A mixed methods study investigating the impact of the Homunculi Approach on anxiety for children with social communication needs

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Abstract

The mental health of children and young people is of growing concern nationally. Schools are well placed to support children with their mental wellbeing, and Educational Psychologists play an important role in assisting schools to adopt evidence-based practices to best support children. One approach with a wealth of research exploring its effectiveness is Cognitive Behavioural Therapy (CBT), but less is known about the efficacy of CBT based approaches when they are delivered in school settings.

The current study aims to add to the evidence-base for CBT based approaches when delivered in a school setting, by school staff. It used a mixed methods research design to investigate the effectiveness of the Homunculi Approach for reducing anxiety in primary aged pupils with social communication needs. The findings of the quantitative phase of the study provided no evidence for the Homunculi Approach reducing anxiety in primary aged children with social communication needs, as measured by the children's self-reports, parent reports, and teacher reports. However, the small sample size of the study means these findings must be interpreted with caution.

The qualitative phase of this study further explores the perceived changes for the children and the possible factors that can impact the implementation of the Homunculi Approach in schools, using semi-structured interviews and thematic analysis. Themes were identified around the perceived changes in the children's behaviour and their emotional literacy and regulation, as well as the difficulties some children experienced using the Homunculi Approach. The thematic analysis also highlighted some possible factors that contribute to the impact of the intervention, including use of the 'little people', talking about thoughts and actions, individual responses to the approach and adaptations to support outside of the intervention context. Finally, themes were identified related to the possible factors impacting

the implementation of the Homunculi Approach, which focused on the resources provided, the input from a Trainee Educational Psychologist and the time demands of the programme.

The limitations of this study and possible directions for future research are discussed, highlighting a need for more research exploring the impact of CBT based approaches, including the Homunculi Approach, when they are delivered in school settings, by school staff.

1 Introduction

1.1 The aims of the current study

The current study aims to add to the evidence-base for the Homunculi Approach and for the efficacy of CBT based approaches when delivered in a school setting, by school staff. It used a mixed methods research design to investigate the effectiveness of the Homunculi Approach for reducing anxiety in primary aged pupils with social communication needs. It also explored the perceived changes for the children following participation in the Homunculi Approach and the possible factors that can affect its implementation.

1.2 A note on terminology

There has been debate around the language used when referring to individuals with a diagnosis of autism. Often, the term autism spectrum disorder is used, in line with the Diagnostic Statistical Manual (DSM-V; American Psychiatric Association, 2013). However, research exploring the views and preferences of 3470 members of the autism community in the UK about the terms they use suggests that 'autism' and 'on the autism spectrum' are the most highly endorsed (Kenny et al., 2016). Moreover, Monk et al. (2022) suggest that the term autism spectrum disorder may reinforce negative discourses that can surround autism and argue that autism is a more appropriate term. The term autism will therefore be used throughout this research.

There has also been discussion in the literature around the use of person-first language or identity-first language (Monk et al., 2022). For example, Kenny et al. (2016) found that the term 'autistic' was preferred by a large percentage of the adults with an autism diagnosis and their families, but the majority of professionals endorsed the term 'person with autism'. Vivanti (2020) argues that the views expressed in such research may not reflect the experiences of all individuals in the autism community and a shift away from person-first

language at this time could be premature. Further research exploring the preferences of 654 English speaking adults with autism from across the globe using a mixed methods approach found that there is no universally accepted way to talk about autism (Keating et al., 2023). Many participants in this study shared that they wanted their autism to be recognised as a part of them but not as all that they are, and they felt the term 'autistic' can be reductive and dismissive of their personhood (Keating et al., 2023). In line with Vivanti (2020)'s arguments, these findings demonstrate why using identity-first language may not be appropriate for all individuals. Person-first language will therefore be used during this research, with the researcher also acknowledging the importance of considering the language preferences of each individual wherever possible.

1.3 Personal interest in the research area

The researcher has personal interest in the research topic due to her experience working in a range of settings with children with autism who have often also required support to manage their feelings of anxiety. This was particularly the case during the researcher's previous role working for a Local Authority Autism Team, where she delivered interventions in school settings. This experience often raised questions for the researcher around the best approaches to support children with autism and anxiety and the evidence base underlying these approaches, with CBT based approaches often being suggested. Through her role as a Trainee Educational Psychologist the researcher gained further understanding of CBT and its applications for supporting the wellbeing of children and young people. The researcher hoped to gain more understanding of the efficacy of CBT based approaches, particularly when they are delivered in schools and by school staff.

1.4 Structure of the thesis

This research thesis is presented in six chapters, as follows:

Chapter 1 Introduction

The introduction chapter has outlined the aims of the current research and the researcher's personal and professional interest in the topic.

Chapter 2 Literature Review

This chapter outlines the research relevant to the topics explored in this thesis, including anxiety, autism, and Cognitive Behavioural Therapy. A systematic literature review on the effectiveness of CBT based interventions for reducing anxiety in children with social communication needs when delivered in a school is then presented. The rationale for the current study is then discussed and the research questions outlined.

Chapter 3 Methodology

The methodology chapter outlines the paradigms, epistemologies, and ontologies relevant to educational psychology research, identifying the assumptions and research paradigm underlying the current study. The chapter then discusses quantitative, qualitative, and mixed methods designs before outlining the design adopted in this study to answer the research questions. The procedure for the two phases of the research is described before considering threats to the validity, reliability, and trustworthiness of the current study. Ethical considerations are also addressed.

Chapter 4 Findings

In this chapter, the findings from the quantitative and qualitative phases of the study are outlined.

Chapter 5 Discussion

The discussion chapter interprets the findings in relation to the research questions for this study. The limitations of each phase of the research are then considered and implications for future research and Educational Psychology practice are outlined.

2 Literature review

This literature review begins by outlining the current mental health context and the role Educational Psychologists play in supporting schools to support children and young people with their mental health. This study is investigating the impact of The Homunculi Approach, a Cognitive Behavioural Therapy (CBT) based programme designed for children and young people with autism, on reducing anxiety. Therefore, anxiety, autism, and CBT are discussed in this chapter. Research surrounding the effectiveness of CBT in reducing anxiety for children and young people with autism and the adaptations that can enhance its effectiveness are also discussed. The Homunculi Approach is then described and the existing literature investigating its efficacy is considered. A systematic literature review is then undertaken, examining the evidence for the effectiveness of CBT based interventions for reducing anxiety in children with social communication needs when delivered in a school. The literature review concludes by setting out the rationale for the current study, identifying the research questions it will explore and the original contribution it aims to make.

2.1 The current mental health context and the role of Educational Psychologists

The mental health of children has received growing attention at a national level in recent years. The prevalence of mental health conditions appears to be increasing in children and young people each year (Pitchforth et al., 2019), with figures from the NHS showing the rates of probable mental disorder increased in 6–16-year-olds from one in nine in 2017, to one in five in 2023 (NHS Digital, 2023). This figure increases in children and young people with special educational needs or disability (SEND), with 56.7% of those between 6 to 16 years old having a probable mental health disorder, based on 3667 parent interviews (NHS Digital, 2021). These statistics should be considered in light of the COVID-19 pandemic which is

thought to have further impacted children's mental health (Newlove-Delgado et al., 2021). For example, the findings from online survey data from 2673 parents highlight a particular deterioration in the mental health of preadolescent children during the pandemic, which included an increase in emotional symptoms, inattention and conduct problems (Waite et al., 2021). With mental health difficulties appearing to become more common in children and young people, attention has also turned to how to support children experiencing such difficulties.

Difficulties with mental health are often onset during childhood and given the large amount of time children spend in schools, these settings have been highlighted as important contexts for early intervention to support children and young people with their mental health (Patalay et al., 2020). Guidance from the Department for Education around mental health and behaviour in schools advises that schools should identify and support children with possible mental health needs (Department for Education, 2018). Furthermore, schools should promote the mental health and wellbeing of children and young people using a range of strategies, including identifying need and monitoring the impact of intervention, developing staff's knowledge to support the wellbeing of students, and providing targeted support and referral to appropriate external services when required (Office for Health Improvement and Disparities and Department for Education, 2015). However, research suggests that whilst teachers view supporting student's mental health as part of their role, they perceive a lack of knowledge and skills in this area (Mazzer & Rickwood, 2015). Further research using focus groups with teachers in the UK suggests that teachers want practical and expert-led training that helps them to recognise students who are struggling with their mental health and provides resources that can be adapted for individuals (Shelemy et al., 2019). These findings have important implications for how Educational Psychologists (EPs) can help schools in supporting children's mental health.

A recent government green paper around transforming children and young people's mental health provision aimed to promote joint working between health services and educational settings to support children's mental wellbeing. This included schools and colleges identifying a Designated Senior Lead for Mental Health to oversee their approach to mental health and wellbeing, and the introduction of Mental Health Support Teams (Department of Health and Department for Education, 2017). The aim of Mental Health Support Teams was to provide extra capacity for early intervention and ongoing help to support children and young people with mild to moderate needs, as well as to promote good mental health and wellbeing more generally (Department of Health and Department for Education, 2017). The most recent data regarding the rollout of Mental Health Support Teams in England shows that 35% of pupils were covered by their service in 2022-23 (Department for Education, 2023a). Whilst the coverage of Mental Health Support Teams continues to grow, the large number of children and young people who do not yet have access to this support highlights a gap in provision that EPs are well places to fill.

Weare (2015) highlights the crucial role EPs can play in ensuring appropriate support for mental health is available for children and young people in school. Linked to this, a key part of the EP role is enabling schools to adopt evidence-based practises to bring about change (Cameron, 2006). Research suggests that EPs are well placed to support school staff in delivering evidence-based interventions through training and ongoing guidance through consultation to monitor their implementation (Reinke et al., 2011). The present research aims to explore the impact of The Homunculi Approach to support children with anxiety and autism when delivered in a school setting, thus adding to the evidence base for the intervention. The next sections will describe anxiety and autism in more detail before exploring the research around Cognitive Behavioural Therapy, the principles of which underly The Homunculi Approach.

2.2 Anxiety in children and young people

Anxiety is a basic emotion that is present from infancy, and it refers to the brain's response to danger (Beesdo et al., 2009). It can range from mild to severe and can often be adaptive when it facilitates the avoidance of danger. However, anxiety can become maladaptive when it interferes with functioning, due to extensive degrees of worry and avoidance associated with feelings of distress (Beesdo et al., 2009). The Diagnostic and Statistical Manual of Mental Disorders-5th edition (DSM-5; American Psychiatric Association, 2013) describes an anxiety disorder as excessive worry that a person finds difficult to control, which is associated with physical symptoms, such as muscle tension, fatigue, and difficulty concentrating. The worry causes significant distress or impairment in important areas of functioning (American Psychiatric Association, 2013).

Whilst diagnoses of mental health conditions, such as anxiety disorders, typically depend on 'yes or no' decisions around meeting specific criteria, such a categorical approach has been criticised for not considering the developmental phase of young people and an individual's circumstances (Beesdo et al., 2009). This reflects the ongoing debate around categorical definitions of anxiety compared to a dimensional approach. A dimensional approach moves towards a continuous measure of anxiety as opposed to a categorical view, allowing for the consideration of the severity of dysfunction a person experiences, rather than solely focusing on its presence or absence (Watson, 2005). It is also argued that continuous measures of anxiety are more likely to be stable over time and more reliable than categorical measures (Watson, 2005). With this debate in mind, the DSM-5 outlines dimensional aspects of diagnoses, alongside categories, to capture how conditions can exist on a continuum and range in severity (Kupfer 2015; Regier et al., 2013).

Categorical constructs may be considered as more helpful for clinical decision making around diagnoses (Watson, 2005). However, in the context of schools and from an educational

psychology perspective where diagnosis is not the focus, it may be more useful to adopt a dimensional view of anxiety. This view that anxiety exists on a continuum ranging from low to severe levels allows for consideration of people's individual experiences of anxiety and how this impacts them (Endler & Kocovski, 2001). Adopting such a view removes the need to focus on whether a person meets certain defining criteria and aligns with guidance that schools should identify and support children with possible mental health needs (Department for Education, 2018). Given its relevance to the educational context, the dimensional view of anxiety will be referred to in the current research.

Research suggests that anxiety is common in children and adolescents (Cartwright-Hatton et al., 2006; Ghandour et al., 2019; Lawrence et al., 2015). The prevalence of anxiety has also increased since the Covid-19 pandemic (Wang et al., 2022), with an estimated one in five children and young people under the age of 18 experiencing elevated anxiety symptoms (Racine et al., 2021). Alves et al. (2022) noted that anxiety in adolescents can often go unidentified and untreated and school settings are well placed contexts to address this using school-based prevention and intervention programs. Garcia and O'Neil (2021) further highlighted anxiety as the most prevalent mental health condition among young people and the importance of having access to evidence-based treatments to support them as soon as possible.

This section outlined how anxiety can be defined, either using a categorical or dimensional approach. The prevalence of anxiety in children and young people was also discussed. It is important to consider populations who may be more likely to experience anxiety, such as children and young people with autism. This will be further explored in the next sections.

2.3 Autism

Before discussing anxiety in children and young people with autism, a brief description of autism is provided. Kanner (1943) was the first to clearly define autism after outlining the cases of 11 children who were demonstrating behaviours unique from anything previously reported. Each child differed in the severity of their symptoms, but there were several common characteristics including difficulty relating themselves to people and situations, an anxiously obsessive desire for the maintenance of sameness and a limitation in spontaneous activity (Kanner, 1943). Definitions of autism have changed and developed over time. For example, Rutter (1978) included impaired social development and delayed language development in his definition. Wing and Gould (1979) further investigated the characteristics of autism and questioned whether it should be labelled as one condition, as it can present in different ways. Autism first appeared in the third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-3; American Psychiatric Association, 1980), with definitions continuing to develop since then.

Today, autism is described as a spectrum disorder to reflect the variety of ways it can present. According to the DSM-5, autism spectrum disorder, is defined as a "persistent impairment in reciprocal social communication and social interaction, and restricted, repetitive patterns of behaviour, interests, or activities. These symptoms are present from early childhood and limit or impair everyday functioning. The stage at which functional impairment becomes obvious will vary according to characteristics of the individual and his or her environment" (American Psychiatric Association, 2013, p.53). In the 70 years since Kanner (1943) first described the term, autism has gone from an uncommon developmental disorder to a widely known condition that is now thought to occur in at least 1% of children (National Collaborating Centre for Women's and Children's Health, 2017). In England in 2023, 116000 children with an Education, Health, and Care Plan (EHCP) had a primary need of autism,

making it the most common type of need for those with an EHCP (Department for Education, 2023b). A further 91000 children with autism are identified as requiring support with their Special Educational Needs in school (Department for Education, 2023b).

Given the high number of children with autism requiring additional support in school, it is important to consider the best practices that can enable schools to do this. These will be further discussed below, following consideration of how anxiety impacts children with autism.

2.4 Autism and anxiety

Anxiety is particularly common in children and young people with autism (White et al., 2009). A meta-analysis of 31 studies involving 2,121 young people with autism identified around 40% as having at least one type of anxiety disorder (Van Steensel et al., 2011). In addition, Skokauskas and Gallagher (2012) examined patterns of psychiatric problems in children with autism compared to an IQ matched control group and detected high rates of psychiatric problems in children with autism, with anxiety (alongside attention deficit hyperactivity disorder) being the most frequently detected condition. Further research from Briot et al. (2020) also shows a high prevalence of social anxiety for children and adolescents with autism, with suggestions that this can impact the social communication skills and social motivation of these young people. A systematic literature review explored the relationship between anxiety and social or academic outcomes in children with autism and found associations between higher anxiety and poorer social relationships (Ambrose et al., 2021). However, this review also highlighted inconsistencies in findings around social outcomes and that there is limited research exploring academic outcomes (Ambrose et al., 2021), suggesting further research is required before firm conclusions can be reached around the impact of anxiety on children and young people with autism.

It is unclear why anxiety is so common in people with autism, but recent research has suggested a key mechanism may be an intolerance of uncertainty (Gaigg et al., 2018). It is thought that sensory processing differences and difficulties in understanding one's own emotions make the world more uncertain and unpredictable for people with autism, resulting in an intolerance of uncertainty and leading to anxiety (Gaigg et al., 2018). Difficulties identifying and describing emotions in themselves may also make it difficult for individuals with autism to adopt emotion regulation strategies effectively, which may also contribute to feelings of anxiety (Gaigg et al., 2018). The research on causes of anxiety for children with autism is still developing but it seems interventions and treatments that can support them to develop their understanding of emotions and strategies to tolerate uncertainty may be of use.

Gaigg et al. (2018) outline possible treatments to support those with autism and anxiety, including Cognitive Behavioural Therapy (CBT), Mindfulness Based Therapy, and programmes teaching children how to better cope with uncertainty in everyday situations. Hillman et al. (2020) conducted a systematic review of interventions for anxiety in mainstream school-aged children with autism and identified 24 experimental studies involving 931 children. Of these studies, 22 used a CBT based approach, some of which were modified specifically for those with autism. The findings of this review suggest that there is strong evidence for the effectiveness of programmes grounded in the principles of CBT in reducing anxiety in children with autism (Hillman et al., 2020). CBT based approaches and the evidence surrounding them will be further discussed below.

2.5 Evidence-based practice

Before further consideration is given to CBT and its use in supporting children with autism and anxiety, it is important to discuss how judgements about the effectiveness of such approaches are made. Evidence-based practice originated in the field of health and aims to provide systematic and reliable insights into the likely efficacy of an intervention in a given

field (Gulliford, 2023). Evidence-based practice has been applied to psychology and can help Educational Psychologists to make decisions around the efficacy of interventions based on the best available evidence (Gulliford, 2023). Evidence-based practice also holds importance when discussing mental health needs and the influence this has on decisions around effective treatments and interventions (Ramey & Grubb, 2009). Gulliford (2023) notes that there is a hierarchy of methods often cited which underpins evidence-based practice:

- Systematic reviews of several randomised control trials (RCTs) or group studies
- Single RCTs
- Quasi-experiments
- Case studies
- Expert opinion

This hierarchy is rooted in the context of scientific evidence, implying that the best possible research is that which can identify causal relationships and generalise these relationships to other populations and settings (Ramey & Grubb, 2009). There has been much debate about the application of evidence-based practice to psychological practice and it should be noted that there are multiple perspectives on what constitutes best research which can vary depending on the underlying paradigm and epistemological or ontological assumptions (Ramey & Grubb, 2009). For example, Biesta (2007) argues that focusing on a framework for evidence-based practice in the field of education may narrow the scope of decision making to questions around effectiveness, whilst ignoring important contextual factors. The different paradigms relating to research in educational psychology and the research methods appropriate for these will be further discussed in section 3.2.

Basing practice on scientific evidence of its effectiveness is important when considering programmes to support children with autism (Odom et al., 2010). However, the benefits of

evidence-based practices are influenced by the quality of the implementation of the practice (Cook and Odom, 2013). Furthermore, Nelson et al. (2012) note that interventions implemented in an experiment often differ from the interventions designed, meaning it can be difficult to know whether findings of ineffectiveness are due to an intervention itself or how it was implemented. This suggests the implementation of interventions during research and in real world practice is important to consider and critically evaluate.

Barry et al. (2020) completed a scoping review of the barriers to implementing evidence-based interventions for children with autism, with the aim of closing the research to practice gap that is evident in autism education and increasing understanding of why evidence-based practices may not be implemented widely. The key barriers identified were a lack of resources, lack of time, difficulties with staff buy-in and staffing, lack of support for school personnel, and a lack of training in autism and evidence-based practices (Barry et al., 2020). Another barrier identified was difficulties implementing the intervention in the school setting, highlighting that interventions deemed to be best practice in a clinical context may not show the same effects in a real-world context, such as in a school. Kasari and Smith (2013) note how most intervention studies for children with autism are conducted in clinical or laboratory settings rather than in a school setting, limiting the ecological validity of the findings. This suggests further research exploring the effectiveness of interventions in schools when implemented by school staff would be useful (Barry et al., 2020).

This section has outlined evidence-based practice and the potential barriers to the implementation of such practices for children with autism in school settings. As previously mentioned, research suggests that CBT based approaches have a strong evidence base for supporting children with autism and anxiety (Hillman et al., 2020). The next section will consider such approaches and the evidence underlying them in more detail.

2.6 Cognitive Behavioural Therapy (CBT)

This section outlines what Cognitive Behavioural Therapy is and the evidence around its effectiveness, including for children and young people with autism. The adaptations that can be made to CBT to support its delivery for children and young people with autism are also described.

CBT is based on the idea that an individual's mental health difficulties are largely derived from distortions of reality (Beck, 1979). These distortions stem from incorrect assumptions that have been learnt during a person's cognitive development in early childhood (Beck, 1979). The purpose of cognitive therapy is therefore to help a person unravel these distortions in thinking and to learn alternative ways to frame their experiences (Beck, 1979). Cognitive therapy has developed over time and has become a widely recognised therapeutic approach to support people with mental health difficulties (Beck, 1991; 1993).

CBT incorporates behavioural perspectives with cognitive therapy to consider the environmental influences and any behavioural skill deficits that may help to understand someone's difficulties (Mennuti et al., 2006). The CBT model suggests that there is a connection between a given situation, someone's belief system and their thoughts about the situation, therefore CBT focuses on how someone's thoughts about an experience can influence their behaviour and emotions (Mennuti et al., 2006). Put briefly, CBT considers the interactions between the context of a situation and a person's physiological reactions, their automatic thoughts, and their beliefs (Mennuti et al., 2006). A key underlying principle from cognitive psychology is the use of schemas, these being models that develop from past experiences that guide the selection, coding, retrieval, and processing of information (Graham, 2005). When there is a discrepancy between the information that is received and the information that is expected based on a person's existing schema, the information may

become distorted, and these distorted thoughts may then adversely affect a person's emotions (Graham, 2005).

To support a person to modify or develop new schemas, a key method used in CBT is Socratic questioning (Clark & Egan, 2015). Socratic questioning invites a person to question their beliefs and acknowledge contradictions in reasoning that may be embedded in their existing schemas, and then encourages them to think of alternative perspectives (Carona et al., 2021). A narrative review of the literature suggests that Socratic questioning can have a variety of benefits, including reducing distress associated with unhelpful cognitions and increasing engagement and autonomy in therapy (Clark & Egan, 2015). However, this review also identified challenges in evaluating the impact of Socratic questioning due to the range of ways it is used in therapy and the lack of a universally accepted definition (Clark & Egan, 2015). Further research attempted to clarify the role of Socratic questioning in CBT by surveying 15 expert CBT researchers, but there was a lack of consensus, with some describing it as valuable but not essential and others considering it to be a central feature of CBT (Clark & Egan, 2018). However, all participants reported that Socratic questioning has the potential to be helpful if used within CBT, with key themes being around its use to facilitate belief change, correct thinking errors and facilitate client insight (Clark & Egan, 2018). Whilst Socratic questioning is often cited as a key factor for success in CBT, the evidence surrounding its use is less clear.

2.6.1 The effectiveness of CBT

There has been a wealth of research investigating the efficacy of CBT in supporting people of all ages with a variety of mental health difficulties. Hofmann et al. (2012) reviewed 106 meta-analyses and found there was strong support for the use of CBT to treat several conditions, including anxiety disorders. For example, there was evidence for a medium to large effect size for the impact of CBT post-treatment compared to control groups for treating

social anxiety disorder in adults (Hofmann et al., 2012). The review of meta-analyses also showed robust support for the use of CBT approaches to treat anxiety in children and adolescents (Hofmann et al., 2012). For example, a systematic review of studies identified 10 RCTs investigating the effectiveness of CBT for children and adolescents with anxiety (Cartwright-Hatton et al., 2004). The review found that 9 out of 10 of the studies included reported a positive effect of CBT in reducing symptoms of anxiety when compared to the control groups (Cartwright-Hatton et al., 2004). In addition, data from meta-analyses of randomised control trials further suggests there is robust evidence for the treatment of children and adolescents with an anxiety disorder using CBT (Ishikawa et al., 2007; Munoz-Solomando et al., 2008). There is also evidence that programmes based on the principles of CBT, like the FRIENDS programme, are effective in reducing anxiety in children and young people when delivered in a school setting (Higgins & O'Sullivan, 2015; Stallard, 2009), suggesting CBT based programmes may also be of use outside of clinical settings.

2.6.2 CBT for children and young people with autism

There has also been a wealth of research exploring the use of CBT with children and young people with autism. As previously mentioned, anxiety is common in children and young people with autism (Van Steensel et al., 2011; White et al., 2009), and there have been several studies exploring the effectiveness of CBT in addressing this. For example, Sofronoff et al. (2005) conducted a randomised control trial with 71 children aged 10-12 with Asperger syndrome. They found that those who participated in CBT had significant decreases in anxiety symptoms reported by parents at the 6-week follow up, although these changes were not reported immediately post-intervention, suggesting additional time was required for the children to implement the strategies they had learnt (Sofronoff et al., 2005). In addition, Chalfant et al. (2007) conducted a controlled trial evaluating a family-based CBT programme for anxiety in 47 children aged 8-13 with autism. This involved 12 weekly group sessions,

with child, parent and teacher measures of anxiety being completed pre- and post-intervention for the experimental group and a waitlist control group. The results showed that there was a significant change in all three measures of the children's anxiety for those in the CBT group compared to the waitlist control group, suggesting the CBT programme had reduced anxiety for the children who took part. The fact that levels of anxiety had decreased on the child, parent and teacher measures also suggests that the efficacy of the treatment had extended to the children's home and school settings (Chalfant et al., 2007).

Several RCTs have been conducted to investigate the use of CBT to treat anxiety in children and adolescents with autism. Sukhodolsky et al. (2013) conducted a meta-analysis which included 8 RCTs, involving a total of 469 participants (252 treatment, 217 comparison). Results showed that the levels of anxiety reduced for those in the CBT treatment groups in comparison to waitlist or treatment as usual control groups, with effect sizes of $d = 1.19$ for clinician rated outcomes and $d = 1.21$ for parent rated outcomes. Five of the studies included also used child self-report measures and found an average effect size of $d = 0.68$ for self-reported anxiety (Sukhodolsky et al., 2013). The findings of this meta-analysis further support the effectiveness of CBT for children with autism in reducing anxiety.

Fujii et al. (2013) investigated the effects of an intensive CBT programme compared with treatment as usual for school aged children with autism and an anxiety disorder. They found that following a 32-session CBT programme, five out of the seven participants no longer met the diagnostic criteria for anxiety, but all five of the participants in the treatment as usual group still met these criteria (Fujii et al., 2013). This suggests the intensive CBT programme was effective in reducing anxiety for children with autism, although the small sample size of the study limits the generalisability of the findings. Fujii et al. (2013) commented on the components that were likely to have contributed to the positive outcomes, these being the length of the treatment, the individualisation of the intervention to the children's specific

needs and the collaboration between therapists and school personnel so that skills could be practised in a school setting. This highlights the possible benefits of implementing a CBT based programme in collaboration with or in a school setting and suggests further research investigating CBT programs for individuals with autism when delivered in a school setting could be useful.

To further investigate the efficacy of CBT approaches that are individualised to a child's needs, Storch et al. (2015) conducted an RCT to examine the efficacy of a personalised CBT programme for children aged 11-16 with autism and clinically significant anxiety. 31 children were randomly assigned to receive 16 weekly CBT sessions or to a treatment as usual control group. Participant's anxiety levels were assessed by blinded raters at pre- and post-intervention. Results suggested that the personalised CBT intervention significantly reduced anxiety symptoms, with large effect sizes compared to the treatment as usual group (Storch et al., 2015).

The existing evidence outlined above clearly suggests that the use of CBT for children with autism and anxiety can be effective in reducing anxiety. Both Fujii et al. (2013) and Storch et al. (2015) refer to the CBT approach being individualised and personalised for the needs of the children taking part. How CBT can best be adapted for children and young people with autism is further discussed in the next section.

2.6.3 Adaptations to CBT for children with autism

Sze and Wood (2008) commented that some characteristics of children with autism may make it difficult for them to access CBT and that modifications to the approach could make it more effective in treating their anxiety. They described a case study with positive outcomes for a 10-year-old boy with Asperger Syndrome following access to an enhanced CBT based approach. The CBT based intervention was modified in a variety of ways, including by increasing the focus on friendship skills and self-help skills (Sze & Wood, 2008).

Furthermore, a review exploring the efficacy of CBT for children with autism and anxiety identified the primary modifications to CBT that have been shown to make it more viable for this population. These modifications included using more concrete and visual tactics, incorporating the child's interests, and involving parents (Moree & Davis, 2010). The review also outlined the importance of broadening the focus of CBT to encompass the range of difficulties the child may experience, rather than only focusing on anxiety. For children with autism, this is likely to include incorporating communication and social skills training for example (Moree & Davis, 2010).

Guidelines from the National Institute for Health and Care Excellence (NICE) on support and management for children and young people with autism recommend the use of a CBT intervention, and also make suggestions for how the approach can be adapted to be more suitable (NICE, 2013). These adaptations are listed below:

- Emotion recognition training
- Greater use of written and visual information and structured worksheets
- A more cognitively concrete and structured approach
- Simplified cognitive activities, for example, multiple-choice worksheets
- Involving a parent or carer to support the implementation of the intervention, for example, involving them in therapy sessions
- Maintain attention by offering regular breaks
- Incorporating the child or young person's special interests into therapy if possible (NICE, 2013).

More recently, Spain and Happe (2020) completed a three round Delphi survey asking experts how to optimise CBT for people with autism, with their findings further endorsing adaptations to the structure and process of the intervention and outlining 155 statements that

are important aspects of CBT for people with autism. Spain and Happe (2020) also highlighted that specialist supervision could support professionals to identify the appropriate adaptations to CBT for each individual. This supervision should focus on autism and provide opportunities to discuss, reflect and acquire new knowledge and skills (Spain & Happe, 2020).

Several studies have explored the efficacy of CBT for children and young people with autism with the necessary adaptations in mind. For example, Ehrenreich-May et al. (2014) evaluated the impact of a modified CBT programme for 20 adolescents with autism and anxiety aged 11-14. They found a significant reduction in anxiety severity from baseline to post-treatment across clinician and parent ratings. These changes were also maintained at one month following the intervention (Ehrenreich-May et al., 2014). Selles et al. (2014) also explored the maintenance of improvements following participation in a CBT programme which had resulted in reduced anxiety in 32 adolescents. They found that on average, anxiety ratings were similar between post-treatment and follow up 10-26 months later and a large effect size was still present at the follow up stage (Selles et al., 2014). However, it should be noted that fewer individuals provided follow up data compared to baseline which impacts the validity of these findings (Selles et al., 2014).

