Neither agree nor disagree (3)

Disagree (4)

Strongly disagree (5)

Q10 I would recommend this site to colleagues.

Strongly agree (1)

Agree (2)

Neither agree nor disagree (3)

Disagree (4)

Strongly disagree (5)

Q11 I am likely to return to this site in the future.

Strongly agree (1)

Agree (2)

Neither agree nor disagree (3)

Disagree (4)

Strongly disagree (5)

Q12 How would you use this site to enable you to support children in the classroom?

_____

Q13 What other information or features would you want on this site?

_____

Q14 Any other comments

_____

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Endnotes

1. Quote from interview, Headteacher, 2019