To further add to the evidence base for adapted CBT with children and young people with autism, Wood et al. (2015) conducted an RCT investigating the impact of a CBT programme that was enhanced and modified to address the needs of early adolescents with autism and anxiety. In their study, 33 adolescents aged 11-15 were randomly assigned to the 16-week CBT programme or a waitlist control group. The results showed there was a greater decrease in participant's anxiety, as rated by independent evaluators, when compared to the waitlist control group. However, no group differences were found for the adolescent or parent measures, showing some inconsistency in the findings, and suggesting the participants and

their parents did not experience any differences in their anxiety following the CBT programme (Wood et al., 2015). Another RCT was conducted by Wood et al. (2020) involving 145 children with autism and anxiety aged 7-13. Participants were randomly assigned to three different groups: CBT, CBT adapted for children with autism, and a treatment as usual group. The adapted CBT addressed difficulties with social communication and self-regulation using perspective taking training and behaviour-analytic techniques (Wood et al., 2020). The results showed that both versions of CBT were beneficial for children with autism and anxiety, with adapted CBT outperforming standard practice CBT and the treatment as usual condition in reducing the anxiety of participants, as assessed by independent evaluators. This provides further evidence for the benefits of adapting CBT for the needs of children with autism to improve its effectiveness.

Several systematic reviews and meta-analyses have been conducted on the effects of CBT in reducing anxiety for children and young people with autism, some of which are described here. For example, a systematic review and meta-analysis identified 14 studies that involved 511 participants (aged 18 or younger) and found a moderate effect size, suggesting CBT is effective in reducing anxiety in these young people (Ung et al., 2015). Kester and Lucyshyn (2018) completed another systematic review to explore the efficacy of CBT to treat anxiety in children with autism. They included 26 group comparison studies in their review, 15 of which used an RCT design. They found that 7 of the included studies were methodologically sound and demonstrated positive effects with participants totalling 321 children aged 5-18, suggesting that modified CBT for children with autism should be considered an effective method of treatment (Kester & Lucyshyn, 2018). The authors noted that only two of the included studies involved a school setting where educators participated in the intervention and highlighted the need for further research into school-based interventions for children with autism (Kester & Lucyshyn, 2018).

Similarly, Perihan et al. (2020) completed a systematic review and meta-analysis evaluating 23 studies and found an overall moderate effect size for the reduction of anxiety in children with autism following a CBT intervention. This review also investigated the moderating effect of parental involvement and the length of the intervention. Perihan et al. (2020) found that there were larger effects for studies which involved parents compared to those who delivered treatment to the child only. They also found that short-term interventions (less than 12 weeks) generated a smaller effect compared to standard or long term (more than 16 weeks) interventions. These findings suggest that CBT based programmes can be more effective in reducing anxiety for children with autism when parents are involved and when delivered for more than 12 weeks.

Finally, a systematic review and meta-analysis of 19 randomised control trials (with a total of 833 participants aged up to 18) found moderate to large effect sizes for reduced parent, child and clinician reported anxiety in children with autism following a CBT intervention (Sharma et al., 2021), providing further evidence for its efficacy with this population. However, unlike the previous reviews outlined above, this review also investigated the risk of bias for included studies. Only three of the included studies were at low risk of bias, with the majority of studies having some concerns and another three studies at high risk of bias (Sharma et al., 2021). The main area of concern was reporting bias due to most studies not registering their protocol (Sharma et al., 2021), highlighting a need for continued research into the effectiveness of CBT for children and young people with autism, that takes more rigorous steps to reduce the risk of bias.

Further critique of the evidence for the effectiveness of CBT for children and young people with autism and anxiety comes from Murphy et al. (2017), who noted that few studies have assessed CBT against a control group receiving an alternative therapy. They conducted an RCT with 36 young people with autism and anxiety aged 12-18, who were randomly

assigned to participate in CBT or person-centred counselling. Murphy et al. (2017) found that both groups showed improvements in their anxiety according to parent, teacher, and self-report measures, with no significant differences found between the groups. This suggests that CBT was no more effective than the alternative treatment provided. In addition, a systematic review by James et al. (2020) further highlights that there is insufficient evidence to compare CBT with alternative treatments. Whilst there is evidence to suggest CBT is effective in reducing anxiety in children and young people, further studies are required to establish its impact in comparison with alternative treatment methods and intervention programmes.

There is clear evidence for the efficacy of adapted CBT programmes in reducing anxiety in children and young people with autism, as outlined above. However, some limitations to the research have been highlighted, such as the risk of bias of some studies (Sharma et al., 2021) and the limited evidence comparing CBT with alternative treatment methods (James et al., 2020; Murphy et al., 2017). Hillman et al. (2020) also suggests that due to the range of CBT based approaches used with children with autism, it is important for further research to identify the characteristics of these interventions that contribute to their effectiveness. Furthermore, most of the studies outlined here have been conducted in a controlled clinical setting, highlighting the need for more research to be carried out in real world settings, including schools.

2.6.4 The Homunculi Approach

The Homunculi Approach is one example of a CBT based intervention that may be implemented in a school setting and has been designed specifically for young people with autism (Greig & MacKay, 2013). It is a flexible programme based on the principles of CBT that aims to empower children and young people to change their thoughts and behaviours. It also has a theoretical underpinning in meta-cognition to support children and young people to develop fresh perspectives on their own thinking (Greig & MacKay, 2013). The approach is

usually delivered across 10 weekly sessions that are one hour long, where the children are introduced to the idea of Homunculi, or "little people," inside their skull who can help solve problems using different tools. The children will identify a problem they have and work towards a solution by completing a "mission" during their sessions. The children create agents with different gadgets that might help to solve the problem and develop a story with support from an adult. The adult delivering the intervention is provided with a general script and guidance on using Socratic questioning to aid the child's thinking. A poster is also provided to support the child in creating their story, which includes a "thoughts and feelings screen" and a "stop, think, and go alarm" to guide them in identifying their emotions in a situation and deciding how to respond (Greig & MacKay, 2013).

There has been limited previous research into the effectiveness of the Homunculi Approach. Greig and MacKay (2005) completed a case study of a 12-year-old boy with Asperger's Syndrome and found that after ten weeks of participating in the Homunculi Approach his levels of anxiety, depression and stress were reduced and social competence scores increased. Another research study was also completed with thirty young people aged 8-18 targeting different areas of difficulty, such as exam stress, friendship problems or low self-esteem (MacKay & Greig, 2008). This study also found reductions in the participant's levels of anxiety, depression, and stress as well as improvements in the range of difficulties they had initially identified (MacKay & Greig, 2008). Whilst these findings are supportive of the effectiveness of the approach, both studies were conducted by the authors of The Homunculi Approach. They are therefore at risk of researcher bias, as the researchers may have influenced the process or outcomes of the study to meet their expectations. The small sample sizes used and lack of control groups to compare to also mean the results cannot be generalised and should be interpreted with caution.

Two doctoral theses have focused on the Homunculi Approach. The first used an exploratory case study design with three participants to investigate the use of the programme to address emotional regulation difficulties in primary aged children with autism (Downing, 2015). Another thesis used Single Case Experimental Designs (SCEDs) to study whether the Homunculi Approach reduced anxiety in secondary aged young people with autism (Maydew, 2018). Findings from both studies were mixed, with improvements in some cases but not all. Again, small sample sizes limit the interpretations of these findings and more rigorous research is needed that can offer comparisons to a control group to increase the validity of findings.

2.6.5 Summary

This section has outlined the principles of CBT and the evidence surrounding its effectiveness for children and young people, including those with autism. Key adaptations to CBT that can enhance its effectiveness for children with autism were described and further evidence using adapted CBT approaches was discussed. Although there is evidence to suggest CBT based approaches can be effective in reducing anxiety for children and young people, less is known about the effectiveness of such programmes when they are delivered in a school setting (Kester & Lucyshyn, 2018). Much of the research outlined here has also been conducted in clinical settings, so further exploration of the research around the use of such interventions in real world settings, such as schools, would be useful.

2.7 Systematic Literature Review

To explore the existing research into the use of CBT based approaches for children with autism and anxiety in school settings, a systematic literature review was conducted. The aim of the review was to answer the following question:

What is the effectiveness of CBT based interventions for reducing anxiety in children with social communication needs when delivered in a school?

Whilst the Homunculi Approach has been identified as one CBT based intervention that can be delivered in a school setting, the number of studies investigating its effectiveness is limited, as previously outlined. Therefore, this review explored the effectiveness of any CBT based approach when it was delivered in a school setting. Additionally, the term social communication need is used rather than focusing only on participants with an autism diagnosis. In the UK, many children and young people experience a delay in being assessed for a diagnosis of autism, particularly for children who are female, have a higher IQ, have relatively good language, or have additional diagnoses (Howlin et al., 2021). It is therefore likely that there are children who meet the diagnostic criteria for autism but who have not yet received a diagnosis. For this reason, the review aimed to include studies that involved children with social communication needs, such as autism, with or without a formal diagnosis.

This review was conducted in line with the stages of a review outlined by Gough (2007), as shown in Figure 2.1.

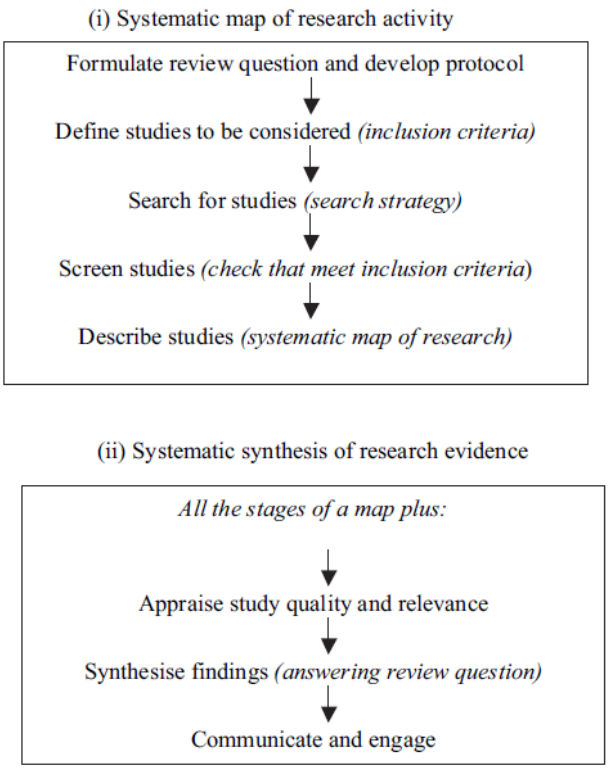

Figure 2.1 A flow chart outlining the stages of a systematic review (Gough, 2007).

Figure 2.2 A flow chart outlining the stages of a systematic review (Gough, 2007).

2.7.1 Inclusion and exclusion criteria

To meet the objectives of this review, a search was completed to identify studies with characteristics that met a list of specific criteria in relation to the review question. Articles were included in the review if:

- Participants were aged 4-16 (UK school age) and had identified social communication needs.
- The study was an empirical piece of research implementing a CBT based intervention that was delivered in a school setting.
- The aim of the research was to investigate changes in levels of anxiety for participants.

- The study used a quantitative or mixed methods design.
- The study was written in English and the full article was available.

Articles were excluded if:

- Participants were children without social communication needs.
- The CBT based intervention was used with parents or families rather than directly with children/young people.
- The intervention was not delivered in a school setting.
- The research did not include outcome measures of anxiety.
- The study only used qualitative methods.
- The study was a review or meta-analysis.
- The study was not published in a research journal (e.g., it was a dissertation or thesis).

2.7.2 Search strategy

A systematic literature search was conducted to find articles relevant to the review question. Searches were conducted across four databases relating to the fields of psychology or education: ERIC, British Education Index, PsycINFO, and Web of Science. Key terms relevant to the research question were identified as children, CBT, anxiety, social communication needs, and school. These key terms were refined through an iterative process and combined with appropriate Boolean operators and wildcards to result in the following final search terms: (child* OR pupil* OR youth*) AND (CBT OR "cognitive behavio*" OR "cognitive-behavio*") AND (anxiety OR anxious) AND (autis* OR asperger* OR ASD OR ASC OR "social communication") AND (school OR "school based" OR "school-based").

The database searches identified 413 articles. The studies were managed by the EndNote programme, through which 61 duplicates were removed. The titles and abstracts of the remaining 352 articles were then screened according to the inclusion and exclusion criteria

and a further 300 articles were excluded. Some reasons for exclusion at this stage included participants being adults or not having social communication needs, interventions being delivered in a clinical setting, and studies not including measures of anxiety. Following this, 52 full text articles were then screened according to the inclusion and exclusion criteria and 44 more were excluded (see Figure 2.2 for reasons for exclusion). This resulted in a total of 8 articles included for analysis within this review (see Figure 2 for full details on the search process).

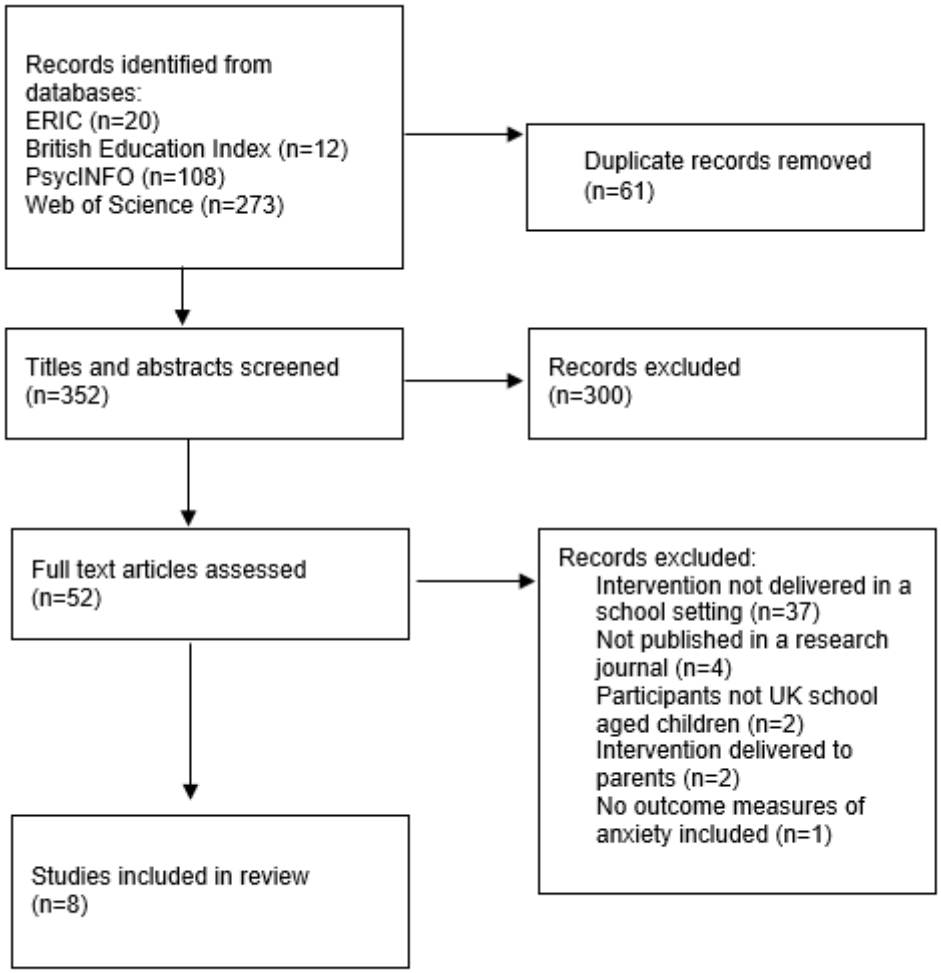

Figure 2.3 A flow chart detailing the systematic search strategy

Figure 2.4 A flow chart detailing the systematic search strategy

The 8 studies included for analysis are listed below, with full citations provided in the reference list:

1. Greig, A., & MacKay, T. (2005). Asperger's syndrome and cognitive behaviour therapy: new applications for Educational Psychologists.
2. Ooi, Y. P., Lam, C. M., Sung, M., Tan, W. T. S., Goh, T. J., Fung, D. S. S., Pathy, P., Ang, R.P., & Chua, A. (2008). Effects of cognitive-behavioural therapy on anxiety for children with high-functioning autistic spectrum disorders.
3. Clarke, C., Hill, V., & Charman, T. (2017). School based cognitive behavioural therapy targeting anxiety in children with autistic spectrum disorder: a quasi-experimental randomised controlled trial incorporating a mixed methods approach.
4. Drmic, I. E., Aljunied, M., & Reaven, J. (2017). Feasibility, acceptability and preliminary treatment outcomes in a school-based CBT intervention program for adolescents with ASD and anxiety in Singapore.
5. Luxford, S., Hadwin, J. A., & Kovshoff, H. (2017). Evaluating the effectiveness of a school-based cognitive behavioural therapy intervention for anxiety in adolescents diagnosed with autism spectrum disorder.
6. Ireri, N. W., White, S. W., & Mbwayo, A. W. (2019). Treating anxiety and social deficits in children with autism spectrum disorder in two schools in Nairobi, Kenya.
7. Rosen, T. E., Pickard, K., Ponomaryova, A., Kerns, C. M., & Reaven, J. (2022). From Clinic to Classroom: Two Case Studies of Youth With ASD and Anxiety From the School-Based Facing Your Fears Program.
8. Reaven, J., Pickard, K., Meyer, A. T., Hayutin, L., Middleton, C., Reyes, N. M., Tanda, T., Stahmer, A., Blakeley-Smith, A., & Boles, R. E. (2023). Implementing school-based cognitive behavior therapy for anxiety in students with autism or suspected autism via a train-the-trainer approach: Results from a clustered randomized trial.

2.7.3 Data extraction

Relevant data from the included studies was extracted and is summarised in Table 2.1. This includes information about the setting, study design, participants, type of CBT intervention, outcome measures of anxiety and the findings for each study.

Table 2.1 A table summarising the studies included in the systematic literature review

Study	Setting	Study design	Participants	Intervention	Anxiety measures	Findings
Greig and MacKay (2005)	A mainstream secondary school	Exploratory study using a single case study methodology	1 boy, 12 years old, with Asperger's Syndrome.	'The Homunculi' (approach developed with the young person). Delivered across 15 therapeutic sessions. Delivered by two EPs.	Briere Trauma Scales (Briere, 1996) measured anxiety, depression, anger, and stress.	Reduction in anxiety, depression, anger, and stress from pre- to post-intervention. Anxiety: Pre (19) and Post (5). Effect size = 3.7
Ooi et al. (2008)	A special education school in Singapore	A pilot study: Pre and post-test design.	6 children aged 9-13. With autism or Asperger's syndrome.	A manualised CBT programme, adapted for children with autism. 16 90-minute sessions in small groups of 3 children. Delivered by two therapists with postgraduate degrees in psychology.	Spence Child Anxiety Scale (SCAS; Spence, 1998). Spence Child Anxiety Scale – parent (Nauta et al., 2004). Asian Children Anxiety Scale – Caretaker Version (Koh et al., 2002).	Children reported a reduction in anxiety (mean T1 = 40.63 and mean T2 = 33.26; $t(5) = 1.88$; $p = 0.12$; $d = 0.36$[1]). Parents reported an increase in their child's anxiety (mean T1= 20.08 and mean T2 = 21.95; $t(5) = -0.56$; $p = 0.60$, $d = -0.23$). Teachers reported a reduction in the child's anxiety (mean T1 = 28.00 and mean T2 = 25.60; $t(5) = 0.55$; $p = 0.61$; $d = 0.28$). Differences did not reach statistical significance due to the small sample size.
Clarke et al. (2017)	6 secondary schools in the South-	Mixed methods quasi-experiment	28 children aged 11-14 with a diagnosis of	Exploring Feelings: Cognitive Behavioural Therapy to Manage	Spence Child Anxiety Scale – Parent and child	Significant differences between groups post-intervention for SCAS child version ($F(2,24) = 54.8$, $p < .001$, $d =$

[1] Where Cohen's *d* is provided as an effect size, a value of 0.2 constitutes a small effect, 0.5 a medium effect, and 0.8 would indicate a large effect (Dancey & Reidy, 2020).

	East of England.	pre and post-test study (with a control group).	ASD. 14 in experimental group, 14 in control group.	Anxiety for children aged 10-12 (Attwood, 2004). 6 weekly sessions lasting approximately 1 hour. Designed for children with autism. Delivered by a TEP.	Version (SCAS; Spence, 1998).	.72) and parent version (F(2,24) = 28.3, p = .001, d = 0.69).
Drmic et al. (2017)	22 mainstream secondary schools in Singapore.	Preliminary treatment outcomes measured by a pre and post-test study.	35 13–15-year-olds with ASD.	Facing your Fears CBT protocol adapted for school delivery by non-clinicians. 10 sessions, 1-1.5hours each, delivered in small groups of 2-3 students. Delivered by a trained member of school staff.	Screen for Child Related Anxiety Disorders (SCARED-parent and child versions; Birmaher et al., 1999).	Statistically lower SCARED-child scores at posttreatment (z = -3.44, p = 0.001, r = 0.85) and SCARED-parent scores (z = -2.20, p = 0.03, r = 0.44).
Luxford et al. (2017)	4 mainstream secondary schools in the South-East of England.	Randomised control trial with a waitlist control group.	35 pupils aged 11-15. 31 male, 4 female. All had a diagnosis of ASD or Aspergers. 18 in intervention	Exploring Feelings CBT intervention (Attwood, 2004). 6 weekly sessions lasting for 90 minutes. Delivered by a researcher,	School Anxiety Scale (Lyneham et al., 2008) SCAS (Spence, 1998) – child and parent versions. Social worries questionnaire (Spence, 1995) –	Parent reported anxiety: There was an interaction between time and group (F(2, 24) = 16.74, p = 0.001, np 2 = 0.41). Within groups parent-reported anxiety symptoms were significantly different for the intervention group for each time point. There were no within group differences for the control.

			group, 17 in control group.	supported by a Teaching Assistant.	child and teacher versions.	Self-reported anxiety: A significant interaction between group and time was found (F(2,64) = 4.45, p = 0.015, np 2 = 0.12), indicating a significant reduction in anxiety from pre to post intervention and pre to follow-up for the intervention group. There were no significant changes found for the control group over time. Social worry: child version – no significant interaction between group and time. Teacher version – a significant interaction between time and group (F (2,32) = 5.23, p < 0.01, np 2 = 0.14), highlighting a significant reduction in teacher reported social worry between all time points for the intervention group. No significant differences were found for the control group between any time points.
Ireri et al. (2019)	2 special education schools in Nairobi City, Kenya.	Experimental design, with an intervention and control group.	40 pupils aged 5-21, 27 male, 13 female. 20 in each group. All had an ASD diagnosis.	The Multimodal Anxiety and Social Skills Intervention (MASSI; White et al. 2010). At least 13 individual sessions for 60 mins each, and 7 group sessions. Delivered	Child and Adolescent Symptom Inventory-4 ASD Anxiety Scale (CASI-Anx; Sukhodolsky et al., 2008) completed by	Significant interaction between time and condition for anxiety (F(2,78) = 5.614, p = 0.006, partial eta squared[2] = 0.067). The main effect of time was not significant (F(2,156) = 2.87, p = 0.06, partial eta squared = 0.035). The main effect of condition was significant (F(1,78) = 16.105, p = 0.000, partial eta squared = 0.171).

[2] Where partial eta squared is provided as an effect size, a value of .01 is a small effect, .06 is a medium effect, and .14 is a large effect (Pallant, 2020).

				by 4 PhD or Masters students in Clinical Psychology.	participants' parents.	There was a positive effect within the group from baseline to phase 3 – children in the treatment condition showed a sharper decline in anxiety than the control participants.
Rosen et al. (2022)	Public school in Colorado, USA	Case studies	Luis: 13-year-old male. Diagnosis of ASD. Frankie: 10-year-old female. No ASD diagnosis, Social Responsiveness Scale (a measure of autism symptoms; SRS-2; Constantino & Gruber, 2012) score was above clinical cutoff.	Facing Your Fears: School-based program. 13 sessions. Luis was in a group of 5 students, Frankie was in a group of 2 students. Delivered by interdisciplinary school providers who attended a 2-day training by the treatment developers.	Screen for Child Related Anxiety Disorders (SCARED-parent and child versions; Birmaher et al., 1999). Anxiety Disorders Interview Schedule for Children – Autism Addendum (ADIS/ASA; Kerns et al., 2017).	Analysis of raw scores: Luis: SCARED-parent report showed a meaningful decrease in total anxiety symptoms, as well as panic, generalised anxiety, and school avoidance symptoms. SCARED-child report showed a meaningful decrease in total anxiety symptoms, as well as social anxiety and school avoidance subscales. ADIS-ASA: no longer met diagnostic criteria for specific phobia of bugs, loud noises, or special interest fear. He continued to meet criteria for social anxiety diagnosis. Frankie: SCARED-parent report showed a meaningful decrease in total anxiety symptoms, as well as panic, generalised anxiety, and separation anxiety. SCARED-child report showed a meaningful decrease in total anxiety symptoms, as well as panic, generalised anxiety, social and school avoidance. Separation anxiety remained significant.

						ADIS-ASA: no longer met diagnostic criteria for generalised anxiety and specific phobia of loud noises. Still met the criteria for other social fears.
Reaven et al. (2023)	25 public schools in Colorado, USA.	Cluster randomised trial.	81 students with autism or suspected autism. (81% male). 39 in intervention group, 42 in control. Aged 8-14.	Facing Your Fears: School-based program. Delivered by interdisciplinary school providers who attended a 12-hour training with the research team.	Screen for Child Related Anxiety Disorders (SCARED-parent and child versions; Birmaher et al., 1999). Parent-Rated Anxiety Scale for Autism Spectrum Disorder (PRAS-ASD; Scahill et al., 2019). School Anxiety Scale-Teacher Report (SAS-TR; Lyneham et al., 2008).	Parent SCARED: Significant reductions in anxiety from pre- to post-intervention for students in the intervention group compared to the control ($F(1, 66.52)=6.61$, $p = 0.012$, Cohens $d = 0.30$). Child report: Significant reductions occurred pre- to post-intervention for Separation ($F(1, 69.70) = 5.96$, $p = 0.017$, Cohen's $d = 0.39$) and Social Anxiety subscales ($F(1, 71.54) = 11.29$, $p = 0.001$, Cohen's $d = 0.40$). Group and interaction effects were non-significant. Only a significant main effect of time was shown for PRAS-ASD ($F(1, 57.82)=9.00$, $p = 0.004$, Cohen's $d = 0.23$) and SAS-TR ($F(1, 64.83)=7.61$, $p = 0.008$, Cohen's $d = 0.23$).

2.7.4 Quality appraisal

The included studies were reviewed using Gough's Weight of Evidence model, to evaluate the extent to which each piece of evidence contributes to answering the review question (Gough, 2007). This model is based on 3 separate generic and review specific judgement criteria, known as the Weight of Evidence, which are then combined to make an overall judgement of the study (Gough, 2007). Weight of Evidence A is a generic judgement about the coherence and integrity of the evidence, based upon the methodological quality of the research design used in the study. Weight of Evidence B and C are review specific judgements about the appropriateness of the study design and the relevance of the focus topic of the evidence for addressing the review question. Weight of Evidence D provides an overall assessment of the extent to which a study contributes evidence to answer the review question based on a combination of the previous three criteria (Gough, 2007). The specific criteria used for this review are outlined in Table 2.2 below.

Table 2.2 A table showing the Weight of Evidence (WoE) criteria used for this systematic literature review

Weight of Evidence A	Methodological quality was assessed using the appropriate Joanna Briggs Institute (JBI) critical appraisal tool for the study design. These were for Case Reports (JBI, 2020a), quasi-Experimental Studies (JBI, 2020b), and Randomised Control Trials (JBI, 2020c). The quality was judged based on the percentage of items answered yes on the checklist: • Above 80% = High methodological quality. • Between 60 and 80% = Medium methodological quality. • Below 60% = Low methodological quality.
Weight of Evidence B	Methodological relevance was assessed using the JBI Levels of Evidence for Effectiveness (JBI, 2014). • Level 1 = High methodological relevance.

	• Level 2 = Medium methodological relevance. • Level 3-5 = Low methodological relevance.
Weight of Evidence C	Topic relevance was assessed by scoring each study out of 5 based on whether it included the following: 1. Children aged 4-16. 2. The use of a CBT based intervention. 3. Outcome measures of anxiety. 4. Participants with social communication needs. 5. An intervention conducted in a school setting. Score of 5 = High topic relevance. Score of 4 = Medium topic relevance. Score of 0-3 = Low topic relevance.
Weight of Evidence D	The above criteria were combined to form an overall judgement. The overall rating is based on an average of the three criteria. If the judgement was not high for both WoE B and C, then the study could not achieve an overall judgement of high, as these criteria are specific to the review question.

These criteria were applied to the 8 studies included in the review. The overall judgement of the quality of the research is outlined in Table 2.3 (see Appendix A for full details of the judgements for each WoE criteria). Based on the criteria outlined above, six studies were judged to be medium quality overall, whilst two were judged to be high quality overall. Overall, the evidence included here to answer the review question is of medium quality.

Table 2.3 A table summarising the WoE judgements for the articles included in this review

Article	**WoE A**	**WoE B**	**WoE C**	**Overall judgement**
Greig and Mackay (2005)	High	Low	High	Medium
Ooi et al. (2008)	Low	Medium	High	Medium
Clarke et al. (2017)	High	Medium	High	Medium
Drmic et al. (2017)	Low	Medium	High	Medium
Luxford et al. (2017)	Medium	High	High	High
Ireri et al. (2019)	Medium	Medium	Medium	Medium
Rosen et al. (2022)	High	Low	High	Medium
Reaven et al. (2023)	Medium	High	High	High

2.7.5 Synthesis of research

In line with Gough's (2007) stages of a review, the findings of the included studies are synthesised. This involves the aggregation, integration and interpretation of the evidence considered to answer the review question (Gough, 2007). The studies included had heterogenous elements, including study design, sample size and the type of CBT intervention used. As a result, a narrative synthesis was judged to be appropriate for this review as combining the data to give an overall measure of effect would be misleading (Boland et al., 2017). The following provides a synthesis of the main themes relevant to the review question.

2.7.5.1 Study design

Two of the included studies used a randomised control trial (RCT) design (Luxford et al., 2017; Reaven et al., 2023). Four studies included in this review utilised a quasi-experimental

design. Two of these used a single group pre and post-test design (Drmic et al., 2017; Ooi et al., 2008) and two used a pre and post-test design with a control group (Clarke et al., 2017; Ireri et al., 2019). The remaining two studies employed a case study methodology, with Greig and MacKay (2008) outlining the findings of one case and Rosen et al. (2022) outlining the findings of two cases.

As detailed in the quality appraisal section, the two RCTs included in this review are considered to have high methodological relevance when investigating effectiveness (JBI, 2014). RCTs are considered to be important in educational research and the best means for assessing whether an intervention is effective, as threats to internal validity are significantly reduced through the randomisation of participants to each group (Cohen et al., 2018). However, it is not always possible to randomly assign participants in real-world research, so quasi-experiments can also be used to contribute to evidence around effectiveness. The four quasi-experimental studies are therefore considered to provide medium methodological relevance, as they will have reduced internal validity due to less control over confounding variables (Cohen et al., 2018). In this review, two of the included quasi-experiments used a single group pre and post-test design. These are considered to be of low methodological quality as the lack of a control group to compare with means even lower internal validity and it is not possible to know if the intervention was responsible for any effects found (Robson &McCartan, 2016). The two studies that used a case study methodology are of low methodological relevance for answering the review question. This is because they lack the validity and reliability required to establish effectiveness, although they may provide useful information about causes and processes that have contributed to the outcomes (Robson &McCartan, 2016).

2.7.5.2 Participants

The total number of participants included in this review is 228. The average sample size of the included studies is 29 participants, spanning from 1 (Greig & MacKay, 2005) to 81 (Reaven et al., 2023). Four of the studies have a small sample size of less than 30 participants (Clarke et al., 2017; Greig & MacKay, 2005; Ooi et al., 2017; Rosen et al., 2022). Using a small sample size means the study may lack external validity, indicating that the generalisability of the results across the population is limited. It is also worth noting that only three of the included studies were conducted in the UK (Clarke et al., 2017; Greig & Mackay, 2005; Luxford et al., 2017). With the majority of the studies therefore being conducted outside of the UK, this is a further factor affecting external validity and the generalisability of the overall results of the review to the UK population.

The age of participants varied in each study, with most participants being between 8 and 15. One study had participants aged between 5-21 years old (Ireri et al., 2019), as this was the age range of pupils within the specialist schools selected to take part. This study was therefore judged to have medium topic relevance, as the participants were not all UK school age, so the results have less relevance to this review question.

Participants all had a diagnosis of Aspergers or autism spectrum disorder (ASD) in six of the studies (Clarke et al., 2017; Drmic et al., 2017; Greig & MacKay, 2005; Ireri et al., 2019; Luxford et al., 2017; Ooi et al., 2008). One participant in the case study by Rosen et al. (2022) did not have a diagnosis of ASD, but the results of their Social Responsiveness Scale were above the clinical threshold, suggesting they had social/communication impairments that are consistent with ASD. All participants in the study by Reaven et al. (2023) had clinically significant deficits in reciprocal social behaviour according to the Social Responsiveness Scale, with 48% having an ASD diagnosis. This study did not require a diagnosis of ASD, as the researchers recognised that many students who may benefit from

support may not have had the opportunity to be formally assessed for a diagnosis and this approach therefore expanded the reach of the intervention (Reaven et al., 2023). This review explores the impact of CBT based interventions for children with any identified social communication needs, so all studies have relevance for answering the review question.

2.7.5.3 CBT based intervention

There were five different types of CBT based intervention used by the studies included in this review. One used the Homunculi (Greig & MacKay, 2005), one used an unspecified manualised CBT programme that was adapted for children with autism (Ooi et al., 2008), one used the Multimodal Anxiety and Social Skills Intervention (Ireri et al., 2019), two used the Exploring Feelings CBT intervention (Clarke et al., 2017; Luxford et al., 2017), and three used Facing Your Fears: School-based program (Drmic et al., 2017; Reaven et al., 2023; Rosen et al., 2022). The frequency and duration of the intervention sessions ranged from 6 weekly sessions of an hour each (Clarke et al., 2017) to a total of 20 individual and group sessions of an hour each (Ireri et al., 2019). Three studies described the creation or adaptation of a CBT based intervention for children with autism or delivery in a school (Drmic et al., 2017; Greig & MacKay, 2005; Ooi et al., 2008), demonstrating how such approaches are still in the early stages of development and use. It is also worth noting that these three studies investigated approaches created by the authors of the research. They are therefore at risk of researcher bias, so findings need to be interpreted with caution.

Who delivered the intervention varied across the studies, with only three of the studies using school staff to deliver the intervention after they were provided with training (Drmic et al., 2017; Reaven et al., 2023; Rosen et al., 2022). Although the remaining studies were all conducted in a school setting, the intervention was delivered by a range of psychological professionals, including EPs or trainee EPs (Clarke et al., 2017; Greig & MacKay, 2005;), therapists (Ooi et al., 2008), students in Clinical Psychology (Ireri et al., 2019) and the

researcher who was supported by a member of staff in the school (Luxford et al., 2017). Whilst all studies included in this review contribute to the evidence for the effectiveness of CBT based interventions delivered in a school setting, the evidence for these interventions delivered by school staff is limited.

2.7.5.4 Findings for anxiety outcomes

All eight of the included studies found positive effects of the CBT based intervention for reducing anxiety in children and young people with social communication needs. Please see Table 2.1 for the full details of the findings for each study. Both RCTs found significant reductions in anxiety from pre- to post-intervention according to parent reports compared to the control groups (Luxford et al., 2017; Reaven et al., 2023). Luxford et al. (2017) also found a significant reduction in anxiety from pre to post intervention according to the self-report measure and there was a significant reduction in teacher reported social worry for the intervention group, whereas no significant changes were found for the control group. Reaven et al. (2023) found significant reductions in separation and social anxiety from pre- to post-intervention based on the self-report measures. However, there was no significant effect of the intervention on teacher reported anxiety, possibly because the changes were not robust enough to be generalised or noticed by teachers outside of the intervention context (Reaven et al., 2023).

The quasi-experimental studies that had a control group both found a significant difference between groups post-intervention for parent reported anxiety (Clarke et al., 2017; Ireri et al., 2019). Clarke et al. (2017) also found a significant difference between groups post-intervention for self-reported anxiety. Drmic et al. (2017) found statistically lower child reported and parent reported levels of anxiety at post-intervention compared to pre. Similarly, Ooi et al. (2008) found a reduction in child and teacher reported anxiety post-intervention compared to pre. In contrast, parent reported anxiety increased post-intervention, possibly

due to differing perceptions of the anxious feelings between parents and children (Ooi et al., 2008). However, none of the differences reported by Ooi et al. (2008) reached statistical significance due to the small sample size used for the study.

Both case studies reported reductions in anxiety for participants when comparing raw scores of the scales used from pre- to post-intervention (Greig & MacKay, 2005; Rosen et al., 2022). Greig and MacKay (2005) reported that post intervention, the participant's anxiety was below the mean score for his age. Rosen et al. (2022) described meaningful decreases in parent reported anxiety for both participants and some elements of child reported anxiety. Meaningful decreases were defined as scores that were below clinical threshold post-intervention but had been above or approaching clinical threshold pre-intervention.

2.7.6 Discussion

This systematic literature review was conducted in line with the stages of review outlined by Gough (2007), to answer the following question: what is the effectiveness of CBT based interventions for reducing anxiety in children with social communication needs when delivered in a school? All studies reported positive effects of CBT based interventions for reducing anxiety in children with social communication needs when delivered in a school. This is consistent with the findings of previous systematic reviews exploring the efficacy of CBT for children with social communication needs, such as autism (Kester & Lucyshyn, 2018; Perihan et al., 2020; Ung et al., 2015). However, there are limitations to the quality of the evidence included and the review process that must be considered.

The studies included in this review varied in quality and the Weight of Evidence that they contributed to answering the review question. Only two of the studies were considered to have a high Weight of Evidence overall. They used an RCT design and therefore had high methodological relevance for assessing effectiveness (JBI, 2014). The methodological quality of these studies was judged to be medium, as participants and those delivering the

interventions and assessing outcomes were not blind to the assignment to the intervention group (JBI, 2020c). However, it would not be possible for participants and those delivering the intervention to be blind to this, as they will be aware of whether they are, or are not, taking part in or delivering an intervention. As a result, both studies were considered of high quality overall. The remaining six studies were judged to be of medium Weight of Evidence to contribute to answering the review question.

All studies included a sample of children within school age with an identified social communication need who were experiencing anxiety, so the samples included in this review seem to have high relevance for the research question. On the other hand, only three of the included studies were conducted in the UK, so there are restrictions in the generalisability of the findings of this review to the UK population. Studies varied in the number of participants and half had a small sample size (less than 30), further limiting the generalisability of the results to the population of children with social communication needs.

This systematic literature review process had some strengths and limitations. A strength is that the quality of the included studies was assessed to provide a clear Weight of Evidence for answering the review question. However, the quality appraisal was only completed by one researcher, so it is subject to a risk of bias. Criteria were used for each category to attempt to reduce the subjectivity of the quality appraisal, but the results may still lack reliability. The screening of the literature and the data extraction was also only completed by one researcher, so it is possible that studies may have been excluded erroneously. The decision was made to not include grey literature in this review, as this is unlikely to have been peer reviewed and therefore at risk of bias as the validity and accuracy of any conclusions has not been scrutinised. This means evidence contributing to the review question may not have been included, for example from unpublished theses.

The inclusion and exclusion criteria seem to have been appropriate, as all but one study (Ireri et al., 2019) had high topic relevance for answering the review question. This study was still included in this review as it did include children aged 4-16 (UK school age). However, the inclusion of participants up to the age of 21 (Ireri et al., 2019) means that this study has reduced relevance for answering the review question and is a limitation of this review. Another possible limitation of this review is that there was no specified date range for the research to be included. The purpose of this was to identify as much evidence as possible relating to the review question and to try to avoid excluding research that has relevant findings. Although the majority of the included studies were completed within the last seven years, one was completed 16 years ago (Ooi et al., 2008) and another 19 years ago (Greig & MacKay, 2005). It is possible that changes to school contexts that may have occurred in the time since these studies were carried out mean the relevance of their findings is limited. Consequently, the conclusions of this review should be interpreted with caution.

2.7.7 Conclusion

This review identified two high-quality studies that answer the review question, but the quality of the remaining 6 studies is limited, with only two of these comparing with a control group. It is not possible to draw conclusions about the effectiveness of CBT based approaches for reducing anxiety in children with social communication needs when delivered in a school, as there is currently insufficient high-quality evidence available. More research is required investigating the use of CBT based interventions in school settings for children with anxiety and social communication needs. To increase the quality of the evidence available, future research should seek to use methodologies that are considered to be of high relevance for effectiveness studies, such as RCTs or quasi-experimental studies with a control group. Future research should also aim to have a larger sample size, if possible, to aid with the power of analysis and generalisability of the results.

2.8 Rationale for the current research

The aim of the current research is to add to the evidence base for CBT based approaches for reducing anxiety in children with social communication needs, when delivered in a school setting. This study focuses on the Homunculi Approach. A CBT based approach was chosen as the focus for this research due to the high prevalence of their use and strong existing evidence base for their effectiveness in reducing anxiety for children with autism (Hillman et al., 2020). As previously outlined, there is already a small amount of evidence for the Homunculi Approach, but the studies are at high risk of bias as they have been conducted by the authors of the approach or are unpublished theses. Moreover, all of the existing research into the approach has used case studies or a single group pre- and post-test design, limiting the validity of the findings. Therefore, the current study aims to add to the evidence base by utilising a control group to compare with.

Existing literature has highlighted the need for further research into CBT based interventions delivered in schools and by school staff (Barry et al., 2020; Kester & Lucyshyn, 2018). The systematic literature review described in the previous section further highlights that there is limited existing research investigating the impact of CBT approaches when delivered in school settings in the UK, particularly when they are delivered by school staff. With regards to the Homunculi Approach, only one previous study has explored its impact when delivered by school staff (Maydew, 2018). The current study therefore aims to investigate the impact of the Homunculi Approach when delivered in a school setting by school staff, to further contribute to the existing evidence base for CBT based interventions in schools.

Previous research suggests the COVID-19 pandemic has impacted the mental health of children and young people, particularly preadolescents (Waite et al., 2021). Although some studies in the systematic literature review in section 2.7 included children from the age of 8, none focused on preadolescents specifically. When considering previous research into the

Homunculi Approach, only one existing study has explored its effects for primary aged pupils (Downing, 2015). There is therefore a gap in the existing research, as no studies have previously investigated the impact of the Homunculi Approach when it is delivered by school staff for primary aged pupils. The current study aims to address this gap.

Throughout this literature review, the focus has been on the evidence surrounding the effectiveness of CBT based approaches for children with autism. When conducting the systematic literature review, this focus was broadened to children with social communication needs. This was in acknowledgement of the fact that many children and young people in the UK experience delays in being assessed for a diagnosis of autism (Howlin et al., 2021). Reaven et al. (2023) have also noted that many children who can benefit from CBT based approaches to reduce their anxiety may not have had the opportunity to be formally assessed for a diagnosis of autism. With this in mind, rather than only seeking participants with a diagnosis, the current study will focus on the impact of the Homunculi Approach for children with social communication needs.

To further understanding of the impact of CBT based approaches, Hillman et al. (2020) have highlighted a need for research to identify characteristics of interventions that contribute to their effectiveness. The current research therefore aims to gather qualitative data through interviews with the facilitators of the Homunculi Approach to further explore its perceived impact and the factors that may influence its effectiveness. Previous research also suggests that it is important to consider the implementation of such interventions alongside their effectiveness (Cook & Odom, 2013; Nelson et al., 2012). In the quantitative phase of this study, some of the participating schools were unable to complete the Homunculi Approach and the attrition for the study was high (discussed further in the Methodology chapter), suggesting there were difficulties implementing the approach. For this reason, the research

also aims to use the qualitative phase of this study to explore the possible factors that can impact the implementation of the Homunculi Approach in schools.

In summary, the current research aims to make an original contribution by being the first to investigate the effectiveness of the Homunculi Approach for reducing anxiety in primary aged pupils with social communication needs, using a control group. In addition, this study aims to add to the evidence-base for the efficacy of CBT based approaches when delivered in a school setting by school staff. This study also aims to use qualitative data to deepen understanding of the impact of the Homunculi Approach and explore factors that can affect its implementation.

The following research questions will be investigated:

1. Does the Homunculi Approach reduce anxiety in primary aged pupils with social communication needs?
2. What changes, if any, do facilitators of the intervention perceive for the children who participate in the Homunculi Approach?
3. What factors do facilitators perceive helped or hindered the implementation of the intervention?

3 Methodology

This chapter starts by outlining the main stakeholders in this study. It will then describe the relevant paradigms and research designs for educational psychology research before describing the methods chosen for the current research. The current research is divided into two phases. Phase one aims to investigate whether the Homunculi Approach reduces anxiety for primary aged children with social communication difficulties, using a quasi-experimental design. Phase two further explores the possible impact of the Homunculi Approach. It uses semi-structured interviews to understand school staff's perceptions of any changes for the child following their participation in the intervention. It also explores factors that may have impacted the implementation of the intervention. Methods for data analysis will be described, as well as possible threats to reliability and validity and the ethical considerations pertinent to this study.

3.1 Stakeholders

The main stakeholders in this study are outlined below:

- The University of Nottingham: the research was conducted as part of the Doctorate in Applied Educational Psychology training programme. The researcher was supervised by a tutor on the programme throughout the study.
- Educational Psychology Service (EPS) in a Local Authority: Following discussion of the research proposal in November 2022, the research was authorised by the Principal Educational Psychologist of the EPS where the researcher was on placement as a Trainee Educational Psychologist. Educational Psychologists in the service also supported recruitment for the study by emailing the schools they were linked with. Findings of the research will be shared with the EPS in July 2024.

- Schools: The Headteachers of the recruited schools gave their permission for their school to take part in the study. School Special Educational Needs Co-ordinators (SENCos) supported the identification of children who met the inclusion criteria. The members of staff who delivered the intervention also supported the collection of data and were contacted regularly throughout the intervention delivery phase. A summary of the findings of the research will be shared with the school staff involved in July 2024.

3.2 Research Paradigms

This section discusses the different paradigms that are relevant for research in educational psychology. A paradigm can be defined as "a worldview that includes a set of philosophical and methodological assumptions and beliefs" (Tashakkori et al., 2020. p. 5). Such philosophical assumptions can be described as ontology, which is the nature of reality, and epistemology, which is concerned with ways of enquiring to gain knowledge about the nature of reality (Cohen et al., 2018). Broadly speaking, ontology can be viewed from a realist perspective where there is a 'real reality' that can be understood, or a relativist perspective where there are multiple realities that are constructed by human experience (Teddlie & Tashakkori, 2009). Epistemology can be seen as objective, where a separateness exists between the researcher and what they want to know, or subjective, where researchers and participants co-construct realities and what is known (Teddlie & Tashakkori, 2009).

Pring (2015) describes two contrasting paradigms in relation to educational research, one that believes in objective reality and employs quantitative methods and another that believes there are multiple realities that are constructed and takes a qualitative approach to research. However, Pring (2015) also noted that there is a false dualism in rejecting one or the other of these paradigms and how we engage in research is far more complex than can be described by simply two opposing paradigms.

It is important to understand the philosophical paradigms underlying research and how they impact the researchers motivations and intent (Robson &McCartan, 2016). The paradigms pertinent to research in educational psychology will therefore be considered below, before identifying the paradigm that underpins the current study.

3.2.1 Positivism and post-positivism

Positivism was the dominant paradigm that guided early educational and psychological research. It assumes that the way we study the natural world can also be applied to the social world and causal explanations can be provided for human behaviour (Mertens, 2020). Positivism is based on the ontological assumption that there is a single reality that can be examined and measured by researchers (Mertens, 2020) and it adopts an objective epistemology, in that the only knowledge available is objective knowledge, which is value-free and founded on facts (Robson &McCartan, 2016). However, there has been extensive criticism of the positivist paradigm in relation to psychological research, with suggestions that there is more to the human experience than just what can be observed and laws about human behaviour cannot be generalised (Mertens, 2020).

The reductionist and oversimplistic nature of positivism has led to it being superseded in social research by the postpositivist paradigm (Robson &McCartan, 2016). The ontological assumptions of postpositivism argue that there is no absolute truth, we can only have partial knowledge of the world and there are multiple perspectives and interpretations of reality (Cohen et al., 2018). Postpositivism still champions the scientific method and values objectivity but acknowledges that research can only reveal probabilities rather than certainties (Mertens, 2020). Researchers will have their own personal biases that can influence the observations they make but this can be avoided through following specific and rigorous procedures (Mertens, 2020). Whilst postpositivism takes steps towards addressing the limitations of positivism, it could be argued that even following a rigorous procedure will not

eliminate all biases and therefore the epistemology contradicts itself by promoting objectivity in research at the same time as accepting the subjective influence of the researcher (Mertens, 2020).

Although some postpositivist research may utilise qualitative methods, postpositivism is considered to rely heavily on quantitative methods as it continues to advocate for scientific procedure and conducting social science research in the same way as natural science (Robson &McCartan, 2016). However, it does acknowledge that it is not always possible to randomly assign participants to groups and allows for other types of research design like quasi-experiments, natural experiments or more passive nonexperimental designs that still aim to highlight causal relationships (Shadish et al., 2002).

3.2.2 Constructivism

An alternative research paradigm that questions the underlying assumptions of post-positivism is constructivism. The ontological assumptions of constructivism are that reality is socially constructed through how humans interact and interpret these interactions (Robson &McCartan, 2016). This means multiple constructions are possible as people's perceptions will differ from each other and can change over time (Mertens, 2020), therefore there is no single or objective reality that research can discover. In addition, the constructivist epistemology assumes that the role of the researcher is to understand the multiple realities that are socially constructed by participants and that the researcher them self can influence these constructions (Mertens, 2020). The constructivist paradigm can also be described as interpretivist (Robson &McCartan, 2016), further supporting the idea that the knowledge gained from research is also a result of the researcher's interpretation of the experiences of the participants. Constructivism is broadly associated with qualitative methods for gathering data such as interviews or observations, as this enables multiple perspectives to be gathered to generate an understanding of individual experiences (Robson &McCartan, 2016).

3.2.3 Transformative

Limitations of the previous research paradigms and practices led to the emergence of the transformative paradigm. Transformative researchers aim to bring about social transformation by positioning themselves alongside the less powerful and confronting social oppression at whatever level it occurs (Mertens, 2020). Mertens et al. (2009) outlines how the transformative paradigm distinguishes itself from the postpositivist and constructivist paradigms by placing importance on the study of the lives and experiences of marginalised groups, as well as the structure of oppression around them that can lead to it being reproduced. Transformative research analyses how and why inequities are reflected in power relationships and how this can be linked to political and social action (Mertens, 2009).

The transformative paradigm adopts the ontological assumption that there are multiple realities. However, it does not accept that these different perceptions of reality are equally legitimate, as to do so would ignore factors that give privilege to one version of reality over another (Mertens, 2020). Therefore, each perception of reality needs to be critically examined to consider how it may be perpetuating oppressive social structures and policies (Mertens, 2020). The transformative epistemology assumes that there is an interactive link between the researcher and participants and acknowledges the influence of historical and social factors on this relationship (Mertens, 2020). Researchers therefore need to be conscious of their own power and cultural lenses and the influence they can have on their relationships with participants (Mertens, 2017).

Issues around power and trust will need to be addressed through the research methodology. A range of methodologies across qualitative, quantitative, and mixed methods may be employed, but they must describe the contextual and historical factors that may relate to oppression and should include the voices of those from marginalised groups (Mertens, 2020).

3.2.4 Pragmatism

The final paradigm to be discussed is the pragmatic paradigm. The pragmatic paradigm advocates for identifying which approach to the research is most appropriate through consideration of the strengths and weaknesses of different methods to answer the research questions. The pragmatic paradigm does not dictate the direction of research based on a preconceived view of reality and knowledge, instead encouraging researchers to think about their purpose and the questions they want to answer (Biesta, 2010).

With regards to ontology, pragmatism posits there is a reality that is external of our minds, but that the truth regarding this reality cannot be determined (Teddlie & Tashakkori, 2009). This can be described as critical realism, which states that there is a reality, but it can only ever be understood imperfectly and probabilistically (Teddlie & Tashakkori, 2009). The epistemological stance of pragmatism is not simply based on the dualistic view of knowledge being subjective or objective but considers how interactions take place in nature and that this is ever changing (Biesta, 2010). Therefore, the pragmatic paradigm suggests that epistemology exists on a continuum and research can take a subjective and objective point of view, depending on the purpose or stage of the study (Teddlie & Tashakkori, 2009). Pragmatism recommends using the quantitative and qualitative methods that are most appropriate for the research questions, therefore advocating for a mixed methods approach (Tashakkori et al., 2020).

3.2.5 The current study

The current study fits within a pragmatic paradigm, as the appropriate methodology was selected based on the research questions rather than because of any predetermined ontological or epistemological beliefs. The research took place in a real-world setting, namely mainstream primary schools. The critical realist ontology linked with pragmatism provides a way of approaching the open and uncontrolled environment of 'field' research (Robson &McCartan, 2016). Whilst this study aims to provide further understanding around the

impact of the Homunculi Approach, the researcher acknowledges that the findings only offer one explanation of reality which may be influenced by the social constructs the study exists within. This is in line with the critical realist ontology that reality can only be known imperfectly and probabilistically (Teddlie & Tashakkori, 2009). This study adopted an objective epistemology in phase one, and a subjective epistemology in phase two. This is common in pragmatic research and allows for the varying levels of interaction between the researcher and the participants in each stage of the mixed methods design (Tashakkori et al., 2020).

3.3 Research designs

In this section, different research designs that are used in educational psychology are discussed. Key quantitative and qualitative methods are described as well as the major types of mixed methods research designs.

3.3.1 Quantitative research designs

Quantitative research designs are usually employed to investigate predetermined variables and follow exact procedures to study these variables (Robson &McCartan, 2016). Hodis and Hancock (2016) highlight how advances in quantitative methods continue to further research in educational psychology and how they can contribute to the understanding of the processes that shape the educational experience of young people. Some of the different types of quantitative research design are discussed below, and the design the current study plans to adopt will be described.

Randomised control trials (RCTs) are considered to be the most rigorous research design for determining a cause-and-effect relationship between a treatment and an outcome (Sibbald & Roland, 1998). They involve randomly assigning participants to an experimental and comparison group and examining any differences in the outcomes between them to assess the effectiveness of treatment or intervention (Kendall, 2003). This random assignment

eliminates selection bias, as any confounding differences between groups that can explain differences in outcomes are removed (Torgerson & Torgerson, 2003). In a well-designed RCT, both groups are treated identically in all respects other than the intervention being tested to further minimise the influence of confounding variables (Kendall, 2003). As other variables have been controlled for, it can be argued that changes brought about in the experimental group must be due to the intervention. Therefore, RCTs offer a high level of internal validity (Cohen et al., 2018).

Whilst RCTs are deemed an effective research design for establishing what works when investigating interventions in education (Torgerson et al., 2013), there are arguments that randomisation and control of variables to establish causality may not be appropriate or possible outside of a laboratory setting (Cohen et al., 2018). When randomisation is not possible, quasi-experiments can be utilised to identify causal relationships (Kim & Steiner, 2016). Quasi-experiments were described by Campbell and Stanley (1963) as studies that used an experimental approach but had not randomly assigned participants to treatment and comparison groups. Quasi-experimental designs therefore study the effect of a treatment or intervention on groups that already exist (Mertens, 2020).

There are different types of quasi-experimental design, one example being a pre-test post-test non-equivalent control group design. This involves an experimental and control group that have not been randomly equated. Both groups complete pre-test measures, with the experimental group then receiving treatment or intervention, before both of the groups then complete post-test measures (Cohen et al., 2018). This design takes some steps to addressing threats to internal validity as researchers are more able to control for differences between participants through use of a pre-test measure and determine if the two groups differ before the treatment or intervention (Mertens, 2020). However, without randomisation of

participants it is possible that individual differences can influence any outcomes being investigated, reducing the validity of the findings (Torgerson & Torgerson, 2003).

Further group research designs include those described as pre-experimental designs (Robson &McCartan, 2016). For example, a static-group comparison design. This involves administering a treatment to an experimental group and comparing their performance with that of a control group on a post-test. Such designs can lack internal validity due to possible differences between participants in each group and attrition (Mertens, 2020). The lack of a pre-test measure and controls for extraneous variables further threaten the validity of this design (Cohen, et al., 2018). There are also single group designs, such as a post-test only design and a pre-test post-test single group design. Although these designs are widely used in research studies, it is suggested that they should be avoided when exploring the effectiveness of a treatment or intervention due to their low levels of validity (Robson &McCartan, 2016).

This section outlined some of the different group designs employed in quantitative research. The current study aims to investigate the effectiveness of the Homunculi Approach for reducing anxiety in primary aged children with social communication needs. Whilst RCTs are considered to be the most rigorous research design for investigating the effectiveness of an intervention (Sibbald & Roland, 1998; Torgerson et al., 2013), it was not possible to randomly assign participants for this study due to it being conducted in the real-world context of mainstream primary schools. The current study therefore used a quasi-experimental research design. More specifically, it adopted a pre-test post-test non-equivalent control group design, with a treatment as usual waitlist control group. The study hopes to make an original contribution to the research base by being the first to utilise a control group to compare to. The research design selected is therefore appropriate to support this.

3.3.2 Qualitative research designs

The prevalence of qualitative research in psychology has increased in recent years and the value of such research is becoming more widely recognised (Carrera-Fernandez et al, 2014; LaMarre & Chamberlain, 2022). Meyer and Schutz (2020) highlight the recent increase in the use of qualitative and mixed research methods in educational psychology specifically, and how the use of such methods can aid a better understanding of educational practice and policy. Mertens (2020) highlights five types of methodology that represent important approaches for educational and psychological qualitative research. They are briefly described in Table 3.1 below.

Table 3.1 A table outlining key types of qualitative methodology (Mertens, 2020)

Ethnographic research	Involves observation over time within the context of the daily lives of participants and can involve other data collection methods such as interviews or informal conversations. It assumes that a better understanding of the beliefs, motivations and behaviours of participants can be gained through firsthand interactions with people and their everyday lives.
Case study	An investigative approach that thoroughly describes complex phenomena with the aim of revealing a deeper understanding of them. A case may be an individual, group or event and a range of data collection methods can be employed to gather detailed information about a unique situation.
Phenomenological research	An approach that seeks to understand an individual's subjective experience and perception of a phenomena. Phenomenological research aims to understand and describe an event from the point of

	view of the participant, with their experiences placed at the centre of the research.
Grounded theory	An approach where data is simultaneously collected and analysed in search of emergent themes that guide future data collection. This leads to the development of a theory grounded in the analysed data, rather than any theories being stated prior to data collection.
Participatory action research	In this research, participants share the role as co-researchers and each participants diverse experiences and skills are key to generating knowledge and working towards solving a problem in a community. Typically, it will involve identifying a problem, reflecting on possible solutions and developing these, implementing the chosen solutions and collecting data on their effectiveness, reflecting on outcomes, and making changes or revisions to action as needed. This cycle can be repeated as necessary to improve practice.

Mertens (2020)

Thematic analysis is another type of qualitative methodology (Willig & Rogers, 2017). It can be defined as "a method for identifying, analysing, and interpreting patterns of meaning within qualitative data" (Clarke & Braun, 2017, p.297). There are several versions of thematic analysis which have been developed for varying purposes (Willig & Rogers, 2017). For example, Boyatzis' (1998) description of thematic analysis places importance on the reliability of the process and the codes identified. The most widely cited version of thematic analysis comes from Braun and Clarke (2006). They describe six phases of thematic analysis, outlined in Table 3.2 below.

Table 3.2 A table describing the six phases of thematic analysis (Braun & Clarke, 2006)

1. Familiarising yourself with your data	Transcribing data, reading and re-reading the data, noting down initial ideas.
2. Generating initial codes	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.
3. Searching for themes	Collating codes into potential themes, gathering all data relevant to each potential theme.
4. Reviewing themes	Checking if the themes work in relation to the coded extracts (level 1) and the entire data set (level 2), generating a thematic map of the analysis.
5. Defining and naming themes	Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells, generating clear definitions and names for each theme.
6. Producing the report	The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating the analysis to the research question and literature.

(Braun & Clarke, 2006, p.87)

Thematic analysis is a flexible approach that can be used to identify patterns in relation to participants' experiences, views, and perspectives (Clarke & Braun, 2017). Unlike some of the approaches outlined above, like grounded theory and phenomenological research, thematic analysis is independent from any particular epistemological and ontological assumptions (Willig & Rogers, 2017) and is therefore not bound by theoretical commitments (Clarke & Braun, 2017). This is of relevance for the pragmatic approach adopted by the

current study, which posits using the most appropriate research methods to answer the research questions rather than being driven by philosophical assumptions.

The current study aims to use qualitative data to deepen understanding of the impact of the Homunculi Approach and to explore the facilitators perspectives of the factors that may influence its effectiveness and implementation. Thematic analysis was used to analyse this data, due to its relevance for identifying patterns linked to participant's perspectives and its alignment with the pragmatic approach underpinning this study.

3.3.3 Mixed methods research designs

Mixed methods research designs utilise a combination of both quantitative and qualitative methods to effectively answer their research question (Teddlie & Tashakkori, 2009). Mixed methods research designs are flexible and diverse and can often evolve as data is collected and analysed. Because of this, it is argued that there cannot be an exhaustive list of the types of mixed methods research designs, rather a set of ideal types of designs can be described which can be manipulated in a way that is relevant for the research context (Teddlie & Tashakkori, 2009). The five major types of mixed method designs are outlined in Table 3.3 below.

Table 3.3 A table outlining the five major types of mixed methods research designs (Teddlie & Tashakkori, 2009, p.151)

Parallel mixed designs	Mixing occurs in a parallel manner, either simultaneously or with some time lapse. Planned and implemented qualitative and quantitative phases answer related aspects of the same questions.
Sequential mixed designs	Mixing occurs across chronological phases of the study. Questions or procedures of one strand emerge from or depend on the previous strand, and research questions are related to one another and may evolve as the study unfolds.

Conversion mixed designs	In these parallel designs, mixing occurs when one type of data is transformed and analysed both qualitatively and quantitatively; this design answers related aspects of the same questions.
Multilevel mixed designs	In these parallel or sequential designs, mixing occurs across multiple levels of analysis, as quantitative and qualitative data from these different levels are analysed and integrated to answer aspects of the same question or related questions.
Fully integrated mixed designs	Mixing occurs in an interactive manner at all stages of the study. At each stage, one approach affects the formulation of the other, and multiple types of implementation processes occur.

(Teddlie & Tashakkori, 2009, p. 151)

Mixed methods research combines quantitative and qualitative methods with the aim of potentially maximising the strengths and minimising the weaknesses of each method. Triangulating the data sets from both research methods traditions can offset the possible limitations within each tradition and enhance the interpretability and usefulness of the findings (Gelo et al., 2008; McCrudden et al., 2019). The key to generating a more comprehensive understanding of a topic using mixed methods research designs is the integration of both quantitative and qualitative approaches. This can occur at one or multiple points of the study and there are a variety of approaches to integrating data in mixed methods research (McCrudden et al., 2019). Mixed method designs in particular can be useful in complex contexts, such as educational settings, as they can incorporate different techniques to answer research questions and enhance a researcher's ability to draw conclusions about the focus of the study (Mertens, 2020).

The current study adopted a mixed methods approach with the aim of triangulating quantitative and qualitative data to provide a deeper understanding of the impact of the

Homunculi Approach. It used a sequential mixed design, which is appropriate as the qualitative phase of the research depends on the Homunculi Approach first being investigated in the quantitative phase. A sequential mixed design allows for research questions to evolve as the study unfolds. This was the case in the current study, as high levels of attrition in the quantitative phase led to the addition of a third research question exploring the factors impacting the implementation of the intervention in the qualitative phase.

3.4 The present research

The above sections outlined the paradigms relevant to educational psychology research, key quantitative, qualitative, and mixed methods designs, and the principal research design choices for the current study. A brief summary of these choices is offered here. The current study is underpinned by the pragmatic paradigm. It adopts a critical realist ontology and both an objective and subjective epistemology, depending on the phase of the research. The study uses a sequential mixed design, that was conducted in two phases, to answer the following research questions:

1. Does the Homunculi Approach reduce anxiety in primary aged pupils with social communication needs?
2. What changes, if any, do facilitators of the intervention perceive for the children who participate in the Homunculi Approach?
3. What factors do facilitators perceive helped or hindered the implementation of the intervention?

Phase one used quantitative methods, specifically a pre-test post-test non-equivalent control group design, to attempt to answer research question 1. Phase two used qualitative methods to answer research questions 2 and 3, with data gathered through interviews and analysed using thematic analysis. These phases are described in further detail below.

3.5 Phase one

Phase one of the study aimed to address research question 1:

Does the Homunculi Approach reduce anxiety in primary aged pupils with social communication needs?

A pre-test post-test non-equivalent control group design was utilised, using a treatment as usual waitlist control group. The independent variable was the Homunculi Approach programme, and the dependent variable was the participant's levels of anxiety, measured using self-report and parent and teacher questionnaires (see section 3.5.3 for further details about the measures).

3.5.1 Sampling and recruitment

This study used a non-probability sample and employed a purposive sampling strategy, as participants were chosen based on particular characteristics being sought to answer the research questions (Cohen et al., 2018). These characteristics included children who were experiencing anxiety with social communication needs in year 3-6 at mainstream primary schools in a Local Authority in the midlands of England. Reasons for the inclusion of participants with these characteristics has been previously discussed in section 2.8 when outlining the rationale for this study.

Participants were recruited by approaching school SENCo's and headteachers with information about the study via emails from their link Educational Psychologist and through Local Authority SENCo and Headteacher briefings in June 2023, and again in September 2023. To take part, schools were asked to identify at least two children in their school with social communication needs who experience anxiety (as defined in section 3.5.2) to participate in the study.

Schools were also asked to acquire a copy of the book "The Homunculi Approach to Social and Emotional Wellbeing: A Flexible CBT Programme for Young People on the Autism Spectrum or with emotional and behavioural difficulties" by Anne Greig and Tommy MacKay (Greig & MacKay, 2013). It should be noted that there was a cost of approximately £20 associated with acquiring a copy of the book if schools did not already have it. This may have prevented some schools from taking part and impacted the recruitment for this study. In addition, schools were asked to identify an appropriate member of staff to attend a centralised training session (see section 3.5.4.2 for further details about the training).

The above conditions were clearly outlined in the school recruitment letter and headteacher consent form (see Appendix B and C). 14 mainstream primary schools gave their consent to take part. However, two of these schools did not then gather consent for participants (process described in section 3.5.4.1) so their involvement in the research did not continue. Therefore, 12 mainstream primary schools took part in the current study.

3.5.2 Participants

Participants in phase one of the study were 26 children aged 7-11 in year 3-6. They were attending mainstream primary schools in the midlands of England and identified as having social communication needs and anxiety by their school SENCo. These identifications were made based on the SENCo's observations of the child in school being in line with the following descriptions provided by the researcher:

- Social communication needs: difficulties using verbal and nonverbal communication in social situations to develop relationships (adapted from NELFT NHS Foundation Trust, n.d.).
- Anxiety: feelings of worry that the child is finding difficult to control (adapted from DSM-5; American Psychiatric Association, 2013).

11 schools identified two children to take part, and one school identified four children to take part. Participants were allocated to the experimental or waitlist control group by the school SENCo, based on whether they were participating in the Homunculi Approach during the autumn or spring term of the school year. There were 13 participants in the experimental group and 13 in the waitlist control group. Participants of this study also included the parents and teachers of the child participants described above, as they completed measures of the child's anxiety.

3.5.3 Measures

3.5.3.1 Social Competence Inventory

The Social Competence Inventory (SCI; Rydell et al., 1997) was completed by the teachers of the children participating before the intervention phase. This was to provide information about the participant's social communication skills and enable the comparison of the needs of the experimental and control group before the intervention. The SCI is a 25-item questionnaire where participants answer on a 5-point Likert scale ranging from does not apply to applies very well. It was used in this research as it is a reliable and valid measure of a child's social competence (Rydell et al., 1997), and unlike other measures of social communication, such as the Social Communication Questionnaire (Rutter et al., 2003) and the Social Responsiveness Scale (Constantino & Gruber, 2012), the SCI is not linked to screening for autism. This study did not only focus on children with an autism diagnosis, therefore it seemed appropriate to use a measure of social communication that was not linked with such a diagnosis. The SCI was found to have good internal consistency in the current study, with a Cronbach alpha coefficient of .93.

3.5.3.2 Spence Children's Anxiety Scale

The Spence Children's Anxiety Scale (SCAS; Spence, 1998) was completed by the children before and after the intervention phase. The SCAS is a 44-item questionnaire where

participants answer on a 4-point Likert scale ranging from never, sometimes, often to always. This scale has good internal reliability and high internal validity (Spence et al., 2003).

The participant's parents also completed the SCAS – Parent Version (Spence, 1999). The parent version is a 38-item questionnaire which rephrases the statements from the child version as behaviours that can be observed. This scale also has good reliability and validity (Nauta et al., 2004).

The SCAS and SCAS-parent were used in this research in line with several previous studies exploring the impact of CBT based approaches on children's levels of anxiety (for example, Clarke et al., 2017; Luxford et al., 2017; Ooi et al., 2008). In the current study, the SCAS and SCAS-parent have good internal consistency, with a Cronbach alpha coefficient of .88 and .75 respectively.

3.5.3.3 School Anxiety Scale – Teacher Report

The School Anxiety Scale – Teacher Report (SAS-TR; Lyneham et al., 2008) was completed by the participant's teachers to provide a measure of the child's level of anxiety in the classroom. This is a 16-item questionnaire where responders answer on a 4-point Likert scale, ranging from never, sometimes, often to always. The SAS-TR was used in this research as it has good internal consistency and convergent validity (Lyneham et al., 2008), and to the researcher's knowledge it is the only teacher measure that focuses solely on anxiety. The SAS-TR was found to have good internal consistency in the current study, with a Cronbach alpha coefficient of .83.

3.5.4 Procedure

3.5.4.1 Consent

Once schools had received the information letter (appendix B), a member of school staff contacted the researcher via email to express their interest in taking part. They were then asked to provide permission from their Headteacher to take part in the study (see Headteacher

permission letter in Appendix C). Child participants were then identified by the school SENCos and informed consent from their parents was sought for them to take part in the study. An information sheet was also shared with the children to seek their assent to take part in the study (see Appendix D). Consent was also gathered from the teachers and parents of the children so they could complete the social competence and anxiety measures (see the information sheets and consent forms in Appendix E, F, G, and H).

3.5.4.2 Training and support

A member of staff from each school, such as a learning support assistant (LSA) or Emotional Literacy Support Assistant (ELSA), was identified by the school SENCo to deliver the intervention. This member of staff attended a centralised online training session delivered by the researcher in October 2023. The focus of this session was cognitive behavioural approaches and the Homunculi Approach. The session lasted 2.5 hours, with time included to outline the logistics of the study and answer any questions the staff had about the intervention or the study.

During the training session, the researcher also outlined the support available to school staff as they completed the intervention, namely an email from the researcher every 2-3 weeks during the intervention delivery phase to check on progress and offer any support. Staff delivering the intervention were also able to contact the researcher via email at any point to seek support with any issues implementing the programme.

3.5.4.3 Pre-intervention data collection

Following the training session, the pre-intervention measures were completed for all of the participants. This was facilitated by the school SENCos and facilitators of the intervention, who shared the questionnaires with the parents and teachers and completed the measure with the child. Pre-intervention data was collected for 26 children.

3.5.4.4 Intervention delivery phase

Once the pre-intervention measures were completed, children in the experimental group participated in the Homunculi Approach intervention for up to 1 hour a week for 10 weeks. The children took part in the intervention on a one-to-one basis with the member of staff who had attended the training session. The intervention is designed to be delivered across 10 weekly sessions that are up to one hour long. The authors of the intervention highlight the flexibility of the programme (Greig & Mackay, 2013), so there is no set session structure to follow. However, they do outline 8 steps to the intervention that should be completed:

Step 1: Meeting the Homunculi

Step 2: Seeing the Homunculi in action

Step 3: Identifying problems and missions

Step 4: Pre- and post- project evaluation

Step 5: Creating agents and gadgets

Step 6: Deciding how to plan the story/ mission

Step 7: Story development

Step 8: Debriefing (Greig & Mackay, 2013).

The intervention phase began in October 2023 and ended in February 2024, lasting for a total of 15 weeks. Some schools were unable to start the intervention in October or could not deliver all of the sessions within 10 weeks due to changes in staff availability. The 15-week intervention phase was therefore to allow additional time for the 10 sessions of the programme to be completed with as many participants as possible.

3.5.4.5 Post-intervention measures

Post-intervention measures were completed in January/ February 2024. Four schools were unable to complete the programme and did not provide post-intervention data. These schools reported that this was due to unexpected changes in staffing meaning they no longer had capacity for a member of staff to deliver the intervention. One school also reported that the child in the experimental group did not wish to continue taking part in the intervention, so did not complete the programme and provide post-intervention measures. Therefore, post intervention data was collected for a total of 18 children; 9 in the control group and 9 in the experimental group. The 9 children in the control group had all completed 10 sessions of the Homunculi Approach, which included the 8 steps outlined above.

3.6 Phase Two

Phase two of the study aimed to address the following research questions:

Research question 2: What changes, if any, do facilitators of the intervention perceive for the children who participate in the Homunculi Approach?

Research question 3: What factors do facilitators perceive helped or hindered the implementation of the intervention?

To answer these questions, qualitative data was gathered through one to one semi-structured interviews with members of staff who delivered the intervention. Originally, the researcher hoped to interview teachers to explore any changes that they perceive in children who participated in the Homunculi Approach. The views of teachers were sought as the researcher thought they would be better able to comment on changes for the child in the classroom and not just the intervention context. Difficulties recruiting class teachers however, meant that this was changed to the members of school staff who delivered the Homunculi Approach. It is important to note that interviewing the facilitators of the intervention increases the risk of

bias, as they were being asked to comment on their own practice. This is further discussed in section 5.2.2.

Research question 3 was added to this phase of the study, based on the difficulties participating schools experienced in completing delivery of the Homunculi Approach (described in section 3.5.4.5). This is in line with the sequential mixed methods design of the study which allows for the development of research questions as the study unfolds and for these questions to emerge depending on the previous phase (Teddlie & Tashakkori, 2009). In this study, the researcher therefore felt that based on the high levels of attrition in phase one of the research, it was important to use the qualitative phase to explore the factors that impacted the implementation of the Homunculi Approach in the schools participating.

3.6.1 Procedure

3.6.1.1 Recruitment of participants

The members of staff facilitating the delivery of the Homunculi Approach in schools were contacted in February 2024 to ask them to take part in an interview with the researcher. They were provided with an information sheet (see Appendix I) and emailed the researcher to express their interest in taking part. Informed consent was then gathered (see Appendix J for the consent form). A total of 5 facilitators participated in an interview. All of the facilitators were Learning Support Assistants, with two also being trained as Emotional Literacy Support Assistants (ELSAs).

3.6.1.2 Interviews with facilitators

Following completion of the Homunculi Approach, one to one semi-structured interviews were conducted with the 5 facilitators who had provided their consent. In semi-structured interviews, the interviewer has a guide of topics to be covered and questions to be asked, but the wording and order of these can be modified based on the flow of the interview and additional questions are often asked to follow up or clarify interviewees responses (Robson &McCartan, 2016). Semi-structured interviews were used in this study as they enabled the

exploration of the facilitators perspectives of the changes for children who participated in the Homunculi approach and of the factors that helped or hindered the implementation of the intervention in school settings.

The interviews included the following questions:

- Thinking back to the first half term of this academic year, what signs did you notice that the child was experiencing anxiety?
- Have you noticed any changes since the child has been participating in the intervention?
- Has the child shown any signs that they are understanding their emotions more?
- What, if any, communication have you had with the class teacher for the child?
- Are you aware of any changes for the child in the classroom? For example, are they or those around them using any different strategies to support them?
- What, if anything, do you think has supported the delivery of the intervention?
- What, if anything, do you think has been a barrier to the delivery of the intervention?
- Do you have any further comments on any changes you have perceived for the child or the impact of the intervention?

The interviews lasted for 10-25 minutes and took place over Microsoft Teams in February 2024. A debrief form (see Appendix K) was shared with facilitators following their participation in the interviews.

3.7 Data analysis

Analysis in phase one of this study was completed using descriptive and inferential statistics. Specifically, the mean scores for the child, parent, and teacher measures at pre- and post-intervention were compared across the experimental and waitlist control group. A series of

mixed between-within subjects ANOVAs were then conducted to further investigate the differences between groups at pre- and post- intervention. How decisions were made regarding the statistical tests used in this study is discussed in the findings chapter.

Phase two of this study analyses the data gathered through semi-structured interviews using thematic analysis. The following phases of analysis were completed (Braun & Clarke, 2006; see section 3.3.2 for further details):

1. Familiarising yourself with your data
2. Generating initial codes
3. Searching for themes
4. Reviewing themes
5. Defining and naming themes
6. Producing the report

How the process is applied in the current research is further outlined in section 4.4.

3.8 Validity and reliability of phase one

It is important to consider the validity and reliability of research when determining its value in answering research questions. Validity refers to the accuracy of a result, in terms of whether any relationships that are established are true or due to the effect of something else (Robson &McCartan, 2016). Reliability is described as the stability or consistency with which something is measured (Robson &McCartan, 2016). Whilst it is not possible to erase all threats to validity and reliability, paying attention to such issues throughout research can help to reduce their impact (Cohen et al., 2018). The possible threats to reliability and validity and actions taken to address these are discussed in this section.

3.8.1 Reliability

The instruments used to measure participant's anxiety were found to be reliable and valid and are therefore considered to be accurate measures of anxiety in children. A threat to the reliability of this study is possible participant bias. This is when participants may respond to a measure in a way that they believe to be desired by others rather than truthfully (Robson &McCartan, 2016). For example, the pupils may not answer truthfully about their experiences of anxiety when completing the measure with a known adult in school. This is a common issue in experimental studies and is a possible limitation to this research.

3.8.2 Internal validity

The possible threats to internal validity and the actions taken to address these are outlined in Table 3.4 below.

Table 3.4 A table outlining the possible threats to internal validity and the actions taken to address these threats

Threat to internal validity	**Actions taken to address the threat**
History: events other than the intervention treatments occur during the time between pre- and post-test, and these events can produce effects that can be mistakenly attributed to differences in treatment.	Participants did not access any other intervention or treatment for their experiences of anxiety during the intervention phase, to limit the possibility of changes being attributed to alternative factors.
Maturation: participants can change in a variety of ways between any two points of observation. Such changes can produce differences that are independent of the research.	The time between the pre- and post-test measures was the same for the experimental and control group, so any maturation effects are likely to be the same for both and not impact the comparison of changes in each group.

Instrumentation: unreliable tests or instruments can introduce errors in research.	The instruments selected to measure the social competence and anxiety levels of participants were reported to have good validity and reliability (Lyneham et al., 2008; Nauta et al., 2004; Rydell et al., 1997; Spence et al., 2003). They were also found to have good internal consistency in the current study (see section 3.5.3).
Selection: Bias may be introduced as a result of differences in the selection of participants for the comparison groups. This could interact with other factors such as history or maturation to cloud further the effects of the comparative treatments.	Participant's social competence was measured at the start of the study to establish whether there was a difference in groups before the intervention. However, participants were assigned to the experimental or control group by school staff, so the risk of selection bias is a limitation of this study.
Experimental mortality (attrition): the loss of subjects through dropout often occurs in long-running research and may confound the effects of the variables.	The researcher regularly contacted the school staff delivering the intervention to offer any support required and to help problem solve around any barriers related to the implementation of the intervention. However, attrition was high for this study and is a limitation of this research. Possible reasons for this attrition are explored in the qualitative phase of this study.

(Cohen et al., 2018, p. 252)

3.8.3 External validity

External validity is concerned with the generalisability of the findings to other groups or settings (Robson &McCartan, 2016). As this research took place in a real-world setting, it has higher ecological validity than research carried out in a laboratory setting as it has more relevance for the usual context that interventions are carried out in mainstream primary schools. There are however threats to external validity that could not be addressed, such as the small sample size of the study and the specific context in which the research took place. Whilst this means the study has low external validity, it was not necessarily the aim of this research to generalise the findings to other groups or settings. This is in line with the pragmatic approach and the critical realist ontology that this research adopts, in that it explores the impact of the Homunculi Approach for this particular group of participants but does not claim that these findings can be applied to all primary aged children with social communication needs.

3.9 Trustworthiness of phase two

The trustworthiness of findings from qualitative research is the subject of much debate, with various terminology and frameworks suggested to establish this (Robson &McCartan, 2016). Lincoln and Guba (1985) suggest the terms validity and reliability do not apply to qualitative research, instead preferring the terms credibility, transferability, dependability, and confirmability. Shenton (2004) provides further description of these terms:

- Credibility: researchers attempt to demonstrate that a true picture of the phenomenon under scrutiny is being presented.
- Transferability: sufficient detail of the context of the research is provided so the reader is able to decide whether the findings can justifiably be applied to another setting.

- Dependability: information is provided to enable a future researcher to repeat the study.
- Confirmability: researchers take steps to demonstrate the findings emerge from the data and not their own predispositions.

The steps taken to promote the trustworthiness of the current research findings in relation to the above criteria are outlined in Table 3.5 below.

Table 3.5 A table outlining the actions taken to promote the trustworthiness of the current research findings

Criteria	Actions taken
Credibility	In the case of the current research, the phenomenon is the perspectives of the facilitators regarding changes for the children following participation in the Homunculi Approach and the factors that impacted the implementation of the intervention. Therefore, interviews were recorded, and transcripts were checked against the recordings before beginning analysis to ensure accuracy. The researcher also checked their understanding throughout the interviews by reflecting back what participants shared to ensure she had understood participant's viewpoints correctly.
Transferability	Contextual information about the schools participating in the study was outlined, along with information about the roles of the facilitators.
Dependability	A detailed description of the research procedure was provided, including how facilitators were recruited and the questions used in the semi-structured interviews. The process for data

	analysis and how this was applied to the current research was also clearly outlined (see section 4.4).
Confirmability	The sources of qualitative data were clearly outlined, and the researchers interpretations made explicit throughout the analysis. The data and interpretations were also discussed with the research supervisor.

3.10 Ethical considerations

Approval for this study was granted by the University of Nottingham Ethics Committee on 25.05.23, and then on 08.08.23 following the addition of the social competence measure to be completed by teachers, and again on 06.02.24 following changes to the participants recruited for interviews in phase two of the study (see Appendix L). The British Psychological Society (BPS) Code of Human Research Ethics outlines the following four general principles that are relevant for all research contexts involving humans (BPS, 2021):

1. Respect for the autonomy, privacy and dignity of individuals, groups, and communities
2. Scientific integrity
3. Social responsibility
4. Maximising benefit and minimising harm

How each principle was adhered to in this study is further discussed below.

3.10.1 Respect for the autonomy, privacy and dignity of individuals, groups, and communities

The nature of the research was explained to the participants through information sheets and debrief forms (see Appendix E, G, I, M, and N). These forms outlined that it was a voluntary study that they could choose not to participate in, and they had the right to withdraw at any time. It was also made clear in the debrief form that they were able to withdraw their data by

contacting the researcher by a given date. Parental consent was gathered for the pupils who took part in the intervention and the pupils were also read an assent form (see Appendix D), so they were given the opportunity to choose whether they wanted to take part in the intervention and data collection. Data collected during phase one of the study contained no personally identifiable information about participants. In phase two, the interviews were audio recorded and any identifying information was removed during transcription to ensure confidentiality.

3.10.2 Scientific integrity

In the design of this research, efforts were made to ensure the quality and robustness of the study in a real-world research context and actions were taken to reduce threats to reliability and validity (see sections 3.8 and 3.9). The use of a control group aimed to increase the quality and robustness of the study compared with previous research into the impact of the Homunculi Approach. The research questions ensure that the research aims were transparent, and these aims were made clear to participants when appropriate through information and debrief forms.

3.10.3 Social responsibility

This research aimed to generate knowledge about the impact of a CBT based intervention for children with social communication needs. It therefore had the potential to produce beneficial outcomes by adding to the evidence base of what may support these children. The researcher worked in partnership with school staff to carry out the research and remained aware of their professional responsibilities throughout the process, for example offering additional support to school staff where required to aid the implementation of the intervention. As a Trainee Educational Psychologist, the researcher remained within the limits of their professional competence by accessing regular supervision from qualified Educational Psychologists through university tuition and placement supervision.

3.10.4 Maximising benefit and minimising harm

To maximise the potential benefits of the research for the participants, staff delivering the intervention attended a training session with the researcher with the aim of developing their understanding of CBT based approaches and their confidence delivering the Homunculi Approach. Possible risks to participants were identified through completing health and safety and ethical risk assessments, and consideration was given to how these risks could be mitigated to reduce the potential for harm. For example, it was possible that completing the anxiety measures may impact the participant's mood or cause them stress. Completion of the measures and participation in the Homunculi Approach intervention was also likely to involve the discussion of personal topics and the recall of personal memories that may be distressing. To address this, child participants were told through an information sheet (see Appendix D) beforehand that they did not have to complete the measures if they did not wish to and that they could ask to stop at any time. The parents of the children were also signposted to further support via the information sheet and debrief form (see Appendix E and M) if they were concerned about their child's wellbeing during or following the study.

3.11 Summary

This chapter outlined relevant paradigms for research in educational psychology and the key quantitative, qualitative, and mixed methods research designs. The pragmatic paradigm underpinning the current research and the sequential mixed methods design adopted by the study was discussed. The quantitative phase of this study aims to investigate the effectiveness of the Homunculi Approach for reducing anxiety in primary aged pupils with social communication needs, using a pre-test post-test non-equivalent control group design with a treatment as usual waitlist control group. The qualitative phase aims to deepen the understanding of the impact of the Homunculi approach and the factors that can affect its

implementation, using semi-structured interviews and thematic analysis. The findings of this mixed methods research study are presented in the next chapter.

4 Findings

This section outlines the findings from phase one and two of the current mixed methods study. It begins by describing the process of preparing the data for analysis and important considerations for hypothesis testing. How decisions were made regarding the use of parametric and non-parametric tests are also considered. The data analysis completed for the quantitative phase of the study is then described and the findings for each measure of anxiety outlined. Following this, the process of thematic analysis used for the qualitative phase of this study and the findings of this analysis are detailed.

4.1 Data preparation

Data for the first phase of this study was prepared and analysed in the Statistical Package for the Social Sciences (SPSS). Firstly, negative coded items in the School Anxiety Scale (SAS) were recoded to score the same as positively worded items. Then, total scores for each scale were calculated for the pre- and post-intervention data.

The data was also checked for outliers by inspecting Boxplots for each data set. Outliers are cases where their value is considerably above or below the majority of other cases (Pallant, 2020). Two outliers were identified in the Spence Children's Anxiety Scale (SCAS) post-intervention data, and one outlier was identified for the SCAS-parent pre-intervention data. The scores of these outliers were checked against the original questionnaire to confirm they were not errors. As suggested by Pallant (2020), the mean and the 5% trimmed mean were then compared to understand the impact these outliers were having on the data overall (see Table 4.1). The difference between the means and 5% trimmed mean was minimal so these cases remained in the data set.

Table 4.1 A table showing the means and 5% trimmed means for the SCAS post-intervention data and SCAS-parent pre-intervention data

Total SCAS post-intervention (experimental group)	Mean	93.89
	5% Trimmed Mean	94.10
Total SCAS-parent pre-intervention (experimental group)	Mean	83.56
	5% Trimmed Mean	83.84

4.2 Hypothesis testing

Phase one of this study used statistical analysis to test hypotheses in relation to the research question (outlined in section 4.3). Important considerations when completing such tests are discussed below.

4.2.1 Error

When testing hypotheses with statistical analysis, there is always a risk of reaching the wrong conclusions. This can be through a Type one or a Type two error, as described below:

- Type one error: the null hypothesis is rejected when it is true. This occurs when we think there is a difference between the groups, but there really is not.
- Type two error: we fail to reject a null hypothesis when it is false. This is when we believe that the groups do not differ, when they do. (Pallant, 2020)

Type one errors are linked with the level of statistical significance applied to a test, and type two errors relate to the power of a statistical test (Robson &McCartan, 2016). Both of these errors are further discussed in the next sections.

4.2.2 Statistical significance

Statistical significance testing can be used to determine the probability of a result, assuming a null hypothesis to be true (Shaver, 1993). The null hypothesis states that there is no difference

between the groups in an experiment (Mertens, 2020). The probability that significance testing gives you is known as the *p* value. If the *p* value is small rather than large, it means it is less likely that the result is due to chance rather than because of a true difference (Robson &McCartan, 2016). For example, setting a probability level of .05 would mean there is a 5% probability that the results occurred by chance, or a 5% probability of a type one error described above. A statistical significance test therefore helps to rule out the possibility that a result is due to random variation in the sample rather than because of real differences between groups (Robson &McCartan, 2016). However, statistical significance does not provide any information regarding the size or importance of an effect (Robson &McCartan, 2016) and researchers have argued that the use of statistical significance testing alone to interpret results is flawed (Carver, 1993; McLean & Ernest, 1998).

4.2.3 Effect size

Due to the criticism surrounding statistical significance, effect size has been proposed as an alternative or supplement for understanding relationships or differences between groups (Fan, 2001). An effect size can be described as the magnitude of the difference between conditions (Dancey & Reidy, 2020). There are different measures of effect size, one commonly used example being Cohen's *d*. Guidelines suggest that a *d* value of 0.2 constitutes a small effect, 0.5 a medium effect, and 0.8 would indicate a large effect (Dancey & Reidy, 2020).

4.2.4 Power

To help reduce the risk of Type two errors, it is important to consider the power of a test. Power is the ability to detect a difference between means, where one exists (Dancey & Reidy, 2020). The chance of a type two error decreases as the power increases (Robson &McCartan, 2016). Power is measured on a scale of 0 to 1, where 0 is no power, meaning it would not be possible to detect a difference between means. For example, a power level of 0.5 would mean you have a 50% chance of finding an effect (Dancey & Reidy, 2020). A power level of at

least 0.8 is high and considered to be optimal for results to be interpreted with confidence (Dancey & Reidy, 2020; Pallant, 2020).

4.2.5 Determining sample size

It is important to consider statistical significance, effect size, and power when determining the sample size required for a study. Cohen et al. (2018) describes a straightforward method for calculating sample size set out by Lehr (1992), which is based on a power level of 0.8 and a significance level of 0.05. Based on finding a large effect size (0.8), Lehr's (1992) method suggests that a sample size of 50 is required, with 25 in each group. Whilst this sample size was the aim for this study, it was not possible due to difficulties with recruitment and then attrition further reducing the number of participants. As a result, the findings of the statistical analysis in this study must be interpreted with caution as the small sample size of 18 is likely to impact the power of the tests used.

4.2.6 Parametric or non-parametric tests

A decision regarding the approach to data analysis was made based on checks for whether the data met the assumptions for parametric testing, rather than non-parametric testing. These assumptions include the dependent variable being measured at the interval or ratio level, the variance of samples being homogeneous, and the data being normally distributed (Pallant, 2020). In this study, each measure used a Likert Scale and the total scores for each measure provided interval level data. An outline of how assumptions regarding homogeneity of variance and normal distribution were assessed is provided below.

4.2.7 Testing for homogeneity of variance

Levene's Test for Equality of Variances can be used to assess whether the variability of scores for each group is similar (Pallant, 2020). This test provides a level of significance. A significance value of less than 0.05 would suggest that the variances for the two groups are not equal and the assumption of homogeneity of variance has been violated. Therefore, a

significance level of greater than 0.05 indicates that the variance of samples is homogeneous, and the assumption has been met (Pallant, 2020). A Levene's Test for Equality of Variances was conducted to explore this for each set of data in this study (see section 4.3.2.1).

4.2.8 Assessing whether data is normally distributed

A normal distribution refers to a "symmetrical, bell-shaped curve, which has the greatest frequency of scores in the middle with smaller frequencies towards the extremes" (Pallant, 2020, p. 59). Whether data is normally distributed can be tested through statistical and graphical methods (Tabachnick & Fidell, 2018). For example, Pallant (2020) suggests the use of formal normality tests, such as the Kolmogorov-Smirnov test which can be completed through SPSS.

Alternatively, data can be visually analysed to explore if it is normally distributed. A histogram of the data could be checked for whether it looks like a bell-shaped curve and if the shape is symmetrical or not. Q-Q plots of the data can also be visually analysed to see whether all data points have a linear tendency and lie on a diagonal or not (Kim, 2012). However, there are disadvantages to visual analysis as the criteria for determining normality are not clear and conclusions may therefore be inaccurate. In addition, many samples do not look like normal distributions, particularly if they have a small sample size, furthering the likelihood of conclusions about the distribution being inaccurate (Kim, 2012).

To resolve these difficulties, Kim (2013) suggests the use of skewness and kurtosis as a more reliable method to assess the normality of the distribution when a study has a small sample size. Skewness refers to the symmetry of a distribution and kurtosis refers to the peakedness or flatness of a distribution (Tabachnick & Fidell, 2018). A z-test can be applied to test normality. A z-score is calculated by dividing the skew values or excess kurtosis by their standard errors, values for which can be provided by SPSS (Kim, 2013). In a sample size of

under 50, as is the case in the current study, if absolute z-scores for either skewness or kurtosis are larger than 1.96, then it is concluded that the distribution of the sample is not normal (Kim, 2013).

In the current study, statistical methods, i.e. the Kolmogorov-Smirnov test and a z-test to test normality using skewness and kurtosis, were completed to assess the distribution of the samples (see section 4.3.2.1). Visual analyses of histograms and Q-Q plots were not applied due to their unreliability in accurately demonstrating the distribution of a sample when the sample size is small, as is the case with the present research.

4.3 Phase one analysis

Phase one aimed to answer the first research question; does the Homunculi Approach reduce anxiety in primary aged children with social communication needs?

The following hypotheses were tested in relation to this question:

1. The Homunculi Approach will reduce the self-reported anxiety of primary-aged children with social communication needs.
2. The Homunculi Approach will reduce the parent reported anxiety of primary-aged children with social communication needs.
3. The Homunculi Approach will reduce the teacher reported anxiety of primary-aged children with social communication needs.

The null hypotheses were as follows:

1. The Homunculi Approach will not reduce the self-reported anxiety of primary-aged children with social communication needs.
2. The Homunculi Approach will not reduce the parent reported anxiety of primary-aged children with social communication needs.

3. The Homunculi Approach will not reduce the teacher reported anxiety of primary-aged children with social communication needs.

A total of 26 children participated in the current study: 13 in the experimental group and 13 in the waitlist control group. Participants also included the parents and teachers of these children. Four schools were unable to complete 10 sessions of the Homunculi Approach (for reasons outlined in section 3.5.4.5) and therefore 8 children did not continue to participate in the study. As a result, pre- and post- intervention data was collected for a total of 18 children, with 9 in the experimental group and 9 in the waitlist control group.

In order to explore research question 1, the Spence Children's Anxiety Scale (SCAS), SCAS-parent, and School Anxiety Scale-teacher report (SAS-teacher) measures were used to gather information about the child's experiences of anxiety. One child and one parent did not complete the post-intervention measure. Their data was therefore removed and data for a total of 17 participants was analysed for the SCAS and SCAS-parent. The sample size for each measure for the experimental and control group is summarised in Table 4.2 below.

Table 4.2 A table outlining the sample size of the experimental and control group for the SCAS, SCAS-parent, and SAS-teacher

	Sample size	
	Experimental group	Control group
SCAS	9	8
SCAS-parent	8	9
SAS-teacher	9	9

4.3.1 Descriptive statistics

Firstly, descriptive statistics for the Social Competence Inventory (SCI) which was completed at pre-intervention for all participants are outlined in Table 4.3 (see Appendix O for SPSS output).

Table 4.3 A table showing the sample size, mean and standard deviation of the SCI for the experimental and control group

	Experimental group			Control group		
	N	Mean	Standard deviation	N	Mean	Standard deviation
Social Competence	9	73.44	10.03	9	70.22	21.64

The SCI was used to gather information about the participant's social communication needs before the intervention began. This data was used to explore any differences in social communication between the experimental and control group. The mean scores for the experimental group were higher than the mean scores for the control group by 3.22, suggesting the social competence of the experimental group was slightly higher than that of the control group. The standard deviation for the control group was larger than that of the experimental group, indicating that the spread of the data from the mean is bigger in the control group and there is more variation in the scores compared to the experimental group. An independent samples t-test was also conducted to compare the social competence scores for the experimental and control group. There was no significant differences in scores for the experimental and control group $t(16) = -.41$, $p = .69$, two-tailed (see Appendix O).

Descriptive statistics for research question 1 are outlined in Table 4.4, 4.5, and 4.6 below. They include data for children in the experimental group and the waitlist control group at pre- and post-intervention, for the self-report measures of anxiety as well as the parent and teacher measures.

Table 4.4 A table showing the sample size, mean, and standard deviation of the SCAS scores for the experimental and control groups, pre- and post-intervention

	Experimental group			Control group		
	N	Mean	Standard deviation	N	Mean	Standard deviation
Pre-intervention	9	93.89	10.22	8	79.75	19.96
Post-intervention	9	81.56	9.85	8	75.50	12.71
Difference		-12.33	-0.37		-4.25	-7.25

Table 4.5 A table showing the sample size, mean, and standard deviation of the SCAS-parent scores for the experimental and control groups, pre- and post-intervention

	Experimental group			Waitlist control group		
	N	Mean	Standard deviation	N	Mean	Standard deviation
Pre-intervention	8	83.75	8.57	9	87.78	13.31
Post-intervention	8	71.38	8.94	9	84.89	13.92
Difference		-12.37	+0.37		-2.89	+0.61

Table 4.6 A table showing the sample size, mean, and standard deviation of the SAS-teacher scores for the experimental and control groups, pre- and post-intervention

	Experimental group			Control group		
	N	Mean	Standard deviation	N	Mean	Standard deviation
Pre-intervention	9	22.22	8.73	9	20.00	7.16
Post-intervention	9	20.11	8.04	9	21.22	9.91
Difference		-2.11	-0.69		+1.22	+2.75

The descriptive statistics show that for the SCAS, the mean scores for the experimental group were higher than the mean scores for the waitlist control group at pre- and post-intervention. The difference from pre- to post-intervention was larger for the experimental group compared to the control group. The standard deviation suggests that the spread of scores for the experimental group remained similar from pre- to post-intervention. However, the standard deviation for the control group decreased by 7.25 from pre- to post-intervention, suggesting there was less variation in the scores at post-intervention.

For the SCAS-parent, the mean scores for the waitlist control group were higher than the mean scores for the experimental group at pre- and post-intervention. Similarly to the SCAS, the difference from pre- to post-intervention was larger for the experimental group compared to the control group. With regards to the standard deviation scores, the spread of the scores appears to remain approximately the same across both the experimental and control group from pre- to post-intervention.

Finally, for the SAS-teacher measure, the mean scores were higher in the experimental group than in the control group at pre-intervention, but then lower in the experimental group compared to the control group at post-intervention. This means that the mean scores for the experimental group decreased from pre- to post-intervention, but the mean scores for the control group increased from pre- to post-intervention. The standard deviation for the experimental group shows that the spread of scores appears to remain similar from pre- to post-intervention. In contrast, the standard deviation increased in the control group by 2.75 from pre- to post- intervention, suggesting the spread of scores increased.

4.3.2 Inferential statistics

4.3.2.1 Assessing whether the data meets parametric assumptions

A Levene's test for Equality of Variances was carried out for the SCAS, SCAS-parent and SAS-teacher for both pre- and post-intervention (see Appendix P, Q, and R for SPSS output). Levene's test shows that for the SCAS at pre-intervention the variances were not equal F (1, 15) = 4.906, p = .043. ANOVA is described as reasonably robust to violations of this assumption if the size of the groups is similar (Pallant, 2020), which is the case in this data set. Levene's test shows that for the SCAS post-intervention the variances are equal F (1, 15) = .993, p = .335. This is also the case for the SCAS-parent at pre-intervention F (1, 15) = 2.862, p = .111 and post-intervention F (1, 15) = 1.753, p = .205. The same was found for the SAS-teacher at pre-intervention F (1, 15) = .862, p = .367 and post-intervention F (1, 15) = 1.834, p = .195.

Results of the Kolmogorov-Smirnov tests were analysed for each measure to assess whether the data was normally distributed (as described in section 4.2.8). As can be seen in Table 4.7, the p values for all measures across both groups were greater than .05 and not significant, which indicates normality (see Appendix P, Q, and R for SPSS output).

Table 4.7 A table showing the Kolmogorov-Smirnov statistic and the significance (p) values of the SCAS, SCAS-parent, and SAS-teacher for the experimental and control group, pre- and post-intervention

Measure	Group	Statistic	P values
SCAS pre-intervention	Control	.24	.19
	Experimental	.18	.20
SCAS post-intervention	Control	.17	.20
	Experimental	.26	.08
SCAS-parent pre-intervention	Control	.18	.20
	Experimental	.20	.20

SCAS-parent post-intervention	Control	.25	.11
	Experimental	.15	.20
SAS-teacher pre-intervention	Control	.20	.20
	Experimental	.24	.14
SAS-teacher post-intervention	Control	.24	.14
	Experimental	.22	.20

Further checks for normality were completed by calculating z-scores using skewness and kurtosis (as described in section 4.2.8). Table 4.8 shows absolute z-scores for each data set, showing that they are all below 1.96 and therefore further indicating that the data is normally distributed.

Table 4.8 A table showing the absolute z-scores for skewness and kurtosis of the SCAS, SCAS-parent, and SAS-teacher for the experimental and control group, pre- and post-intervention

Measure	Group	Skewness z-score	Kurtosis z-score
SCAS pre-intervention	Control	.79	.79
	Experimental	.49	.34
SCAS post-intervention	Control	.59	.66
	Experimental	1.34	.09
SCAS-parent pre-intervention	Control	.69	.83
	Experimental	1.02	.34
SCAS-parent post-intervention	Control	.61	.66
	Experimental	1.20	.56
SAS-teacher pre-intervention	Control	0.51	1.32
	Experimental	.58	1.25
SAS-teacher post-intervention	Control	.49	1.44
	Experimental	.64	1.04

Based on the information outlined above, it was concluded that the pre- and post-intervention data for both the experimental and waitlist control groups were normally distributed across all three data sets. Therefore, a parametric test could be utilised to investigate research question 1.

4.3.2.2 Analysis of variance (ANOVA)

A series of mixed between-within subjects ANOVAs were completed to investigate the differences between groups at pre- and post- intervention (see Appendix P, Q, and R for SPSS output). This method enables the comparison of two or more different groups across two or more conditions, therefore investigating a between-subjects difference as well as a within-subjects difference (Pallant, 2020). Each mixed between-within subjects ANOVA investigated the following variables:

- A between-subjects independent variable: the Homunculi Approach (experimental or waitlist control group)
- A within-subjects independent variable: time (pre- and post-intervention)
- A dependent variable: the measure of anxiety (SCAS, SCAS-parent, or SAS-teacher)

The risk of a type one error increases when conducting multiple ANOVAs (Pallant, 2020). To control for this a Bonferroni adjustment was used, which involves dividing the alpha value (.05) by the number of tests performed. As there were three dependent variables, the alpha level for this study becomes .017. Differences between groups therefore need a probability (p) value of less than .017 to be considered statistically significant.

It is also important to note that effect sizes are provided for ANOVAs as a Partial Eta Squared value. A value of .01 is a small effect, .06 is a medium effect, and .14 is a large effect (Pallant, 2020).

4.3.2.2.1 SCAS

A mixed between-within subjects ANOVA was conducted to assess the impact of the Homunculi Approach on the child participant's scores on the SCAS across two time periods (pre-intervention and post-intervention). There was a statistically significant main effect for time, Wilks' Lambda = .64, F (1, 15) = 8.46, p = .011, partial eta squared = .36, with both groups showing a reduction in the child's self-reported anxiety from pre- to post-intervention. The main effect for group was not significant, F (1, 15) = 2.93, p = .11, partial eta squared = .16. There was no significant interaction between time and group, Wilks' Lambda = .88, F (1, 15) = 2.01, p = .18, partial eta squared = .12, suggesting there was not a significant difference in the reduction of child reported anxiety levels between the children who took part in the Homunculi Approach and those in the waitlist control group.

4.3.2.2.2 SCAS-parent

A mixed between-within subjects analysis of variance was conducted to assess the impact of the Homunculi Approach on the parent participant's scores on the SCAS-parent across two time periods (pre-intervention and post-intervention). There was a statistically significant main effect for time, Wilks' Lambda = .47, F (1, 15) = 17.28, p < .001, partial eta squared = .54, suggesting both groups had a reduction in the parent reported anxiety of the children from pre- to post-intervention. The main effect for group was not significant, F (1, 15) = 2.71, p = .12, partial eta squared = .15. There was no significant interaction between time and group, Wilks Lambda = .69, F (1, 15) = 6.67, p = .021, partial eta squared = .31, suggesting there was not a significant difference in the reduction of parent reported anxiety levels between the children who took part in the Homunculi Approach and those in the waitlist control group.

4.3.2.2.3 SAS-TR

A mixed between-within subjects analysis of variance was conducted to assess the impact of the Homunculi Approach on the teacher participant's scores on the SAS-TR across two time periods (pre-intervention and post-intervention). There was no significant main effect for time, Wilks' Lambda = .99, F (1, 16), p = .74, partial eta squared = .01. This suggests that there was not a significant reduction in teacher reported anxiety for the children in either the experimental or control group from pre- to post-intervention. There was no significant main effect for group, F (1, 16) = .021, p = .89, partial eta squared = .001. There was also no significant interaction between time and group, Wilks' Lambda = .91, F (1, 16) = 1.61, p = .22, partial eta squared = .09, suggesting there was not a statistically significant difference in the teacher reported anxiety levels between the children who took part in the Homunculi Approach and those in the waitlist control group.

4.4 Phase two analysis

Phase two aimed to answer the following research questions:

Research question 2: Do facilitators of the intervention perceive any changes for the children who participate in the Homunculi Approach?

Research question 3: What factors do facilitators perceive helped or hindered the implementation of the intervention?

The transcripts from the five semi-structured interviews were analysed using thematic analysis (see Appendix S for an example interview transcript). The process outlined by Braun and Clarke (2006), as discussed in section 3.3.3, was used to analyse the data. How this process was applied in this study is described below:

4.4.1 Familiarising yourself with the data

The researcher conducted the interviews, so they had some prior knowledge of the data. Each interview was listened to and transcribed by the researcher. The Microsoft Teams transcript tool was used to support this. Transcripts were checked again against the recordings to ensure they were accurate. The data set was read repeatedly so the researcher became immersed in the data. During this process, data extracts of interest were highlighted, and key concepts noted before coding began.

4.4.2 Generating initial codes

This stage focused on identifying features of the data that are of interest in relation to the research questions. The researcher worked systematically through the data set, paying full and equal attention to each transcript to identify interesting aspects in the data that could form patterns. Coding was completed manually by making notes on the text and highlighting related data extracts. In line with advice from Braun and Clarke (2006), the researcher coded for as many potential themes of interest as possible. In total, 114 codes were generated at this stage, with some of these being removed at later stages either because they only represented the views of one participant, or they were not relevant to the research questions.

4.4.3 Searching for themes

At this stage, the analysis focused on identifying the broader themes and the researcher considered how the different codes may combine and be sorted into potential themes. This was done using a visual representation, with each code written on post-it notes and grouped based on related ideas and concepts into candidate themes (see Appendix T). Codes that were not relevant to the research questions or did not appear to belong to the candidate themes were placed in a ‘miscellaneous’ theme. A thematic map of the candidate themes at this stage, including main themes and sub-themes, can be seen in Appendix U.

4.4.4 Reviewing themes

The purpose of this stage was to refine the candidate themes to ensure that the data within them were meaningful together and that there were clear distinctions between the themes. Braun and Clarke (2006) describe two levels of refinement during this stage. The first level involves reviewing the coded extracts of data. All of the data extracts for each theme were read to consider whether they form a coherent pattern. During this process, some codes were moved to different themes or removed from the analysis as they were not considered relevant. Some themes were merged together, and further sub-themes were identified. A thematic map for this stage of the analysis can be seen in Appendix V.

At the second level of refinement, the validity of each theme is considered in relation to the entire data set. The researcher must also consider whether the candidate thematic map reflects the meanings evident in the data set as a whole. To achieve this, the entire data set was re-read. During this re-reading, additional data linked to the themes that had been missed in earlier stages was coded. The data was also coded for any new themes that had been identified. Further refinement of the themes took place until the researcher deemed that all of the themes worked for the data set. The final themes and related codes can be seen in Appendix W.

4.4.5 Defining and naming themes

The final stage of this process was to define and name each theme so the aspect of the data that each theme captures is clear (Braun & Clarke, 2006). Three overarching themes were identified:

1. Perceived outcomes of the intervention
2. Possible factors contributing to the impact of the intervention
3. Possible factors impacting the implementation of the intervention

Each main theme had a number of substantive themes, which can be seen in the final thematic map in Figure 4.1. It should be noted that the overarching themes identified are similar to the research questions and the analysis mostly lies at the sub-theme level. These themes are discussed in more detail below.

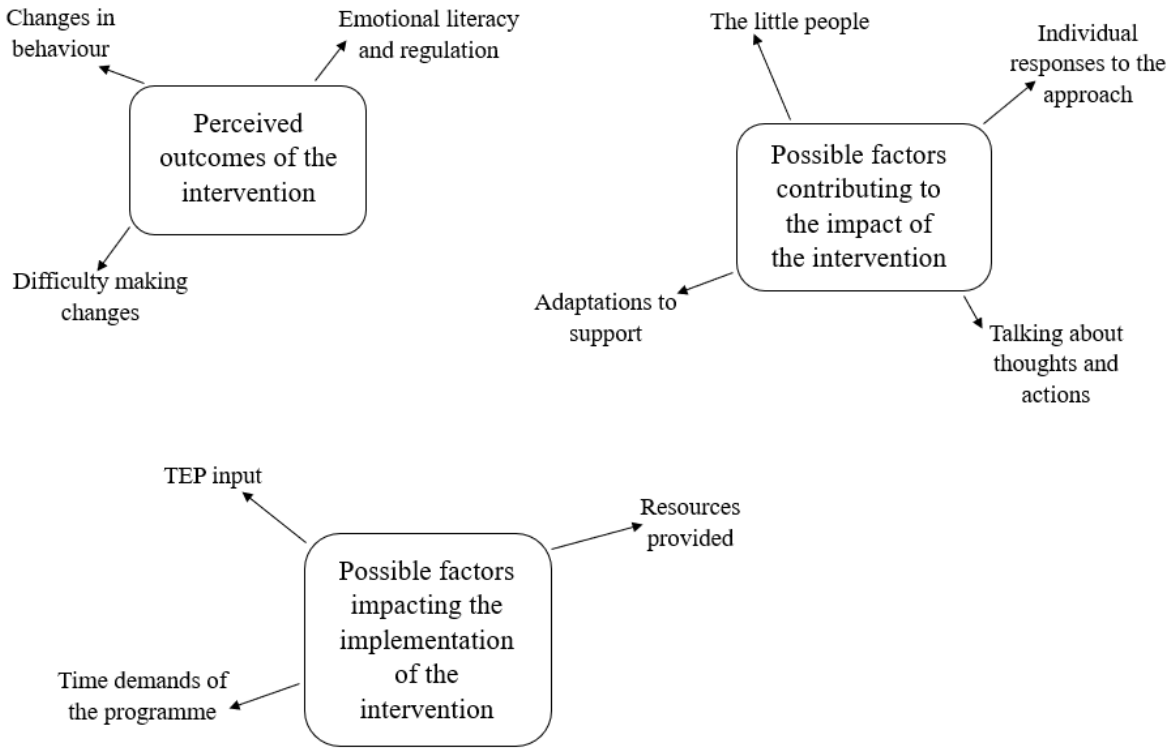

Figure 4.1 The final thematic map

4.5 Theme 1: Perceived outcomes of the intervention

The first theme focused on perceived outcomes for the children who took part in the intervention. It consisted of three key subthemes:

1. Changes in behaviour
2. Emotional literacy and regulation
3. Difficulty making changes

4.5.1 Sub-theme: Changes in behaviour

Participants spoke about the changes they had perceived in the behaviour of the children who took part in the intervention. For example, some participants noted changes in how the child

came into school. When discussing these changes, participant 2 said that *"her attendance has been much more regular"* and participant 3 shared that *"he now comes into school on his own"* and *"he actually said to me […] sometimes he's actually quite excited to come to school now. Whereas before he wasn't"*. This suggests that from the perspective of the facilitators, the children's perceptions of school appear to have changed since taking part in the Homunculi Approach and they seem to experience more positive emotions around school.

Participants also described how the children appeared to be more comfortable in unstructured and unfamiliar situations or in interacting with unfamiliar peers. Participant 2 noted that the child they were supporting *"was finding the playground overwhelming […] she's now started to take some break and lunch times outside"*. Moreover, participant 3 reported that the child they were working with *"just seems to be more able to work with other children that he's not used to working with […] and he's felt less uncomfortable with that"*. It seems that following the Homunculi Approach some children are perceived by the facilitators to have developed an improved sense of confidence in social situations and in interacting with peers. Similarly, participant 4 observed that the child they were supporting *"seems a lot more confident with happily doing things unexpectedly"*. Participant 4 also noted that the child has been *"a bit more confident in assemblies"* and that when working with a new teacher in class *"he happily put his hand up and he was happy when they asked him a question"*. This suggests that from the perspective of the adult supporting him the child's confidence had developed in school, which has led to him feeling more able to talk in front of large groups and with unfamiliar adults.

4.5.2 Sub-theme: Emotional literacy and regulation

The second sub-theme focuses on the changes that the facilitators had noted in how the children talked about and understood their emotions. Participants shared that the children seemed to have greater understanding of their emotions. For example, participant 1 noted *"I*

think [they are] probably giving their emotions more thought than they had previous. So yes, that would lead to more sort of understanding of them". Moreover, participant 3 stated that the child *"most certainly understands his emotions in the context of these little people that are dealing with a different emotion and how he can help himself to […] self-regulate and to solve certain situations that caused him anxiety before"*. This suggests that from the perspective of the adult, the Homunculi Approach appeared to have an instrumental influence on the child in helping them to understand their emotions through the creation of the Homunculi. It also suggests that the adult supporting the child believes that having a better understanding of their emotions may have helped the child to develop some self-regulation strategies to better manage situations they previously found difficult.

Further evidence that the programme has supported the development of emotion regulation skills can be seen in the following extract from participant 2, who observed that the child they support *"does seem to have sort of found the courage or the wherewithal or the tools to be able to manage much better in school"*. It seems the child is perceived to be more able to manage the school environment and it appears that this could be because the tools they have developed may be helping them to better regulate their emotions. Furthermore, participant 4 noted that *"when we first sorted all the agents and everything, he chose ones, you know that would help him calm. He chose one that would sort of, tell him he could get on with it. […] he understands [emotions] a lot more now I think"*. This highlights that from the perspective of the facilitator, the child seems to understand some of the emotions he was experiencing and recognise that he needed to put a strategy in places to support him to manage these emotions. Participant 4 also stated that *"it's given him the confidence to move forward that if he does come across something, he knows we've got that to sort of use and fall back on to process everything. And I think that has helped him as well to address that things are scary […], but there is ways and means to help us deal with it"*. This suggests that developing an

understanding of his thoughts and feelings through use of the Homunculi Approach may have helped the child to develop strategies that help him to self-regulate in situations he finds challenging.

The thematic analysis also highlights that the facilitators believed that understanding the link between thoughts and feelings was an important outcome for some children. For example, participant 5 observed the child *"[understands] that link between thoughts and feelings, that they're both controlling each other"* and that *"he understands the link, he could see how if you were thinking something, [it could] make you feel that way and if you're having a feeling it's come from a thought"*. It seems that from the perspective of the facilitator, exploring the link between thoughts and feelings may have been helpful for children to understand where their emotions were coming from and what may be causing them.

4.5.3 Sub-theme: Difficulty making changes

A third sub-theme was identified around the difficulties some of the children were said to experience in making changes during the intervention. For example, participant 1 shared that the approach supported the child to reflect back on situations and discuss them "*retrospectively,*" but said *"I'm not sure that he's quite at the point where he could use [the approach] to plan in advance".* This highlights how the adult supporting the child perceived that they found it difficult to use the Homunculi approach to make the link between thoughts, feelings, and actions and to identify how he could respond differently in a situation. Similarly, participant 5 said *"I think he's struggling to actually do something to change his thoughts, so that his feelings then change",* further illustrating how the adult viewed the child to be struggling to change how they were responding to their thoughts.

Participant 2 noted that the child had some difficulties discussing the same problem repeatedly, as illustrated by the following extract: *"at the beginning, she found it quite*

difficult to reflect, although she would talk about her general feelings, she found it difficult to reflect on actual incidents in school that had provoked anxiety and made it difficult to cope. […] having to revisit [a scenario] more than once, she was finding quite tricky, and she did actually go home and say to her mum at one point I don't want to talk about this anymore". The Homunculi approach does require repeated discussion of a problem in order to find an appropriate solution (Greig & Mackay, 2013). It seems that from the perspective of the facilitator this may have caused some feelings of anxiety for the child, which could have made it more difficult for her to continue accessing the programme. It also highlights the importance of monitoring the child's wellbeing throughout participation in the programme to ensure it is not causing them additional stress.

4.6 Theme 2: Possible factors contributing to the impact of the intervention

The second theme identified in the thematic analysis was factors contributing to the impact of the intervention. Five sub-themes were identified:

1. The little people
2. Individual responses to the approach
3. Talking about thoughts and actions
4. Adaptations to support

4.6.1 Sub-theme: The little people

Facilitators spoke about how they perceived the children to be using the little people in the Homunculi Approach. For example, participant 3 noted that *"just having that strategy of having these little people that are helping him with his different issues or different emotions has been the biggest thing for him."* It seems the facilitator perceives that the little people may have been most influential in supporting the child with his emotions and the difficulties

he was experiencing. Participants also perceived the children to be using the little people in the classroom, with participant 3, for example, observing *"he had his homunculi to help him, you know, put his hand up, ask the teacher, you know, reassure himself that its ok to make mistakes".* Further, participant 4 shared that the child told them they were using their homunculi, stating *"he did say to me I used my agents and I took a breath and I answered the question".* Participant 4 also noted *"he knew sometimes he just needed to hide in that tent with his first agent to take a breath […] then this other agent he often says always comes along and says you can do it".* It appears that, from the perspective of the facilitators, the characters that the children created were an important aspect of the intervention. These characters may have supported the children to apply some of the skills they had learnt during the programme outside of the intervention context.

Some facilitators shared how they felt the little people may have been helping the children talk about their emotions. For example, participant 1 said that *"I think that whole that it was somebody else that was experiencing those emotions made it easier for him to access those emotions".* Similarly, participant 2 stated *"I guess the cartoon was the way of looking at it without feeling it personally".* It seems the facilitators perceived that the children being able to express their emotions through other characters could have been helpful for them.

4.6.2 Sub-theme: individual responses to the approach

A second sub-theme was identified around the children's individual responses to the Homunculi Approach. Many of the facilitators perceived that the children had enjoyed the approach and that they appeared to be invested in it. For example, participant 5 reported that *"he really enjoyed it"* and *"he's really engaged well in it and he speaks about it a lot".* In addition, participant 1 shared that the child *"took all his little characters home with him at the end of the intervention because he was very invested in them"* and *"he really enjoyed them and who they were".* The following extract from participant 3 seems to indicate

enthusiasm for the characters and the programme: *"I left the room for five minutes and by the time I came back he'd written himself out a grid of all his agents and what they'd have and what mission they were going to solve".* These extracts suggest that from the facilitators perspectives, the children seemed to enjoy taking part in the Homunculi Approach and show enthusiasm for aspects of the programme.

Some facilitators also commented on how quickly they felt the children had taken to the approach. This is illustrated by the following extracts from participant 3: *"I explained it to him and he just instantly got it"* and *"he just led it completely".* Participant 1 also observed *"it made sense to him",* suggesting that the facilitators felt that the children had understood the Homunculi Approach well. Participant 2 also noted that *"it was really logical, […] the way she sort of developed these kind of characters and it sort of worked, made a lot of sense and worked really well I think"* and *"she just really ran with it".* This further highlights the facilitators perception that the approach made sense to the children, and they were quickly able to understand the concept. It also seems that some of the children were perceived to take the lead in completing the programme.

4.6.3 Sub-theme: talking about thoughts and actions

The thematic analysis identified another sub-theme related to how the approach seemed to help the children talk about their thoughts and actions. Participant 1 noted that the child *"found it […] quite therapeutic to talk through what had happened and how things could have changed"* and that *"he definitely found it beneficial as a retrospective tool to understand what had happened and why, and how things could have changed"*. In addition, participant 4 stated that since taking part in the Homunculi Approach, the child *"understands how thinking different things can help him with his situations".* It seems the facilitators perceive that the children have developed their ability to talk about and reflect on their experiences and how their thoughts can influence their view of a situation.

4.6.4 Adaptations to practice

The participants highlighted how, through discussion with the child and completion of the Homunculi Approach, strategies were identified that could be put in place to support the child outside of the intervention context. For example, participant 2 shared that *"the teacher has certainly discussed where the child sits in the classroom, […] to make sure that this child is not sat with someone that she struggles to connect with."* Moreover, participant 3 noted that the child and their teacher *"kept a worry journal together, and then every day he'd come in and they'd sort of tick off the worries that he'd written down and see how they could solve them".* These extracts suggest that the children's teachers seem to be implementing changes in the classroom based on information the facilitators had gathered when working through the Homunculi Approach with the child. Further, participant 5 shared that at the start of the school day *"we set up like so when he comes in he has an activity that he can take somebody out that he chooses […] so when he comes into school he comes in and does that straight away rather than facing the class so that he's a bit more settled when he goes into class".* Participant 5 also shared that the child has *"a box in the classroom that he can access to take like a time out, just with little things he can either twiddle with himself or things that he could play with,"* suggesting access to calming activities may have been implemented at the start and throughout the day for this child. It seems that the facilitators perceive that completing the Homunculi Approach helped the children and themselves to identify some strategies that could support the child outside of the intervention context, which were also communicated with class teachers.

Another element of adapting practise to support the child moving forward was the ongoing support that the children were offered following the intervention. Participant 2 said *"I still meet with her fairly regularly"* and participant 5 shared that *"it needed ongoing work to keep reminding them to go back to you know, what we discussed".* Participant 4 also stated *"I have*

told him any time come back to me, we can have a look at different situations", suggesting this facilitator believes it will be helpful for the child to revisit the concepts he has learnt through the approach in the future. It appears that from the facilitators' perspective, it is important for children who complete the Homunculi Approach to continue to access support from the facilitator. This support could provide opportunities to remind the children of the concepts they have learnt and check if they require help with any new situations that have arisen that they are finding challenging.

4.7 Theme 3: Possible factors impacting the implementation of the intervention

The final theme identified in the thematic analysis was factors impacting the implementation of the intervention. It consisted of three sub-themes:

1. TEP input
2. Resources provided
3. Time demands of the programme

4.7.1 Sub theme: TEP input

The first sub-theme identified was around the input the facilitators received from the researcher as a TEP. For example, participant 2 stated that *"the training was really helpful to give you an insight at the beginning*". Further, participant 3 shared that *"[…] the presentation that you gave us, which also kind of gave you a bit of a breakdown of one week to the next, what you should be looking at doing was the most helpful thing for me,"* and also said *"having that training has been really, really valuable".* It seems that the facilitators felt that additional training from a TEP was useful and supported the implementation of the intervention.

Some participants also shared that being able to contact the TEP with questions and to seek support was helpful. For example, when asked what supported the delivery of the intervention, participant 4 said *"having yourself available if I've got any questions […] just knowing you was there to help if all of a sudden I came to a full stop and a blank"* and participant 5 stated *"being able to speak to you definitely"*. It appears that having the opportunity to discuss the implementation of the programme was perceived to be useful for these facilitators.

4.7.2 Sub-theme: resources provided

Another sub-theme was identified around the resources provided to complete the Homunculi Approach. Several participants commented that they felt the book (Greig & Mackay, 2013) had supported the delivery of the intervention. For example, participant 2 said *"the book is particularly useful because I've been able to follow that pattern and read around it a little bit"*. In addition, when asked what supported the delivery of the intervention, participant 3 responded *"I think […] having the book to sort of go through, having the guidelines"* and participant 4 said *"the book, yeah that book. I read it cover to cover"*. These extracts suggest that the facilitators felt that the guidance provided in the book supported the delivery of the intervention.

In addition, participant 3 stated that *"the videos were good too. I played the videos to the child and that was really helpful right in the very beginning for him to understand what we're trying to do here,"* suggesting the links to the videos provided in the book supported the implementation of the intervention by helping this child to understand the programme and its purpose. In contrast, participant 2 shared that *"the videos that we were able to access online, none of them quite fit our circumstances, I felt."* It seems that opinion was divided in relation to the relevance and usefulness of the videos, but overall facilitators appear to view the book as a useful resource.

4.7.3 Sub-theme: time demands of the programme

A final sub-theme was identified around the time demands of the programme. Participant 3 shared that *"the only slight barrier would be the time out to do it because obviously you need a little bit of time to do each session, some take longer than others. And actually, for this particular child he can sometimes be anxious if he knows he's missing a certain thing in class."* Similarly, participant 4 said *"the barrier was trying to be continuous with it from week to week"* and participant 5 stated *"I think the time scale is hard and you know the length of time [of each session]."* From the perspective of the facilitators, the amount of time needed to deliver the Homunculi Approach appears to be a barrier to implementing the intervention. It also seems to be important to consider the impact the time away from the classroom could have on the child and ensuring that this does not increase any feelings of anxiety.

4.8 Integration of findings

In line with a mixed sequential design, this section aims to integrate the findings from the quantitative and qualitative phases of the study. The purpose of this is to outline how the qualitative themes may provide additional insight into the quantitative data (Creswell and Clark, 2018). The integration of the findings will also be further considered through interpretation in the discussion section.

Findings from the quantitative analysis show there is no significant difference between the groups anxiety levels following intervention. This suggests there is no evidence that the Homunculi Approach reduces anxiety in primary aged children with social communication difficulties, as measured by the children's self-reports, parent reports, and teacher reports. However, conclusions from the statistical analysis may have been impacted by the small sample size limiting the power of the tests and increasing the likelihood of a type two error and a false negative result.

To further explore the potential impact of the Homunculi Approach, facilitators perceptions of changes for the children who took part in the programme were investigated during the qualitative phase of the study. From the perspective of those who delivered the intervention, it seems some children were viewed as seeing school more positively and appeared to feel more comfortable in unstructured and unfamiliar situations or when interacting with unfamiliar peers since taking part in the approach. Facilitators also reported that children appeared to develop their confidence in the school setting and seemed to have a better understanding of their emotions and the link between their thoughts and feelings. The facilitators also noted how for some of the children this had appeared to support the development of their emotion regulation skills, so they seemed better able to cope with situations they had previously found challenging.

In contrast, some facilitators perceived it was difficult for the children to make changes when taking part in the Homunculi Approach. For example, it seems that some facilitators felt the children were finding it difficult to use the approach to identify how they could respond differently in a situation. It is also important to note that one facilitator shared that the child found it difficult to discuss the same problem repeatedly as it seemed to be increasing her feelings of anxiety. Whilst the qualitative data suggests there may have been some positive changes for the children who took part in the Homunculi Approach based on the perceptions of the facilitators, it also highlighted some challenges the children faced in making such changes. These challenges may provide some explanation as to why the quantitative phase of this study found no evidence that the Homunculi Approach reduces anxiety in primary aged children with social communication difficulties

The qualitative data also suggests some factors that the facilitators believed contributed to the perceived changes for the children, including the children using the Homunculi they had created to support the application of the skills they had learnt during the programme outside

the intervention context. The facilitators also felt that it helped the children to express their emotions through these characters and that the programme helped them to talk about their thoughts and actions, and how these were linked. The facilitators reported that the children appeared to enjoy the approach and were enthusiastic about it. Moreover, they were perceived to quickly understand the programme and some were able to take the lead in the process, all of which appeared to support the children's engagement with the intervention. Finally, facilitators reported how completing the Homunculi Approach with the child had helped to identify some adaptations to practice to better support the child in school. This included strategies that were implemented in the classroom and opportunities for the child to continue to work with the facilitator, using the Homunculi approach, if new challenges arose.

It is also important to note that four of the schools participating in the study were unable to complete the programme and therefore the attrition for the quantitative phase of the study was high. Because of this, the researcher used the qualitative phase of the study to explore what may have helped or hindered the implementation of the intervention. The facilitators reported that the input they received from the researcher regarding the training and opportunities to ask questions or discuss any concerns helped the implementation of the intervention. They also shared that they found the guidance and resources provided in the book useful, although one participant felt the videos were not relevant for the child they were working with. On the other hand, the amount of time the intervention took, both in the length of each session and the number of sessions required seemed to be a challenge for facilitators. Although all facilitators interviewed were able to complete the programme, some schools did not. The time demands of the approach appears to be a barrier to the intervention being implemented successfully, which may explain why the attrition was high in the quantitative phase of this study.

4.9 Summary

This section outlined the findings from phase one and phase two of the current mixed methods study. No significant differences were found in the anxiety levels of the children who completed the Homunculi Approach compared to the waitlist control group following completion of the programme. However, the small sample size impacts the power of the tests used so these findings must be interpreted with caution. The process of thematic analysis used for the qualitative phase of this study was described followed by the findings of this analysis. Three main themes were identified; perceived outcomes of the intervention, possible factors contributing to the impact of the intervention and possible factors impacting the implementation of the intervention. The findings of this mixed methods study will be interpreted in the discussion chapter.

5 Discussion

This chapter begins by offering an interpretation of the findings of this mixed methods study. The findings are discussed in relation to the three research questions that have been investigated. The limitations of each phase of the study are then considered and the implications for future research and for Educational Psychology practice are outlined.

5.1 Interpretation of the findings

The current research used a sequential mixed methods design. Phase 1 explored the impact of the Homunculi Approach on the anxiety levels of primary-aged children with social communication needs, using a pre-test post-test non-equivalent control group design, with a waitlist control group. Phase 2 used a qualitative approach to explore any perceived changes by the intervention facilitators for the children following participation in the approach. This phase also aimed to explore the factors that the facilitators perceived to help or hinder the implementation of the intervention. The findings for this study are discussed below in relation to the three research questions.

5.1.1 Research question 1

Does the Homunculi Approach reduce anxiety in primary aged children with social communication needs?

There is a small amount of existing evidence supporting the effectiveness of the Homunculi Approach (Greig & MacKay, 2005; MacKay & Greig, 2008) but these studies were completed by the authors of the approach and therefore at risk of bias. Two doctoral theses have also focused on the Homunculi Approach using an exploratory case study design (Downing, 2015) and SCEDs (Maydew, 2018) but findings were mixed, with improvements in some cases but not all. Overall, the small sample sizes of these studies and lack of control groups to compare to limit the interpretations of their findings and the evidence for the

effectiveness of the Homunculi Approach is unclear. The current research therefore aimed to add to this evidence base to improve understanding of the impact of the Homunculi Approach. It used a pre-test post-test non-equivalent control group design to enhance the validity of the findings compared to previous research.

The present research measured the anxiety levels of participants in three ways: child self-reports, parent reports and teacher reports. It was hypothesised that participation in the Homunculi Approach would reduce anxiety in primary aged children with social communication difficulties across all three of these measures. Statistical analysis was completed to compare the changes in anxiety from pre- to post-intervention between the experimental and control group, and no statistically significant interaction effects were found. This was across the child, parent, and teacher measures, so the null hypotheses were all accepted. Therefore, phase one of the current study does not provide evidence that participation in the Homunculi Approach reduces anxiety in primary-aged children with social communication needs.

When considering research into CBT based approaches more broadly, previous research suggests that CBT can be effective in reducing anxiety in children and young people (Cartwright-Hatton et al., 2004; Hofmann et al., 2012; Ishikawa et al., 2007; Munoz-Solomando et al., 2008). There is also evidence to suggest that CBT can reduce anxiety in children and young people with autism (Chalfant et al., 2007; Sofronoff et al., 2005; Sukhodolsky et al., 2013). The findings of the current study are not in line with this previous research.

Based on the findings of the systematic literature review outlined in section 2.7, the previous research around the use of CBT based programmes, that have been adapted for children and young people with social communication needs and delivered in a school setting, seems to be

less clear. The systematic literature review identified 8 studies investigating the impact of CBT based programmes on the anxiety levels of children with social communication difficulties when delivered in a school setting. All of the studies included found positive effects of CBT based interventions for reducing anxiety in children and young people with social communication needs, but only two of the studies were judged to be of high quality (Luxford et al., 2017; Reaven et al., 2013). Consequently, more high-quality research is required before firm conclusions can be reached about this evidence base. It is still important to note that the findings of the current study are not in line with the findings of previous research on CBT based programmes when delivered in school settings. Possible reasons for the findings of phase one of the current study are discussed below.

Firstly, it is possible that no statistical significance was found due to the small sample size limiting the power of the analysis (Pallant, 2020). Lack of power increases the risk of a type two error and creates a threat to the reliability of the analysis (discussed further in section 5.2.1), so the findings must be interpreted with caution. The descriptive statistics indicate that the mean levels of anxiety decreased by a larger amount in the experimental group compared to the waitlist control group, across the child self-report, parent report and teacher report measures. However, no inferences can be made about these findings to the wider population. Further research with a larger sample size to enable powerful statistical analysis is needed to increase the reliability of the findings.

Another possible reason no significant difference was found between the groups post-intervention could be because the programme did not run for long enough to produce an effect. A systematic review and meta-analysis by Perihan et al. (2020) found that CBT based interventions that are less than 12 weeks long produce a smaller effect compared to those that ran for more than 12 weeks. The Homunculi Approach is designed to be delivered across 10 weekly sessions (Greig & MacKay, 2013), so it is possible that the length of the intervention

may limit the impact it can have. This may also explain why previous research into the Homunculi Approach has not consistently found positive changes for the children participating (Downing, 2015; Maydew, 2018) and suggests it could be useful to increase the length of the intervention to see if this makes a difference to the outcomes of the programme.

It is possible that no significant difference was found between the groups because the intervention did not have an immediate impact on the reduction of anxiety for the participants. Sofronoff et al. (2005) found that positive effects were not found immediately after a CBT intervention aiming to reduce the anxiety of participants, but there was a significant reduction in anxiety when measured again at six weeks following the end of the intervention. It is possible that participants require more time to practice and embed the skills they have learnt through participation in the Homunculi Approach before they experience a significant reduction in their anxiety. It was not possible to gather follow-up data for this study due to the time constraints of the doctoral programme, but it may be useful for future research investigating the effects of the Homunculi Approach to gather follow up data to explore the long-term impact.

Another factor that may have impacted the effect of the Homunculi Approach in this study is parental involvement. The involvement of parents has been found to be effective in producing a larger effect for CBT based interventions (Perihan et al., 2020). The Homunculi Approach encourages the involvement of parents (Greig & MacKay, 2013), but there are no explicit instructions around how parents should be involved, and the amount of contact required. The fact that parents were not involved in the intervention sessions and did not receive any support using CBT approaches themselves as part of this study may have reduced the impact of the intervention.

5.1.2 Research question 2

What changes, if any, do facilitators of the intervention perceive for the children who participate in the Homunculi Approach?

The purpose of this question was to further explore the perceived outcomes of the Homunculi Approach for children with social communication needs. The researcher felt that using only quantitative methods to explore outcomes may limit the findings and the addition of qualitative data would deepen the understanding of the impact of the Homunculi Approach. Thematic analysis of the data from interviews with the facilitators of the intervention identified the following themes in relation to this research question:

- Perceived outcomes of the intervention. The following sub-themes were also identified within this theme:
    - Changes in behaviour
    - Emotional literacy and regulation
    - Difficulty making changes
- Possible factors contributing to the impact of the intervention. The following sub-themes were also identified within this theme:
    - The little people
    - Individual responses to the approach
    - Talking about thoughts and actions
    - Adaptations to support

With regards to potential changes in the child's behaviour, facilitators perceived that some of the children viewed school more positively since taking part in the Homunculi Approach and they seemed to be experiencing more positive emotions around school. This was linked to one child's attendance increasing and another child reporting their 'excitement' about coming

to school, which had not previously been their experience. Facilitators also described how the children seemed to be more comfortable in unstructured and unfamiliar situations and they appeared to have developed an improved sense of confidence in social interactions. These findings suggest that from the perspective of the facilitators of the intervention, participation in the Homunculi Approach may support changes in the children's behaviour by helping them to view school more positively and to develop their confidence in unfamiliar situations or in social interactions.

Facilitators also noted perceived changes in how the children talked about and understood their emotions. Children were perceived to have improved their understanding of their emotions by thinking about them more and relating them to the Homunculi they had created to deal with different emotions. There was also evidence that the facilitators felt the Homunculi Approach had helped children develop their emotion regulation skills. Some of the children were noted to have developed tools to help them manage the school environment and, in turn, better regulate their emotions. These findings are in line with previous research from Clarke et al. (2017), who explored the impact of a school-based CBT programme on anxiety for children with autism using a mixed methods approach. Analysis of the qualitative data from interviews with the children taking part in the Clarke et al. (2017) study also identified themes around developing emotional self-awareness and making sense of their emotions. It seems that CBT based approaches, including the Homunculi Approach, may support children with social communication needs to develop their emotional literacy.

It is important to note that not all facilitators described positive outcomes for the children following the Homunculi Approach, with some outlining the difficulties that the children experienced in making changes to their thoughts and behaviours. For example, one child was perceived to have found it difficult to make the link between thoughts, feelings, and actions, and to identify how he could respond differently to a situation. Similarly, another facilitator

reported viewing the child to be struggling to change how they were responding to the unhelpful thoughts they were having. Participant 2 also noted that the child had some difficulties discussing the same problem repeatedly, and that from the perspective of the facilitator this may have caused some feelings of anxiety for the child which may have impacted their engagement and continued access to the programme. These findings suggest that some children may find it more difficult to make changes whilst completing the Homunculi Approach, which may be linked to challenges in understanding the link between their thoughts, feelings, and actions. These differences in how individuals respond to the Homunculi Approach have also been seen in previous research (Downing, 2015; Maydew 2018), suggesting further investigation into why these differences occur could be useful.

Another theme that was identified in the qualitative data was the possible factors contributing to the impact of the intervention. The researcher felt that this theme has relevance to the second research question, as it provides insight into potential factors that may be important in bringing about change for children who take part in the Homunculi Approach. Therefore, it adds to the understanding of the perceived changes for the children and the possible mechanisms underlying these changes.

Firstly, facilitators perceived the 'little people' that the children created through the intervention, known as the Homunculi, to be helpful. One facilitator perceived that the Homunculi had supported the child to work through his emotions and the difficulties he was experiencing. Facilitators also reported that the children were using their Homunculi in the classroom to help them work through experiences they usually find difficult, such as putting their hand up to seek support or take some time in a quiet space to calm down. From the perspective of the facilitators, it seems that the Homunculi played an important role in supporting the children to apply the skills they had learnt during the programme outside of the intervention context. It is likely that providing the children with opportunities to create

their own Homunculi allowed them to incorporate their interests into the programme. For example, one facilitator shared that the child used a theatre setting to create her characters due to her interest in performing on stage. Incorporating interests is one of the modifications recommended for CBT for children with autism (Moree & Davis, 2010; NICE, 2013), and it appears that this adaptation may have been useful for the children participating in the Homunculi Approach in this study.

Another sub-theme was identified around how the children responded to the Homunculi Approach, with facilitators reporting that the children appeared to enjoy the programme and were invested in it. They also perceived the children to be enthusiastic about the programme, particularly about the characters they created. Some facilitators also highlighted how quickly the children understood the concepts underlying the approach, with some appearing to take the lead in how they completed the programme. Previous research by Downing (2015) exploring the necessary adaptations to CBT based approaches for children with autism noted how incorporating a child's creativity may be a factor that enables them to access such approaches. It is possible that in this study, the children creating their characters and feeling a sense of ownership over how they completed the programme supported them to make changes.

The facilitators of the intervention also felt that the Homunculi Approach appeared to help the children talk about their thoughts and actions. They highlighted that the children were able to use the approach to talk through situations they had experienced and how they might change them. One facilitator also shared that they perceived the child to be understanding how changing their thoughts can help them with situations they usually find difficult. It seems that the facilitators perceived the Homunculi Approach to have supported some children to have developed their skills in linking their thoughts, feelings, and actions. A key resource in supporting this in the Homunculi Approach is the visual 'thoughts and feelings screen' (Greig

& MacKay, 2013). The use of visual information is another modification to CBT programmes recommended for children with autism (Moree & Davis; 2010; NICE, 2013). These finding suggest that this adaptation supported the children who participated in this study to access the CBT based programme and subsequently make changes.

A final sub-theme identified in relation to the possible factors contributing to the impact of the Homunculi Approach was adaptations to practice. The facilitators highlighted some strategies that could be put in place to support the children following completion of the Homunculi Approach. These strategies were individual to each child, such as adjusting seating plans, keeping a worry journal, and providing access to calming activities. From the facilitators perspectives, it seems that completing the Homunculi Approach may have helped the children and facilitators to identify strategies that could support them outside of the intervention context. This highlights the importance of communication with class teachers to ensure these strategies can be put in place and children can continue to be supported following the intervention. These findings also suggest that a key contributing factor to the impact of the intervention may be the changes the Homunculi Approach brought about in terms of the support they received outside of the intervention context.

The current study is the first to explore the perceptions of the outcomes for children participating in the Homunculi Approach using qualitative data. More broadly, only one of the eight studies (Clarke et al., 2017) included in the systematic literature review described in section 2.7 gathered qualitative data about the impact of a school delivered CBT based approach on anxiety for children with autism. Therefore, little was previously known about the perceived outcomes for children following the Homunculi Approach and CBT based approaches when delivered in a school setting, and the things that are seen as influencing these outcomes, beyond the factors investigated using quantitative measures, such as anxiety, stress, and emotion regulation (Downing, 2015; Greig & MacKay, 2005; MacKay & Greig,

2008; Maydew, 2018). This study provides further detail about the changes children with social communication difficulties seem to experience through participation in the Homunculi Approach. However, it is important to note that the changes outlined above are from the perspective of those who delivered the intervention and therefore there is a risk of bias, as the facilitators are commenting on their own practice. This will be further discussed in section 5.2.2.

5.1.3 Research question 3

What factors do facilitators perceive helped or hindered the implementation of the intervention?

The attrition rate for this study was high, so the researcher felt it would be useful to explore the possible facilitators and barriers to the implementation of the Homunculi Approach in school settings within the qualitative phase of this research. There is limited existing research exploring the factors which affect the implementation of the Homunculi Approach when delivered by school staff in school settings, with only Maydew (2018) previously investigating this using Single Case Experimental Design and Activity Theory. The present research therefore aims to add to this evidence base by interviewing the facilitators of the intervention to explore what helped or hindered the implementation of the Homunculi Approach in their setting.

In relation to this research question, the thematic analysis identified the overarching theme of possible factors impacting the implementation of the intervention. This was divided into the following sub-themes:

- TEP input
- Resources provided
- Time demands of the programme

Firstly, the facilitators outlined that the training they received from the researcher in their role as a TEP around CBT approaches and the Homunculi Approach was useful. This suggests that the facilitators perceived that the additional training on CBT approaches supported the implementation of the intervention. This is in line with findings from Maydew (2018), who identified that further training in CBT could have supported the implementation of the Homunculi Approach. However, it is important to note that these findings are at risk of response bias due to the researcher investigating aspects of their own practice. This will be further discussed in section 5.2.2.

The facilitators also reported that having the opportunity to contact the researcher to ask questions and seek support with the implementation of the programme was useful. This implies that additional support from professionals, such as EPs, could be useful to support the implementation of the programme. Previous research by Spain and Happe (2020) highlighted the use of specialist supervision in supporting professionals to adapt CBT based approaches to each individuals needs and outlined the importance of providing opportunities to discuss and reflect on practice. Barry et al. (2020) also highlighted how a lack of support for school personnel can be a barrier for school settings in implementing interventions for children with autism. It is possible that providing more structured supervision and support for school staff delivering CBT based approaches, such as the Homunculi Approach, could enhance the implementation of the intervention.

Another sub-theme identified was the resources provided to complete the Homunculi Approach. The facilitators felt that the guidance and resources provided in the book supported the delivery of the intervention. Some facilitators also commented that the videos provided were useful in helping the children to understand the programme, whereas one facilitator shared that they did not feel the videos were relevant for the child they were working with. This suggests that opinion was divided around the usefulness of the videos

associated with the programme. This is in line with previous research by Maydew (2018), who also identified that some facilitators felt the videos were not relevant to the young person they were working with. It seems that overall, the Homunculi Approach book (Greig & MacKay, 2013) and the associated resources supported the delivery of the intervention, although it seems the addition of a wider range of videos outlining the approach for different children may be useful.

A final sub-theme relating to the possible factors impacting the implementation of the Homunculi Approach was the time demands of the programme. From the perspective of the facilitators, the amount of time needed to deliver the intervention appears to be a barrier to its implementation. This is further evidenced by the high attrition rate for this study, with the most common reason for schools not being able to complete the programme being because school staff did not have time to deliver the intervention. This is in line with previous research outlining that a key barrier to the implementation of interventions for children with autism in schools is a lack of time (Barry et al., 2020).

It is important to note that the facilitators who participated in interviews had all successfully completed delivery of the Homunculi Approach. Therefore, their experiences were mostly positive with regards to the implementation of the intervention, and they identified very few factors that hindered the implementation. It is therefore possible that there are a number of barriers that have not been identified in this study.

5.2 Limitations of the study

This section outlines the limitations of the current study for both phases one and two.

5.2.1 Limitations of phase one

Although steps were taken to address possible threats to reliability and validity (see section 3.8), there were still some limitations experienced within the implementation of phase one of the study which are discussed below.

Firstly, as previously discussed in section 5.1.1, the size of the sample used for this study was smaller than hoped which is likely to have impacted the reliability of the statistical tests used. The researcher had intended to recruit a total of 50 participants, with 25 in the experimental group and 25 in the waitlist control group. A sample size of 50 would have provided a power value of 0.8, which is optimal for interpreting results with confidence (Pallant, 2020). However, it was not possible to recruit this number of participants due to various factors. Some schools were also unable to complete the programme and dropped out of the study, further reducing the final number of participants for whom pre- and post-intervention data was collected to a total of 18, with 9 participants in each group. Small sample size can cause insufficient power for statistical tests and increase the risk of a type two error, which may explain why no statistical significance was found in this study. The lack of power therefore creates a threat to the reliability of the results of phase one of the study, as the researcher cannot be sure if the non-significant findings are because the Homunculi Approach did not impact the children's levels of anxiety or because the power of the tests was too low to find a statistically significant effect. The small sample size of the study also means that the findings cannot be generalised to the wider population and the ecological validity of this study is therefore low.

Whilst analysis of the quantitative data suggests the Homunculi Approach did not have an immediate impact on the anxiety levels of participants, it is possible that it may have had an impact in the long term once children had been able to embed the skills they had learnt through the intervention. It would therefore have been beneficial to collect follow up data

once the waitlist control group had completed the intervention. However, this was not possible for this study due to the time constraints of the doctorate programme.

Another limitation of this study is the lack of random allocation of participants to the experimental and waitlist control group. As discussed in section 3.3.1, RCTs are considered to be the most rigorous research design for determining a causal relationship between an intervention and an outcome (Sibbald & Roland, 1998). Random allocation to groups reduces the impact of individual differences between groups which might influence the outcomes of the intervention (Torgerson & Torgerson, 2003). In this study, it was not possible to randomly allocate the children to each group due to the logistics in some schools around when staff and children were able to complete the intervention. Therefore, it has been difficult to control for individual differences and it is possible that the differences between groups may have impacted the findings.

It is also important to consider that when participants were recruited for this study, a caveat was that they would not be receiving any other treatment or support from other services with regards to the anxiety they were experiencing. The aim of this was to reduce the possibility of events other than the intervention producing effects that could be mistakenly attributed to the impact of the Homunculi Approach. However, it is not possible for the researcher to be sure that no other events occurred that may have impacted participant's levels of anxiety outside of the intervention. For example, there are likely to be variations in the support each child received in school in general due to individual differences between teachers and school settings. It is therefore possible that extraneous variables may have influenced the outcomes of this study and reduced the validity of the findings.

It is also likely that there were individual differences between the facilitators of the intervention that may have influenced how the programme was delivered. All of the

facilitators accessed the same training session with the researcher, but they are likely to have different levels of previous experience and training in supporting children with social communication needs and anxiety. For example, some of the facilitators were also trained as ELSAs and therefore had more experience of implementing interventions and supporting children with emotional difficulties. These individual differences between the facilitators could have impacted the quality of the intervention delivery which may have influenced its effectiveness.

The instruments used to measure participant's anxiety have been reported to have good validity and reliability. However, this study is at risk of participant bias, where participants may respond to a measure in a way that they believe to be desired by others rather than truthfully (Robson &McCartan, 2016). The children participating and their parents and teachers will all have been aware of whether the child has taken part in the Homunculi Approach and is therefore part of the experimental or waitlist control group. This may have influenced how they responded to the questionnaires and could further impact the reliability of the findings.

It should also be noted that no screening tools were used to determine whether children participating in the study were experiencing difficulties with their social communication or anxiety. This was in line with the dimensional view of anxiety adopted by this study and the researcher not wanting to limit participation to those who had been assessed for autism when there are known barriers to accessing these assessments. However, it means that the researcher relied on observations from school SENCos to identify participants based on the brief definitions they were provided with. This means the researcher cannot be sure that the participants were experiencing difficulties with their social communication or anxiety before the intervention.

5.2.2 Limitations of phase two

The limitations that impact the trustworthiness of the findings in phase two of this study are discussed below.

It is possible that the researchers' own views and biases have influenced the research. For example, the thematic analysis has been completed by one researcher so it is possible that the personal preferences of the author will have influenced the development of themes. The researcher also had more contact with some of the facilitators than others prior to the interviews, as they had sought support to discuss the implementation of the Homunculi Approach. The researcher therefore had more knowledge of some facilitators' experiences which may have influenced the questions asked during the semi-structured interviews.

It is also important to acknowledge the potential bias of the facilitators. During the interviews they were being asked to comment on their own practice. This may have led them to reflect more positively on the possible outcomes of the intervention. When discussing the factors that supported the delivery of the intervention, the researcher may also have influenced their responses. For example, facilitators may have felt obligated to report on the usefulness of the training and support they received from the researcher, rather than this being a true reflection of their views. It is therefore possible that some views about how the training and support the facilitators received could have improved have not been gathered in this study.

5.3 Implications for future research

As previously discussed, the existing research into the impact of the Homunculi Approach is limited and there is a need for additional research into its efficacy, particularly when delivered in a school setting by school staff. With regards to the study design future research should adopt, randomised control trials are considered the best means for assessing the effectiveness of an intervention, as the randomisation of participants to each group

significantly reduces threats to internal validity (Robson &McCartan, 2016). However, given the real-world nature of conducting research in schools, randomisation is unlikely to be possible. Therefore, future research using a quasi-experimental design is likely to be best placed to investigate the effectiveness of the Homunculi Approach when delivered in schools, with the caveat that such designs will have reduced internal validity due to less control over confounding variables (Cohen et al., 2018).

The current study was the first to investigate the impact of the Homunculi Approach by comparing between an intervention group and a control group. It is important for future research to also utilise a control group, as it is not possible to know if the intervention was responsible for any effects found in studies using single group designs, further reducing the internal validity of the findings (Robson &McCartan, 2016). It may also be useful for future research to use group designs to compare the effects of the Homunculi Approach with other approaches, to further add to the research findings around its efficacy.

Given the small sample size of this study and of previous research into the impact of the Homunculi Approach, it would be useful for future research to seek a larger sample size to increase the power of statistical analysis and the reliability of findings. In the current study, although the research had been approved by the Local Authority (LA) and the Educational Psychology Service (EPS) where the researcher was on placement as a Trainee Educational Psychologist, it was not part of a LA or EPS project and the researcher worked alone. Whilst real-world research is often conducted on a smaller scale and large sample sizes can be difficult to obtain, it may facilitate recruitment in future research if it is conducted as part of a wider project where there is more buy in from the LA or EPS and more time and resources can be directed at contacting schools and monitoring the implementation.

To further understanding of the impact the Homunculi Approach can have, it would be useful for future research to gather follow up data to explore the long-term impact of the intervention. Previous research by Sofronoff et al. (2005) found that CBT did not appear to reduce anxiety immediately after completion of an intervention, but there were significant reductions at the 6-week follow up stage. Given these findings, it could be argued that the present research should have aimed to gather follow up data, but the time constraints of the doctoral programme meant this was not possible.

The majority of existing research has explored whether the Homunculi Approach can reduce children and young people's experiences of negative emotions, such as depression and anxiety (Greig & MacKay, 2005; MacKay & Greig, 2008; Maydew, 2018). The current research was no different in that it explored the impact of the approach on anxiety levels for children and young people with social communication needs. Whilst this was deemed appropriate due to the high prevalence of anxiety for children and young people (Racine et al., 2021), including for those with social communication needs such as autism (Skokauskas & Gallagher, 2012; Van Steensel et al., 2011), it may be useful for future research to also explore the impact the Homunculi Approach can have on other factors. For example, this could include whether it improves the overall wellbeing of participants or if there is any development in their coping skills. The difficulties around defining anxiety when it is an internalised construct have been discussed in section 2.2 and it may be useful to measure an outcome that is more easily quantified, such as coping skills. Changing the focus of the research from reducing anxiety to improving how anxiety is coped with may also be more in line with the aims of the Homunculi Approach, these being to improve how a child copes with a problem (Greig & MacKay, 2013).

Previous research has suggested that the length of a CBT based programme can impact the effectiveness of such approaches (Perihan et al., 2020). The Homunculi Approach is designed

to be completed over 10 weekly sessions (Grieg and MacKay, 2013), but previous research suggests that programmes of less than 12 weeks were found to have a smaller effect than those conducted over more than 12 weeks (Perihan et al., 2020). Given this, it may be useful for future research to explore why different lengths of CBT based programmes can have different effects and whether extending the length of the Homunculi Approach could improve its efficacy.

Similarly, previous research also suggests that parental involvement can increase the effectiveness of CBT based approaches (Perihan et al., 2020), but it is unclear why this is the case or what this involvement must look like to lead to such an increase. Future research into the involvement of parents in CBT based approaches, including for the Homunculi Approach, would therefore be useful. For example, it could compare groups where parents have differing levels of involvement in the intervention to see whether any differences in the effects of the intervention occur. It is important to consider the real-world context of research conducted in schools and the difficulties that may be associated with involving parents in intervention sessions that are conducted during the school day, compared to a clinical context which may carry out interventions at times and places that are easier for parents to access. Whilst further research exploring the impact and benefits of parental involvement in CBT based approaches would be useful, such research should also keep in mind how this can be applied in the real-world context of school settings.

In the current study, facilitators of the Homunculi Approach were interviewed with the aim of deepening understanding of the impact of the intervention. Whilst this provided information about the changes that facilitators perceived and some possible factors that supported these changes to occur, the potential bias of the facilitators commenting on their own practice impacts the trustworthiness of these findings. It would be useful for future research to gather the views about the impact of the intervention directly from the children who take part.

Careful consideration will need to be given to how this can be done meaningfully and in a way that is accessible for the children, particularly if they have difficulties with social communication. For example, it may be that some of the adaptations suggested to enhance CBT for these children (NICE, 2013), such as providing visual options and outlining a clear structure, would also support them to take part in an interview.

As there were difficulties with schools completing the programme in the current study, it would be useful for future research to further investigate facilitators and barriers to the implementation of the intervention in school settings. Whilst this was briefly explored in the current study, only facilitators who had successfully delivered the intervention took part in interviews, so important data about the barriers schools faced in delivering the intervention may not have been collected. Therefore, larger scale research investigating the implementation of the intervention alongside the effectiveness is likely to yield more informative findings.

5.4 Implications for Educational Psychologists

The current research has also brought to light some implications for the practice of Educational Psychologists (EPs), which are discussed below.

Firstly, as has been outlined in chapter 2, existing evidence suggests that CBT based approaches are effective in reducing anxiety for children, including those with autism. The challenge lies in increasing access to these approaches in school settings. Use of the Homunculi Approach in schools could help to increase this access, as it is a manualised CBT based programme that is available at relatively low cost. However, there is currently limited research into its effectiveness, and the effectiveness of CBT based approaches in general when delivered by school staff in school settings. Therefore, EPs could have a role in adding

to this evidence-base by conducting more research into the effectiveness of the Homunculi Approach or other manualised CBT based interventions.

EPs are also in a position to support schools in the implementation of interventions, such as those based on CBT. In the current study, facilitators commented on the usefulness of the training they attended that outlined the underlying principles of CBT. This highlights the crucial role EPs play in providing the psychological knowledge underpinning interventions and how this may increase the confidence of staff in schools delivering these interventions. When recommending the use of interventions to schools, it is important for EPs to consider the existing knowledge base and confidence of the staff delivering these interventions and whether it may be appropriate to offer additional training or supervision to support their delivery.

The high attrition rate in this study suggests that schools experienced difficulties in implementing the Homunculi Approach. This highlights the importance of EPs monitoring and continuing to provide support during the implementation of interventions. This support could provide school staff with opportunities to discuss and problem-solve around any barriers they may be facing in delivering an intervention. Although support was available to school staff in this study through emails and phone calls, this was on an ad hoc basis. It may be useful for EPs to offer more structured support to school staff when they are implementing interventions, for example through regular consultation or supervision.

5.5 Conclusion

The current study investigated the effectiveness of the Homunculi Approach for reducing anxiety in primary aged pupils with social communication needs. It also explored the perceived changes for the children following participation in the Homunculi Approach and the possible factors that can affect its implementation.

The findings from phase one of the study suggested there was no evidence that the Homunculi Approach was effective in reducing the anxiety of participants. However, the small sample size used in this study threatens the reliability of these findings and they must be interpreted with caution. The findings from phase two of the research suggest that the facilitators perceived some changes in the behaviour of the children and improved emotional literacy and regulation following the Homunculi Approach, although some difficulties making changes were also outlined.

Phase two of the research also identified some possible factors that contributed to the impact of the intervention from the perspective of the facilitators, including use of the Homunculi, perceived enjoyment of the programme, talking about the link between thoughts, feelings, and actions, and adaptations to support outside of the intervention context. Possible factors impacting the implementation of the Homunculi Approach in schools were also identified. These were support from the TEP, the resources provided, and the time demands of the programme.

Although there were limitations to this study, it makes an original contribution to the research base by being the first to investigate the effectiveness of the Homunculi Approach using a control group to compare to. The qualitative phase of this study also contributes to the understanding of the possible outcomes of the intervention and the factors that may contribute to its impact or affect its implementation. This study has also identified possible areas for future research, with the aim of continuing to build the evidence base for CBT based approaches delivered in school settings.

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7 Appendices

7.1 Appendix A: Weight of Evidence judgements

Weight of Evidence A			
Article	**Tool used**	**Results**	**Judgement**
Greig and Mackay (2005)	Case report checklist	86% (6 out of 7)	High
Ooi et al. (2008)	Quasi-experiment checklist	44% (4 out of 9)	Low
Clarke et al. (2017)	Quasi-experiment checklist	89% (8 out of 9)	High
Drmic et al. (2017)	Quasi-experiment checklist	44% (4 out of 9)	Low
Luxford et al. (2017)	RCT checklist	62% (8 out of 13)	Medium
Ireri et al. (2019)	Quasi-experiment checklist	67% (6 out of 9)	Medium
Rosen et al. (2022)	Case report checklist	86% (6 out of 7)	High
Reaven et al. (2023)	RCT checklist	62% (8 out of 13)	Medium
Weight of Evidence B			
Article	**Level of evidence**		**Judgement**
Greig and Mackay (2005)	Level 4.d		Low
Ooi et al. (2008)	Level 2.d		Medium
Clarke et al. (2017)	Level 2.c		Medium

Drmic et al. (2017)	Level 2.d	Medium
Luxford et al. (2017)	Level 1.c	High
Ireri et al. (2019)	Level 2.c	Medium
Rosen et al. (2022)	Level 4.d	Low
Reaven et al. (2023)	Level 1.c	High

Weight of Evidence C

Article	**Criteria**					**Judgement**
	1	**2**	**3**	**4**	**5**	
Greig and Mackay (2005)	Yes	Yes	Yes	Yes	Yes	High
Ooi et al. (2008)	Yes	Yes	Yes	Yes	Yes	High
Clarke et al. (2017)	Yes	Yes	Yes	Yes	Yes	High
Drmic et al. (2017)	Yes	Yes	Yes	Yes	Yes	High
Luxford et al. (2017)	Yes	Yes	Yes	Yes	Yes	High
Ireri et al. (2019)	No	Yes	Yes	Yes	Yes	Medium
Rosen et al. (2022)	Yes	Yes	Yes	Yes	Yes	High
Reaven et al. (2023)	Yes	Yes	Yes	Yes	Yes	High

7.2 Appendix B: School recruitment letter

Dear SENCo,

I am writing to inform you about an opportunity for your school to take part in a research study, which will include a free training session for a member of school staff.

My name is Kathryn Brown. I am a Trainee Educational Psychologist at the University of Nottingham and on placement with XXX Educational Psychology Service. For my thesis, I am conducting a research project evaluating the impact of a Cognitive Behavioural Therapy (CBT) based intervention on anxiety for pupils with social communication needs.

The intervention is called the Homunculi Approach. It would be delivered on a one-to-one basis by a member of school staff for approximately 1 hour a week, for up to 10 weeks. The Homunculi Approach is a Cognitive Behavioural Therapy based programme that aims to empower children to change their thoughts and behaviours and develop fresh perspectives on their own thinking. The member of school staff will attend a free training session on the Homunculi Approach and Cognitive Behavioural Approaches with a Trainee Educational Psychologist in September 2023.

If you choose to take part:

- You will need to identify at least two children in your school in year 3-6 with social communication difficulties (such as autism) who experience anxiety . These children must not be receiving any therapeutic support from other professionals whilst this study takes place. Their parents and teachers will be required to complete consent forms to take part. Your school headteacher will also need to provide written consent for the study to take part in the school.
- To access the necessary resources to carry out the intervention, your school will need to have the following book: “The Homunculi approach to social and emotional wellbeing: A flexible CBT programme for young people on the autism spectrum or with emotional and behavioural difficulties” by Anne Greig and Tommy MacKay (available to purchase at this link).
- A member of school staff will attend a free training session on the Homunculi Approach and the use of Cognitive Behavioural Approaches on Tuesday 3rd October on Microsoft Teams. This member of staff will deliver the Homunculi Approach programme on a one-to-one basis for up to 1 hour a week, for up to 10 weeks with two children. One child will participate in the programme in the Autumn term 2023 and another child will participate in the programme in the Spring term 2024.

If you would like to take part in this exciting research opportunity, please email me at Kathryn.Brown@leics.gov.uk for further information.

Best wishes,

Kathryn Brown

Trainee Educational Psychologist

XXX Educational Psychology Service

7.3 Appendix C: Headteacher permission form

Dear Headteacher,

I am writing to inform you about an opportunity for your school to take part in a research study, which includes a free training session for a member of school staff.

My name is Kathryn Brown. I am a Trainee Educational Psychologist at the University of Nottingham and on placement with XXX Educational Psychology Service. For my thesis, I am conducting a research project evaluating the impact of a Cognitive Behavioural Therapy (CBT) based intervention on anxiety for pupils with social communication needs.

The intervention is called the Homunculi Approach. It would be delivered on a one-to-one basis by a member of school staff for approximately 1 hour a week, for up to 10 weeks. The Homunculi Approach is a Cognitive Behavioural Therapy based programme that aims to empower children to change their thoughts and behaviours and develop fresh perspectives on their own thinking. The member of school staff will attend a free training session on the Homunculi Approach and Cognitive Behavioural Approaches with a Trainee Educational Psychologist in September 2023.

The class teacher may be asked to participate in an interview for up to 30 minutes, to explore any noticeable changes in the classroom for children who have participated in the Homunculi Approach. Teachers will only be contacted if they have given their consent to participate in an interview. Any data collected will be kept anonymous.

If you agree for your school to take part:

- Your school SENCo will need to identify two children in year 3-6 with social communication needs (such as autism) who experience anxiety. Their parents and teachers will be required to complete consent forms to take part.

- To access the necessary resources to carry out the intervention, your school will need to have the following book: “The Homunculi approach to social and emotional wellbeing: A flexible CBT programme for young people on the autism spectrum or with emotional and behavioural difficulties” by Anne Greig and Tommy MacKay.

- A member of your staff will attend a free training session on the Homunculi Approach and the use of Cognitive Behavioural Approaches in September 2023. This member of staff will deliver the Homunculi Approach programme on a one-to-one basis for up to 1 hour a week, for up to 10 weeks with two children. One child will participate during the Autumn term 2023 and another child will participate during the Spring term 2024.

If you require any further information, please email me at Kathryn.Brown@leics.gov.uk. Please complete and return the consent below.

“I give permission for this research study to be carried out in this school and agree to the above conditions.”

Name of Headteacher (in block capitals):

Signature of the Headteacher: Date:

7.4 Appendix D: Pupil information sheet

School of Psychology

Information Sheet for pupil

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

An evaluation of the impact of the Homunculi Approach on anxiety for primary aged pupils with social communication difficulties.

Ethics Approval Number: S1517

Researcher: Kathryn Brown (Kathryn.Brown@nottingham.ac.uk)

Supervisor: Nicholas Durbin (Nicholas.Durbin@nottingham.ac.uk)

The following should be read to the child by an adult they are familiar with before completing the first measure:

A trainee Educational Psychologist called Kathryn Brown is conducting a research study about anxiety for children in primary school.

If you agree to take part, you will be asked to complete a questionnaire with an adult in school about how often certain things happen to you. You will do this questionnaire in September 2023 and again in December 2023. Your questionnaires will be shared with Kathryn Brown and the data will be stored anonymously, so no one will know they are your answers.

You will also take part in some sessions with an adult in school once a week. In these sessions you will have support to talk about any problems you have that make you feel anxious. You may also learn some strategies that could help you. This will last for up to 10 weeks and will start in October 2023 or January 2024.

If you do not want to take part in the questionnaires or any sessions, you do not have to, and you can tell me now. You can also tell me if you want to stop at any point during the questionnaires or sessions. If you have any questions for Kathryn Brown, you can ask an adult to email them to Kathryn.Brown@leics.gov.uk.

Do you want to take part in this study?

7.5 Appendix E: Parent information sheet

School of Psychology

Information Sheet for Parents

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

An evaluation of the impact of the Homunculi Approach on anxiety for primary aged pupils with social communication difficulties.

Ethics Approval Number: S1517

Researcher: Kathryn Brown (Kathryn.Brown@nottingham.ac.uk)

Supervisor: Nicholas Durbin (Nicholas.Durbin@nottingham.ac.uk)

This is an invitation to take part in a research study on the impact of the Homunculi Approach for primary aged children with social communication difficulties. Before you decide if you wish to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully.

If your child participates, they will be assigned to one of two groups who take part in a support programme. Group A will participate during the Autumn term in 2023 and group B will participate in the Spring term in 2024. The programme is called the Homunculi Approach and will involve one-to-one sessions with a member of school staff that take place for approximately 1 hour a week, for up to 10 weeks. The Homunculi Approach is a Cognitive Behavioural Therapy (CBT) based programme where your child will be supported to consider problem solving strategies. A member of school staff will deliver the intervention after attending a training session with a Trainee Educational Psychologist in September 2023.

The purpose of this study is to investigate the impact of the Homunculi Approach on anxiety for children with social communication needs. To measure this, your child will complete a questionnaire with an adult in school to explore their levels of anxiety. You and your child's teacher will also be asked to complete a similar questionnaire. These measures will be completed in September 2023 and the same measure will be completed again in December 2023, irrespective of when your child participates in the intervention. Your child's teacher will also complete a questionnaire measuring your child's social competence before they begin the intervention.

Your child must not be receiving any therapeutic support from other professionals to take part in this study.

Participation in this study is totally voluntary and you are under no obligation to take part. You are free to withdraw at any point before or during the study. All data collected will be kept confidential and used for research purposes only. Only the researcher and the supervisor will have access to the data you provide, and it will be stored in compliance with the Data Protection Act. The data will be analysed and reported in a Doctoral Thesis. Only broad trends will be reported, and it will not be possibly to identify any individuals. A summary of the results of the study will be available upon request from the researcher once it is complete. No individual findings will be shared at any point.

If you choose to take part and are concerned about your child's wellbeing during the study, please seek support from your child's school SENCo or contact myself at the above email address. Please also see resources below for further support:

Young Minds mental health parent support - https://www.youngminds.org.uk/parent/

Family support hubs for children with social communication difficulties - https://www.autismeastmidlands.org.uk/child-services/family-support-hubs

If you have any questions or concerns, please don't hesitate to ask now. I can also be contacted after your participation at the above email address.

Many thanks,

Kathryn Brown (Trainee Educational Psychologist)

If you have any complaints about the study, please contact:

Stephen Jackson (Chair of Ethics Committee)

stephen.jackson@nottingham.ac.uk

7.6 Appendix F: Parent consent form

School of Psychology

Parent Consent Form

University of Nottingham
UK | CHINA | MALAYSIA

An evaluation of the impact of the Homunculi Approach on anxiety for pupils with social communication difficulties.

Ethics Approval Number: S1517

Researcher: Kathryn Brown (Kathryn.Brown@nottingham.ac.uk)

Supervisor: Nicholas Durbin (Nicholas.Durbin@nottingham.ac.uk)

The parent/carer of the child participant should answer these questions independently:

- Have you read and understood the Information Sheet? YES/NO
- Have you had the opportunity to ask questions about the study? YES/NO
- Have all your questions been answered satisfactorily (if applicable)? YES/NO
- Do you understand that you are free to withdraw from the study? (at any time and without giving a reason) YES/NO
- Do you agree to take part in the study? YES/NO
- Do you agree for your child to take part in the study? YES/NO

"This study has been explained to me to my satisfaction, and I agree to my child and myself taking part. I understand that I am free to withdraw at any time."

Name of child (in block capitals):

Name of parent/carer (in block capitals):

Signature of the child's parent/carer: Date:

I have explained the study to the above and they have agreed for the child to take part.

Signature of researcher: Date:

7.7 Appendix G: Teacher information sheet

School of Psychology

Information Sheet for Teachers

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

An evaluation of the impact of the Homunculi Approach on anxiety for primary aged pupils with social communication difficulties.

Ethics Approval Number: S1517

Researcher: Kathryn Brown (Kathryn.Brown@nottingham.ac.uk)

Supervisor: Nicholas Durbin (Nicholas.Durbin@nottingham.ac.uk)

This is an invitation to take part in a research study on the impact of the Homunculi Approach for primary aged children with social communication difficulties. Before you decide if you wish to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully.

The purpose of this study is to investigate the impact of the Homunculi Approach on anxiety for children with social communication needs. The Homunculi Approach is a Cognitive Behavioural Therapy based intervention that will take place for approximately 1 hour a week, for up to 10 weeks. A child in your class will be assigned to one of two groups. Group A will participate during the Autumn term in 2023 and group B will participate in the Spring term in 2024. A member of school support staff will deliver the intervention after attending a training session with a Trainee Educational Psychologist in September 2023.

If you participate, you will be asked to complete a questionnaire that measures a child's social competence and another that measures their levels of anxiety in September 2023. You will complete the anxiety measure again in December 2023, irrespective of when the child receives the intervention.

You will also be asked to take part in a short interview with a trainee Educational Psychologist for up to 30 minutes. The purpose of this interview will be to explore any perceived changes in the child in the classroom after they have received the intervention. You will only be asked to do this if a child you teach participated in the intervention in the Autumn term 2023 and it is completely voluntary. Interviews will take place in December

2023/January 2024 and will be audio recorded. This may take place over Microsoft Teams, so as a possible online participant in this research, we are obliged to make you aware that there is always a potential risk of intrusion by outside agents, for example through hacking, and therefore the possibility of being identified.

Participation in this study is totally voluntary and you are under no obligation to take part. You are free to withdraw at any point before or during the study. All data collected will be kept confidential and used for research purposes only. Only the researcher and the supervisor will have access to the data you provide, and it will be stored in compliance with the Data Protection Act. The data will be analysed and reported in a Doctoral Thesis. Only broad trends will be reported, and it will not be possibly to identify any individuals. If you take part in an interview the audio recording of this will be kept until the Doctoral Thesis is complete and has been signed off. A summary of the results of the study will be available upon request from the researcher once it is complete. No individual findings will be shared at any point.

If you have any questions or concerns, please don't hesitate to ask now. I can also be contacted after your participation at the above address.

If you have any complaints about the study, please contact:

Stephen Jackson (Chair of Ethics Committee)

stephen.jackson@nottingham.ac.uk

7.8 Appendix H: Teacher consent form

School of Psychology

Teacher Consent Form

An evaluation of the impact of the Homunculi Approach on anxiety for pupils with social communication difficulties.

Ethics Approval Number: S1517

Researcher: Kathryn Brown (Kathryn.Brown@nottingham.ac.uk)

Supervisor: Nicholas Durbin (Nicholas.Durbin@nottingham.ac.uk)

Participants should answer these questions independently:

- Have you read and understood the Information Sheet? YES/NO
- Have you had the opportunity to ask questions about the study? YES/NO
- Have all your questions been answered satisfactorily (if applicable)? YES/NO
- Do you understand that you are free to withdraw from the study? (at any time and without giving a reason) YES/NO
- Do you agree to take part in completing the questionnaires for this study? YES/NO
- Do you agree to take part in an interview for this study (if asked), and for this to be audio recorded? YES/NO

"This study has been explained to me to my satisfaction and I agree to take part. I understand that I am free to withdraw at any time."

Name of participant (in block capitals):

Signature of the participant: Date:

I have explained the study to the above and they have agreed to take part.

Signature of researcher: Date:

7.9 Appendix I: Facilitator information sheet

School of Psychology

Information Sheet for staff

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

An evaluation of the impact of the Homunculi Approach on anxiety for primary aged pupils with social communication difficulties.

Ethics Approval Number: S1517

Researcher: Kathryn Brown (Kathryn.Brown@nottingham.ac.uk)

Supervisor: Nicholas Durbin (Nicholas.Durbin@nottingham.ac.uk)

This is an invitation to take part in a short interview with a trainee Educational Psychologist for 15-30 minutes as part of a research study on the impact of the Homunculi Approach for primary aged children with social communication difficulties. Before you decide if you wish to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully.

The purpose of this study is to investigate the impact of the Homunculi Approach on anxiety for children with social communication needs. The Homunculi Approach is a Cognitive Behavioural Therapy based intervention that takes place for approximately 1 hour a week, for up to 10 weeks. At least two children in your school have been assigned to one of two groups – group A and B. You have delivered or are currently in the process of delivering this intervention with a child in your school who is in group A.

The purpose of the interview will be to explore any perceived changes in the child following participation in the Homunculi Approach intervention. Interviews will take place in February/March 2024 and will be audio recorded. This may take place over Microsoft Teams, so as a possible online participant in this research, we are obliged to make you aware that there is always a potential risk of intrusion by outside agents, for example through hacking, and therefore the possibility of being identified.

Participation in this interview is totally voluntary and you are under no obligation to take part. You are free to withdraw at any point before or during the study. All data collected will be kept confidential and used for research purposes only. Only the researcher and the supervisor will have access to the data you provide, and it will be stored in compliance with the Data Protection Act. The data will be analysed and reported in a Doctoral Thesis. Only broad trends will be reported, and it will not be possibly to identify any individuals. The audio recording of the interview will be kept until the Doctoral Thesis is complete and has been signed off. A summary of the results of the study will be available upon request from the researcher once it is complete. No individual findings will be shared at any point.

If you have any questions or concerns, please don't hesitate to ask now. I can also be contacted after your participation at the above address.

If you have any complaints about the study, please contact:

Stephen Jackson (Chair of Ethics Committee)

stephen.jackson@nottingham.ac.uk

7.10 Appendix J: Facilitator consent form

School of Psychology

School staff delivering the intervention Consent Form

An evaluation of the impact of the Homunculi Approach on anxiety for pupils with social communication difficulties.

Ethics Approval Number: S1517

Researcher: Kathryn Brown (Kathryn.Brown@nottingham.ac.uk)

Supervisor: Nicholas Durbin (Nicholas.Durbin@nottingham.ac.uk)

Participants should answer these questions independently:

- Have you read and understood the Information Sheet? YES/NO
- Have you had the opportunity to ask questions about the study? YES/NO
- Have all your questions been answered satisfactorily (if applicable)? YES/NO
- Do you understand that you are free to withdraw from the study? (at any time and without giving a reason) YES/NO
- Do you agree to take part in an interview for this study and for this to be audio recorded? YES/NO

"This study has been explained to me to my satisfaction and I agree to take part. I understand that I am free to withdraw at any time."

Name of participant (in block capitals):

Signature of the participant: Date:

I have explained the study to the above and they have agreed to take part.

Signature of researcher: Date:

7.11 Appendix K: Facilitator debrief form

School of Psychology

School staff delivering the intervention Debrief

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

An evaluation of the impact of the Homunculi Approach on anxiety for primary aged pupils with social communication difficulties.

Ethics Approval Number: S1517

Researcher: Kathryn Brown (Kathryn.Brown@nottingham.ac.uk)

Supervisor: Nicholas Durbin (Nicholas.Durbin@nottingham.ac.uk)

The purpose of this debrief statement is to provide you with information regarding the next steps in the above research study. I would also like to take this opportunity to thank you for taking part in this study.

You have now completed the delivery of the Homunculi Approach programme with the child in group A. I hypothesised that participation in the Homunculi Approach would result in a positive impact on levels of anxiety experienced by children in group A. To investigate this, children from both group A and B and their parents and teachers have completed questionnaires exploring their current levels of anxiety. These results will now be analysed.

You also took part in an interview to explore any changes you have observed for children who participated in the Homunculi Approach. The purpose of this was to gather further qualitative data to add depth to the understanding of the impact of the Homunculi Approach programme. Data gathered from the interviews will also now be analysed.

If you would like to withdraw from the study, please contact me at the details above by 1st March 2024.

The data will be analysed and reported in a Doctoral Thesis. Only broad trends will be reported and it will not be possibly to identify any individuals. A summary of the findings of the study will be available upon request from the researcher once it is complete. The findings will also be shared anonymously with other researchers, XXX Educational Psychology

Service and the schools who took part in the study. No individual findings will be shared at any point.

If you have any further queries regarding the research, please don't hesitate to contact me, or my supervisor, at the details above.

Many thanks,

Kathryn Brown (Trainee Educational Psychologist)

7.12 Appendix L: Ethical approval

The University of Nottingham

UNITED KINGDOM · CHINA · MALAYSIA

School of Psychology
The University of Nottingham
University Park
Nottingham
NG7 2RD

tel: +44 (0)115 846 7403 or (0)115 951 4344

SJ/tp

Ref: S1517

Thursday 25th May 2023

Dear Kathryn Brown & Nick Durbin

Ethics Committee Review

Thank you for submitting an account of your proposed research 'An evaluation of the impact of the Homunculi Approach on anxiety for primary aged pupils with social communication difficulties.'

That proposal has now been reviewed and we are pleased to tell you it has met with the Committee's approval.

However:
Please note the following comments from our reviewers.

Reviewer One:

- Define SENCo on first appearance when writing about this research.
- Reporting power analysis doesn't make sense if you don't state the anticipated effect size. Also state the statistical test you are using. I assumed a t-test, but I then noticed you mentioned making pre—post comparisons. So, I guess repeated measures? Be explicit about the planned test.

Independently of the Ethics Committee procedures, supervisors also have responsibilities for the risk assessment of projects as detailed in the safety pages of the University web site. Ethics Committee approval does not alter, replace, or remove those responsibilities, nor does it certify that they have been met.
Yours sincerely

Professor Stephen Jackson
Chair, Ethics Committee

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

School of Psychology
The University of Nottingham
University Park
Nottingham
NG7 2RD

tel: +44 (0)115 846 7403 or (0)115 951 4344

Tuesday 8th August 2023

Ref: S1544 Chair Approval Minor Amendments

Dear Kathryn Brown & Nick Durbin,

Your name and contact details:- Kathryn Brown (Kathryn.Brown@nottingham.ac.uk)
Today's date:- 03.08.23
Title of the new project:- (remains the same) An evaluation of the impact of the Homunculi Approach on anxiety for primary aged pupils with social communication difficulties.
Are you an undergraduate, postgraduate or staff? PGR

Details of the previous study:
Applicant: Kathryn Brown
Title: An evaluation of the impact of the Homunculi Approach on anxiety for primary aged pupils with social communication difficulties.
Date of approval: 25.05.23
Reference number (if known): S1517

As Chair of the Ethics Committee I have considered your request and I am happy to grant approval for the following changes:

1. A change to the procedure so teachers will also complete the Social Competence Inventory (SCI; Rydell et al., 1997) before the intervention (see appendix 1 for a copy of the SCI). This will be used to provide information about the participants social communication skills before they start the intervention and enable the comparison of the needs of the experimental and control group. No changes are made to the ethical risk checklist. The parent and teacher information sheets and the teacher consent form have been amended to reflect this change (see highlighted sections in appendix 2-4).

Independently of the Ethics Committee procedures, supervisors also have responsibilities for the risk assessment of projects as detailed in the safety pages of the University web site. Ethics Committee approval does not alter, replace, or remove those responsibilities, nor does it certify that they have been met.

Yours sincerely

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

School of Psychology
The University of Nottingham
University Park
Nottingham
NG7 2RD

tel. +44 (0)115 846 7403 or (0)115 951 4344

Tuesday 6th February 2024

Ref: **S1588 Chair Approval Minor Amendments**

Dear Kathryn Brown and Nick Durbin,

Your name and contact details:- Kathryn Brown (Kathryn.Brown@nottingham.ac.uk)
Today's date:- 02.02.24
Title of the new project:- (remains the same) An evaluation of the impact of the Homunculi Approach on anxiety for primary aged pupils with social communication difficulties.
Are you an undergraduate, postgraduate or staff? PGR

Details of the previous study:
Applicant: Kathryn Brown
Title: An evaluation of the impact of the Homunculi Approach on anxiety for primary aged pupils with social communication difficulties.
Date of approval: 25.05.23
Reference number (if known): S1517

As Chair of the Ethics Committee I have considered your request and I am happy to grant approval for the following changes:

List of significant changes in the proposed study. This list should include any changes which could potentially impact on ethical risks of the work e.g., moving from student participants to vulnerable adults; use of sensitive stimulus materials; changes in remuneration or consent procedures:

1. A change to phase two of the study, so the members of school staff who delivered the intervention will be asked to take part in an interview, rather than class teachers. These interviews will be semi-structured and follow the interview schedule in Appendix 1. Staff will be contacted via email with an information sheet and asked to volunteer to take part in the interview in February/March 2024 (see Appendix 2). Informed consent will be gathered before the interviews take place and participants will be debriefed following the interviews (see consent form in Appendix 3 and debrief form in Appendix 4). No changes are made to the ethical risk checklist.

Final responsibility for ethical conduct of your research rests with you or your supervisor. The Codes of Practice setting out these responsibilities have been published by the British Psychological Society and the University Research Ethics Committee. If you have any concerns whatever during the conduct of your research then you should consult those Codes of Practice.

Independently of the Ethics Committee procedures, supervisors also have responsibilities for

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Nottingham
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the risk assessment of projects as detailed in the safety pages of the University web site. Ethics Committee approval does not alter, replace, or remove those responsibilities, nor does it certify that they have been met.
Yours sincerely,

Professor Stephen Jackson
Chair, Ethics Committee

7.13 Appendix M: Parent debrief form

School of Psychology

Parent Debrief Statement

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

An evaluation of the impact of the Homunculi Approach on anxiety for primary aged pupils with social communication difficulties.

Ethics Approval Number: S1517

Researcher: Kathryn Brown (Kathryn.Brown@nottingham.ac.uk)

Supervisor: Nicholas Durbin (Nicholas.Durbin@nottingham.ac.uk)

The purpose of this debrief statement is to provide you with information regarding the next steps in the above research study. I would also like to take this opportunity to thank you for consenting to your child taking part in this study.

Children in group A have now completed the Homunculi Approach programme. I hypothesised that participation in the Homunculi Approach would result in a positive impact on levels of anxiety experienced by children in group A. To investigate this, children from both group A and B and their parents and teachers have completed questionnaires exploring their current levels of anxiety. At the time, your child was advised what would happen to their data and verbally confirmed whether they were happy to take part in the study. These results will now be analysed.

The data will be analysed and reported in a Doctoral Thesis. Only broad trends will be reported and it will not be possible to identify any individuals. A summary of the findings of the study will be available upon request from the researcher once it is complete. The findings will also be shared anonymously with XXX Educational Psychology Service and the schools who took part in the study. No individual findings will be shared at any point.

If you would like to withdraw your child from the study, please contact me at the details above by 8th March 2024.

Children in group B will participate in the Homunculi Approach from January 2024. This does not form part of the research study, but I will be contacting the school to ensure the programme is being delivered. Your child's school can complete their own assessment to measure the impact of the Homunculi Approach on your child's anxiety, using similar measures to those used as part of the study.

If you have any further queries regarding the research, please don't hesitate to contact me, or my supervisor, at the details above.

If you are concerned about your child's wellbeing following the study, please seek support from your child's school SENCo. Please also see resources below for further support:

Young Minds mental health parent support - https://www.youngminds.org.uk/parent/

Family support hubs for children with social communication difficulties - https://www.autismeastmidlands.org.uk/child-services/family-support-hubs

Many thanks,

Kathryn Brown (Trainee Educational Psychologist)

7.14 Appendix N: Teacher debrief form

School of Psychology

Teacher Debrief Statement

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

An evaluation of the impact of the Homunculi Approach on anxiety for primary aged pupils with social communication difficulties.

Ethics Approval Number: S1517

Researcher: Kathryn Brown (Kathryn.Brown@nottingham.ac.uk)

Supervisor: Nicholas Durbin (Nicholas.Durbin@nottingham.ac.uk)

The purpose of this debrief statement is to provide you with information regarding the next steps in the above research study. I would also like to take this opportunity to thank you for taking part in this study.

Children in group A have now completed the Homunculi Approach programme. I hypothesised that participation in the Homunculi Approach would result in a positive impact on levels of anxiety experienced by children in group A. To investigate this, children from both group A and B and their parents and teachers have completed questionnaires exploring their current levels of anxiety. These results will now be analysed.

If you took part in an interview, the purpose of this was to explore any changes you have observed in the classroom for children who participated in the Homunculi Approach and therefore whether participants were able to generalise skills they learnt during the programme to the classroom setting. Data gathered from the interviews will also now be analysed.

If you would like to withdraw from the study, please contact me at the details above by 8th March 2024.

The data will be analysed and reported in a Doctoral Thesis. Only broad trends will be reported and it will not be possibly to identify any individuals. A summary of the findings of the study will be available upon request from the researcher once it is complete. The findings will also be shared anonymously with other researchers, XXX Educational Psychology

Service and the schools who took part in the study. No individual findings will be shared at any point.

If you have any further queries regarding the research, please don't hesitate to contact me, or my supervisor, at the details above.

Many thanks,

Kathryn Brown (Trainee Educational Psychologist)

7.15 Appendix O: Social Competence Inventory SPSS output

Descriptives

Descriptive Statistics

Experiment or control		N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
		Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
1 Control	Total social competence	**9**	**47**	**110**	**70.22**	**21.644**	**.975**	**.717**	**-.039**	**1.400**
	Total prosocial orientation	**9**	**32**	**79**	**46.67**	**17.769**	**1.138**	**.717**	**-.159**	**1.400**
	Total social initiative	**9**	**14**	**31**	**23.56**	**5.725**	**-.191**	**.717**	**-.646**	**1.400**
	Valid N (listwise)	**9**								
2 Experimental	Total social competence	**9**	**59**	**88**	**73.44**	**10.026**	**-.241**	**.717**	**-.691**	**1.400**
	Total prosocial orientation	**9**	**39**	**60**	**50.22**	**7.242**	**.065**	**.717**	**-1.162**	**1.400**
	Total social initiative	**9**	**15**	**30**	**23.22**	**4.631**	**-.221**	**.717**	**-.167**	**1.400**
	Valid N (listwise)	**9**								

T-Test

Group Statistics

	Experiment or control	N	Mean	Std. Deviation	Std. Error Mean
Total social competence	1 Control	**9**	**70.22**	**21.644**	**7.215**
	2 Experimental	**9**	**73.44**	**10.026**	**3.342**

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means							
						Significance				95% Confidence Interval of the Difference	
		F	Sig.	t	df	One-Sided p	Two-Sided p	Mean Difference	Std. Error Difference	Lower	Upper
Total social competence	Equal variances assumed	**3.631**	**.075**	**-.405**	**16**	**.345**	**.691**	**-3.222**	**7.951**	**-20.078**	**13.633**
	Equal variances not assumed			**-.405**	**11.282**	**.346**	**.693**	**-3.222**	**7.951**	**-20.669**	**14.225**

Independent Samples Effect Sizes

		Standardizer[a]	Point Estimate	95% Confidence Interval	
				Lower	Upper
Total social competence	Cohen's d	**16.867**	**-.191**	**-1.114**	**.738**
	Hedges' correction	**17.712**	**-.182**	**-1.061**	**.703**
	Glass's delta	**10.026**	**-.321**	**-1.249**	**.625**

a. The denominator used in estimating the effect sizes.

Cohen's d uses the pooled standard deviation.

Hedges' correction uses the pooled standard deviation, plus a correction factor.

Glass's delta uses the sample standard deviation of the control (i.e., the second) group.

7.16 Appendix P: Spence Children's Anxiety Scale SPSS Output

Explore

Control or experiment

Case Processing Summary

	Control or experiment	Cases					
		Valid		Missing		Total	
		N	Percent	N	Percent	N	Percent
Total child pre-intervention	1 Control	**8**	**100.0%**	**0**	**0.0%**	**8**	**100.0%**
	2 Experimental	**9**	**100.0%**	**0**	**0.0%**	**9**	**100.0%**
Total child post-intervention	1 Control	**8**	**100.0%**	**0**	**0.0%**	**8**	**100.0%**
	2 Experimental	**9**	**100.0%**	**0**	**0.0%**	**9**	**100.0%**

Descriptives

	Control or experiment			Statistic	Std. Error
Total child pre-intervention	1 Control	Mean		**79.75**	**6.961**
		95% Confidence Interval for Mean	Lower Bound	**63.29**	
			Upper Bound	**96.21**	
		5% Trimmed Mean		**79.33**	
		Median		**75.50**	
		Variance		**387.643**	
		Std. Deviation		**19.689**	
		Minimum		**57**	
		Maximum		**110**	
		Range		**53**	
		Interquartile Range		**35**	
		Skewness		**.592**	**.752**
		Kurtosis		**-1.172**	**1.481**
	2 Experimental	Mean		**93.89**	**3.405**
		95% Confidence Interval for Mean	Lower Bound	**86.04**	
			Upper Bound	**101.74**	
		5% Trimmed Mean		**94.10**	
		Median		**97.00**	
		Variance		**104.361**	
		Std. Deviation		**10.216**	

		Minimum		**76**	
		Maximum		**108**	
		Range		**32**	
		Interquartile Range		**16**	
		Skewness		**-.354**	**.717**
		Kurtosis		**-.481**	**1.400**
Total child post-intervention	1 Control	Mean		**75.50**	**4.492**
		95% Confidence Interval for Mean	Lower Bound	**64.88**	
			Upper Bound	**86.12**	
		5% Trimmed Mean		**75.22**	
		Median		**74.50**	
		Variance		**161.429**	
		Std. Deviation		**12.705**	
		Minimum		**60**	
		Maximum		**96**	
		Range		**36**	
		Interquartile Range		**23**	
		Skewness		**.446**	**.752**
		Kurtosis		**-.976**	**1.481**
	2 Experimental	Mean		**81.56**	**3.283**
		95% Confidence Interval for Mean	Lower Bound	**73.98**	
			Upper Bound	**89.13**	
		5% Trimmed Mean		**81.28**	
		Median		**79.00**	
		Variance		**97.028**	
		Std. Deviation		**9.850**	
		Minimum		**69**	
		Maximum		**99**	
		Range		**30**	
		Interquartile Range		**14**	
		Skewness		**.961**	**.717**
		Kurtosis		**.120**	**1.400**

Extreme Values[a]

Control or experiment			Case Number	School and child	Value
1 Control	Highest	1	**9**	**O_SW**	**110**

Total child pre-intervention			2	**13**	**SF_AS**	**105**
			3	**1**	**BH_HEJ**	**85**
			4	**4**	**H_AG**	**84**
		Lowest	1	**15**	**SM_FH**	**57**
			2	**12**	**R_IAL**	**65**
			3	**8**	**MF_CS**	**65**
			4	**6**	**MF_SJ**	**67**
	2 Experimental	Highest	1	**17**	**SLTS_JB**	**108**
			2	**7**	**MF_ID**	**105**
			3	**5**	**MF_FO**	**99**
			4	**2**	**BH_SR**	**98**
		Lowest	1	**14**	**SF_FB**	**76**
			2	**11**	**R_RD**	**86**
			3	**10**	**O_CG**	**86**
			4	**16**	**SM_SW**	**90**
Total child post-intervention	1 Control	Highest	1	**9**	**O_SW**	**96**
			2	**6**	**MF_SJ**	**89**
			3	**13**	**SF_AS**	**81**
			4	**4**	**H_AG**	**77**
		Lowest	1	**8**	**MF_CS**	**60**
			2	**15**	**SM_FH**	**64**
			3	**12**	**R_IAL**	**65**
			4	**1**	**BH_HEJ**	**72**
	2 Experimental	Highest	1	**3**	**H_LH**	**99**
			2	**17**	**SLTS_JB**	**96**
			3	**11**	**R_RD**	**82**
			4	**5**	**MF_FO**	**81**
		Lowest	1	**14**	**SF_FB**	**69**
			2	**16**	**SM_SW**	**75**
			3	**2**	**BH_SR**	**75**
			4	**10**	**O_CG**	**78**

a. The requested number of extreme values exceeds the number of data points. A smaller number of extremes is displayed.

Tests of Normality

Control or experiment	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.

Total child pre-intervention	1 Control	**.241**	**8**	**.189**	**.891**	**8**	**.241**
	2 Experimental	**.175**	**9**	**.200***	**.962**	**9**	**.816**
Total child post-intervention	1 Control	**.171**	**8**	**.200***	**.951**	**8**	**.717**
	2 Experimental	**.260**	**9**	**.081**	**.880**	**9**	**.159**

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

General Linear Model

Within-Subjects Factors

Measure: MEASURE_1

Time_prepost	Dependent Variable
1	**TotSCASPre**
2	**TotSCASPost**

Between-Subjects Factors

		Value Label	N
Control or experiment	1	**Control**	**8**
	2	**Experimental**	**9**

Descriptive Statistics

	Control or experiment	Mean	Std. Deviation	N
Total child pre-intervention	1 Control	**79.75**	**19.689**	**8**
	2 Experimental	**93.89**	**10.216**	**9**
	Total	**87.24**	**16.574**	**17**
Total child post-intervention	1 Control	**75.50**	**12.705**	**8**
	2 Experimental	**81.56**	**9.850**	**9**
	Total	**78.71**	**11.351**	**17**

Box's Test of Equality of Covariance Matrices[a]

Box's M	**3.351**
F	**.955**
df1	**3**
df2	**92294.873**
Sig.	**.413**

Tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups.

a. Design: Intercept + CorE
Within Subjects Design: Time_prepost

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Time_prepost	Pillai's Trace	**.361**	**8.458[b]**	**1.000**	**15.000**	**.011**	**.361**
	Wilks' Lambda	**.639**	**8.458[b]**	**1.000**	**15.000**	**.011**	**.361**
	Hotelling's Trace	**.564**	**8.458[b]**	**1.000**	**15.000**	**.011**	**.361**
	Roy's Largest Root	**.564**	**8.458[b]**	**1.000**	**15.000**	**.011**	**.361**
Time_prepost * CorE	Pillai's Trace	**.118**	**2.010[b]**	**1.000**	**15.000**	**.177**	**.118**
	Wilks' Lambda	**.882**	**2.010[b]**	**1.000**	**15.000**	**.177**	**.118**
	Hotelling's Trace	**.134**	**2.010[b]**	**1.000**	**15.000**	**.177**	**.118**
	Roy's Largest Root	**.134**	**2.010[b]**	**1.000**	**15.000**	**.177**	**.118**

a. Design: Intercept + CorE
Within Subjects Design: Time_prepost

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b]		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Time_prepost	**1.000**	**.000**	**0**	**.**	**1.000**	**1.000**	**1.000**

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept + CorE
Within Subjects Design: Time_prepost

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Time_prepost	Sphericity Assumed	**582.368**	**1**	**582.368**	**8.458**	**.011**	**.361**
	Greenhouse-Geisser	**582.368**	**1.000**	**582.368**	**8.458**	**.011**	**.361**
	Huynh-Feldt	**582.368**	**1.000**	**582.368**	**8.458**	**.011**	**.361**
	Lower-bound	**582.368**	**1.000**	**582.368**	**8.458**	**.011**	**.361**
Time_prepost * CorE	Sphericity Assumed	**138.368**	**1**	**138.368**	**2.010**	**.177**	**.118**
	Greenhouse-Geisser	**138.368**	**1.000**	**138.368**	**2.010**	**.177**	**.118**
	Huynh-Feldt	**138.368**	**1.000**	**138.368**	**2.010**	**.177**	**.118**
	Lower-bound	**138.368**	**1.000**	**138.368**	**2.010**	**.177**	**.118**
Error(Time_prepost)	Sphericity Assumed	**1032.750**	**15**	**68.850**			
	Greenhouse-Geisser	**1032.750**	**15.000**	**68.850**			
	Huynh-Feldt	**1032.750**	**15.000**	**68.850**			
	Lower-bound	**1032.750**	**15.000**	**68.850**			

Tests of Within-Subjects Contrasts

Measure: MEASURE_1

Source	Time_prepost	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Time_prepost	Linear	**582.368**	**1**	**582.368**	**8.458**	**.011**	**.361**
Time_prepost * CorE	Linear	**138.368**	**1**	**138.368**	**2.010**	**.177**	**.118**
Error(Time_prepost)	Linear	**1032.750**	**15**	**68.850**			

Levene's Test of Equality of Error Variances[a]

		Levene Statistic	df1	df2	Sig.
Total child pre-intervention	Based on Mean	**4.906**	**1**	**15**	**.043**
	Based on Median	**3.961**	**1**	**15**	**.065**
	Based on Median and with adjusted df	**3.961**	**1**	**12.626**	**.069**
	Based on trimmed mean	**4.903**	**1**	**15**	**.043**
Total child post-intervention	Based on Mean	**.993**	**1**	**15**	**.335**
	Based on Median	**1.065**	**1**	**15**	**.318**
	Based on Median and with adjusted df	**1.065**	**1**	**14.833**	**.319**
	Based on trimmed mean	**1.030**	**1**	**15**	**.326**

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + CorE
Within Subjects Design: Time_prepost

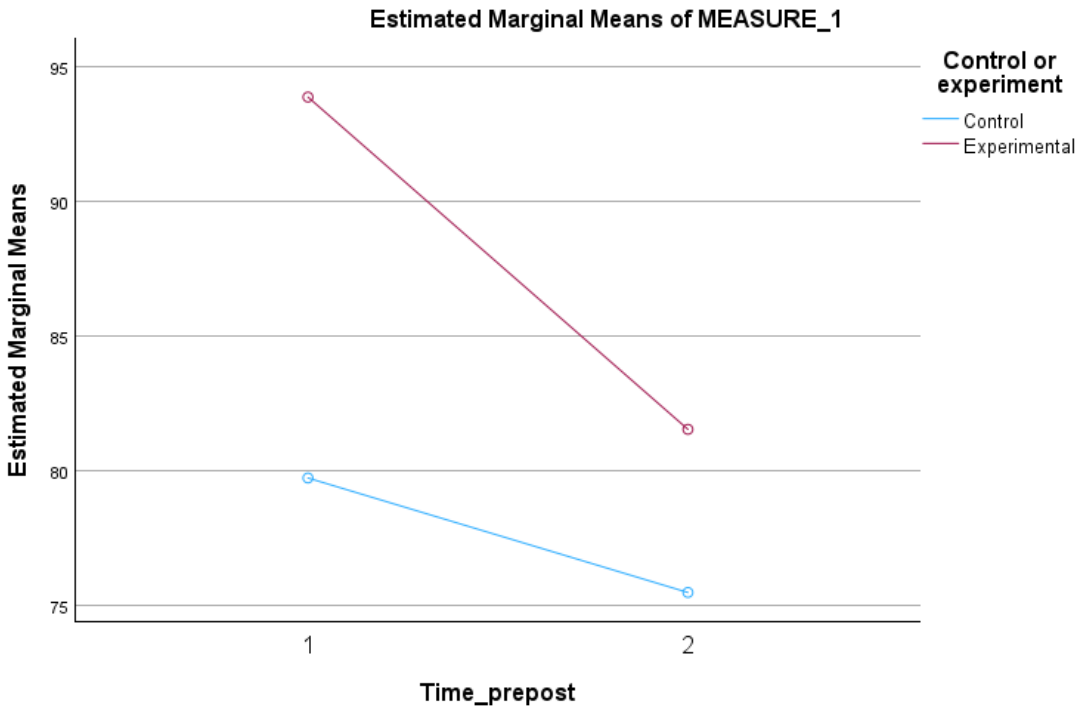
Tests of Between-Subjects Effects

Measure: MEASURE_1

Transformed Variable: Average

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Intercept	**231583.374**	**1**	**231583.374**	**785.586**	**<.001**	**.981**
CorE	**863.609**	**1**	**863.609**	**2.930**	**.108**	**.163**
Error	**4421.861**	**15**	**294.791**			

Profile Plots



7.17 Appendix Q: Spence Children's Anxiety Scale – parent SPSS output

Explore

Control or experiment

Case Processing Summary

	Control or experiment	Cases					
		Valid		Missing		Total	
		N	Percent	N	Percent	N	Percent
Total SCAS parent pre-intervention	1 Control	**9**	**100.0%**	**0**	**0.0%**	**9**	**100.0%**
	2 Experimental	**9**	**100.0%**	**0**	**0.0%**	**9**	**100.0%**
Total SCAS parent post-intervention	1 Control	**9**	**100.0%**	**0**	**0.0%**	**9**	**100.0%**
	2 Experimental	**8**	**88.9%**	**1**	**11.1%**	**9**	**100.0%**

Descriptives

	Control or experiment			Statistic	Std. Error
Total SCAS parent pre-intervention	1 Control	Mean		**87.78**	**4.437**
		95% Confidence Interval for Mean	Lower Bound	**77.55**	
			Upper Bound	**98.01**	
		5% Trimmed Mean		**88.03**	
		Median		**92.00**	
		Variance		**177.194**	
		Std. Deviation		**13.311**	
		Minimum		**67**	
		Maximum		**104**	
		Range		**37**	
		Interquartile Range		**25**	
		Skewness		**-.497**	**.717**
		Kurtosis		**-1.164**	**1.400**
	2 Experimental	Mean		**83.56**	**2.678**
		95% Confidence Interval for Mean	Lower Bound	**77.38**	
			Upper Bound	**89.73**	
		5% Trimmed Mean		**83.84**	
		Median		**83.00**	
		Variance		**64.528**	
		Std. Deviation		**8.033**	

		Minimum		**68**	
		Maximum		**94**	
		Range		**26**	
		Interquartile Range		**12**	
		Skewness		**-.734**	**.717**
		Kurtosis		**.482**	**1.400**
Total SCAS parent post-intervention	1 Control	Mean		**84.89**	**4.641**
		95% Confidence Interval for Mean	Lower Bound	**74.19**	
			Upper Bound	**95.59**	
		5% Trimmed Mean		**85.10**	
		Median		**92.00**	
		Variance		**193.861**	
		Std. Deviation		**13.923**	
		Minimum		**60**	
		Maximum		**106**	
		Range		**46**	
		Interquartile Range		**19**	
		Skewness		**-.440**	**.717**
		Kurtosis		**-.092**	**1.400**
	2 Experimental	Mean		**71.38**	**3.162**
		95% Confidence Interval for Mean	Lower Bound	**63.90**	
			Upper Bound	**78.85**	
		5% Trimmed Mean		**71.36**	
		Median		**71.00**	
		Variance		**79.982**	
		Std. Deviation		**8.943**	
		Minimum		**58**	
		Maximum		**85**	
		Range		**27**	
		Interquartile Range		**14**	
		Skewness		**.090**	**.752**
		Kurtosis		**-.830**	**1.481**

Extreme Values[a]

Control or experiment			Case Number	School and child	Value
	1 Control	Highest 1	**6**	**MF_SJ**	**104**

Total SCAS parent pre-intervention			2	**13**	**SF_AS**	**100**
			3	**4**	**H_AG**	**99**
			4	**12**	**R_IAL**	**94**
		Lowest	1	**15**	**SM_FH**	**67**
			2	**9**	**O_SW**	**70**
			3	**8**	**MF_CS**	**80**
			4	**17**	**SLTS_IC**	**84**
	2 Experimental	Highest	1	**14**	**SF_FB**	**94**
			2	**11**	**R_RD**	**91**
			3	**5**	**MF_FO**	**90**
			4	**16**	**SM_SW**	**86**
		Lowest	1	**18**	**SLTS_JB**	**68**
			2	**2**	**BH_SR**	**76**
			3	**10**	**O_CG**	**82**
			4	**3**	**H_LH**	**82**
Total SCAS parent post-intervention	1 Control	Highest	1	**6**	**MF_SJ**	**106**
			2	**8**	**MF_CS**	**93**
			3	**1**	**BH_HEJ**	**92**
			4	**4**	**H_AG**	**92[b]**
		Lowest	1	**15**	**SM_FH**	**60**
			2	**9**	**O_SW**	**73**
			3	**17**	**SLTS_IC**	**74**
			4	**12**	**R_IAL**	**82**
	2 Experimental	Highest	1	**14**	**SF_FB**	**85**
			2	**3**	**H_LH**	**80**
			3	**7**	**MF_ID**	**76**
			4	**11**	**R_RD**	**74**
		Lowest	1	**18**	**SLTS_JB**	**58**
			2	**16**	**SM_SW**	**65**
			3	**2**	**BH_SR**	**65**
			4	**5**	**MF_FO**	**68**

a. The requested number of extreme values exceeds the number of data points. A smaller number of extremes is displayed.

b. Only a partial list of cases with the value 92 are shown in the table of upper extremes.

Tests of Normality

	Kolmogorov-Smirnov[a]	Shapiro-Wilk

	Control or experiment	Statistic	df	Sig.	Statistic	df	Sig.
Total SCAS parent pre-intervention	1 Control	**.180**	**9**	**.200***	**.926**	**9**	**.442**
	2 Experimental	**.201**	**9**	**.200***	**.949**	**9**	**.681**
Total SCAS parent post-intervention	1 Control	**.251**	**9**	**.108**	**.935**	**9**	**.531**
	2 Experimental	**.147**	**8**	**.200***	**.974**	**8**	**.924**

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

General Linear Model

Within-Subjects Factors

Measure: MEASURE_1

Time_PrePost	Dependent Variable
1	**TotSCASParPre**
2	**TotSCASParPost**

Between-Subjects Factors

		Value Label	N
Group	1	**Control**	**9**
	2	**Experimental**	**8**

Descriptive Statistics

	Group	Mean	Std. Deviation	N
Total SCAS parent pre-intervention	1 Control	**87.78**	**13.311**	**9**
	2 Experimental	**83.75**	**8.565**	**8**
	Total	**85.88**	**11.180**	**17**
Total SCAS parent post-intervention	1 Control	**84.89**	**13.923**	**9**
	2 Experimental	**71.38**	**8.943**	**8**
	Total	**78.53**	**13.426**	**17**

Box's Test of Equality of Covariance Matrices[a]

Box's M	**1.779**
F	**.507**
df1	**3**
df2	**92294.873**
Sig.	**.678**

Tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups.

a. Design: Intercept + CorE
Within Subjects Design: Time_PrePost

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[c]
Time_PrePost	Pillai's Trace	**.535**	**17.276[b]**	**1.000**	**15.000**	**<.001**	**.535**	**17.276**	**.972**
	Wilks' Lambda	**.465**	**17.276[b]**	**1.000**	**15.000**	**<.001**	**.535**	**17.276**	**.972**
	Hotelling's Trace	**1.152**	**17.276[b]**	**1.000**	**15.000**	**<.001**	**.535**	**17.276**	**.972**
	Roy's Largest Root	**1.152**	**17.276[b]**	**1.000**	**15.000**	**<.001**	**.535**	**17.276**	**.972**
Time_PrePost * CorE	Pillai's Trace	**.308**	**6.673[b]**	**1.000**	**15.000**	**.021**	**.308**	**6.673**	**.676**
	Wilks' Lambda	**.692**	**6.673[b]**	**1.000**	**15.000**	**.021**	**.308**	**6.673**	**.676**
	Hotelling's Trace	**.445**	**6.673[b]**	**1.000**	**15.000**	**.021**	**.308**	**6.673**	**.676**

	Roy's Largest Root	**.445**	**6.673[b]**	**1.000**	**15.000**	**.021**	**.308**	**6.673**	**.676**

a. Design: Intercept + CorE

Within Subjects Design: Time_PrePost

b. Exact statistic

c. Computed using alpha = .05

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b]		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Time_PrePost	**1.000**	**.000**	**0**	**.**	**1.000**	**1.000**	**1.000**

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept + CorE

Within Subjects Design: Time_PrePost

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Time_PrePost	Sphericity Assumed	**493.383**	**1**	**493.383**	**17.276**	**<.001**	**.535**	**17.276**	**.972**
	Greenhouse-Geisser	**493.383**	**1.000**	**493.383**	**17.276**	**<.001**	**.535**	**17.276**	**.972**
	Huynh-Feldt	**493.383**	**1.000**	**493.383**	**17.276**	**<.001**	**.535**	**17.276**	**.972**
	Lower-bound	**493.383**	**1.000**	**493.383**	**17.276**	**<.001**	**.535**	**17.276**	**.972**
Time_PrePost * CorE	Sphericity Assumed	**190.559**	**1**	**190.559**	**6.673**	**.021**	**.308**	**6.673**	**.676**
	Greenhouse-Geisser	**190.559**	**1.000**	**190.559**	**6.673**	**.021**	**.308**	**6.673**	**.676**
	Huynh-Feldt	**190.559**	**1.000**	**190.559**	**6.673**	**.021**	**.308**	**6.673**	**.676**
	Lower-bound	**190.559**	**1.000**	**190.559**	**6.673**	**.021**	**.308**	**6.673**	**.676**
Error(Time_PrePost)	Sphericity Assumed	**428.382**	**15**	**28.559**					

	Greenhouse-Geisser	**428.382**	**15.000**	**28.559**					
	Huynh-Feldt	**428.382**	**15.000**	**28.559**					
	Lower-bound	**428.382**	**15.000**	**28.559**					

a. Computed using alpha = .05

Tests of Within-Subjects Contrasts

Measure: MEASURE_1

Source	Time_PrePost	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Time_PrePost	Linear	**493.383**	**1**	**493.383**	**17.276**	**<.001**	**.535**	**17.276**	**.972**
Time_PrePost * CorE	Linear	**190.559**	**1**	**190.559**	**6.673**	**.021**	**.308**	**6.673**	**.676**
Error(Time_PrePost)	Linear	**428.382**	**15**	**28.559**					

a. Computed using alpha = .05

Levene's Test of Equality of Error Variances[a]

		Levene Statistic	df1	df2	Sig.
Total SCAS parent pre-intervention	Based on Mean	**2.862**	**1**	**15**	**.111**
	Based on Median	**1.503**	**1**	**15**	**.239**
	Based on Median and with adjusted df	**1.503**	**1**	**12.531**	**.243**
	Based on trimmed mean	**2.787**	**1**	**15**	**.116**
Total SCAS parent post-intervention	Based on Mean	**1.753**	**1**	**15**	**.205**
	Based on Median	**.520**	**1**	**15**	**.482**
	Based on Median and with adjusted df	**.520**	**1**	**9.916**	**.487**
	Based on trimmed mean	**1.716**	**1**	**15**	**.210**

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + CorE

Within Subjects Design: Time_PrePost

Tests of Between-Subjects Effects

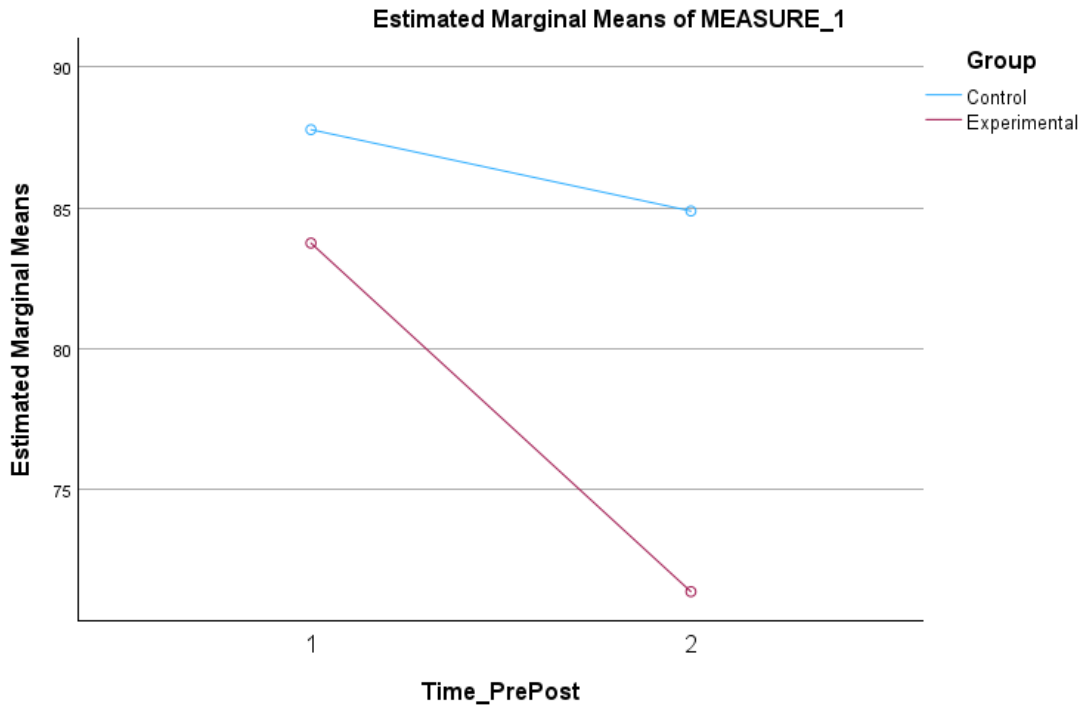
Measure: MEASURE_1

Transformed Variable: Average

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	**227535.621**	**1**	**227535.621**	**944.539**	**<.001**	**.984**	**944.539**	**1.000**
CorE	**651.621**	**1**	**651.621**	**2.705**	**.121**	**.153**	**2.705**	**.337**
Error	**3613.437**	**15**	**240.896**					

a. Computed using alpha = .05

Profile Plots



7.18 Appendix R: School Anxiety Scale – Teacher SPSS Output

Explore

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Total SAS pre-intervention	**18**	**100.0%**	**0**	**0.0%**	**18**	**100.0%**
Total SAS post-intervention	**18**	**100.0%**	**0**	**0.0%**	**18**	**100.0%**

Descriptives

			Statistic	Std. Error
Total SAS pre-intervention	Mean		**21.11**	**1.845**
	95% Confidence Interval for Mean	Lower Bound	**17.22**	
		Upper Bound	**25.00**	
	5% Trimmed Mean		**20.96**	
	Median		**21.00**	
	Variance		**61.281**	
	Std. Deviation		**7.828**	
	Minimum		**10**	
	Maximum		**35**	
	Range		**25**	
	Interquartile Range		**14**	
	Skewness		**.216**	**.536**
	Kurtosis		**-1.231**	**1.038**
Total SAS post-intervention	Mean		**20.67**	**2.067**
	95% Confidence Interval for Mean	Lower Bound	**16.30**	
		Upper Bound	**25.03**	
	5% Trimmed Mean		**20.74**	
	Median		**20.50**	
	Variance		**76.941**	
	Std. Deviation		**8.772**	
	Minimum		**8**	
	Maximum		**32**	
	Range		**24**	

	Interquartile Range	**17**	
	Skewness	**-.021**	**.536**
	Kurtosis	**-1.707**	**1.038**

Extreme Values

			Case Number	School and child	Value
Total SAS pre-intervention	Highest	1	**14**	**O_CG**	**35**
		2	**18**	**SLTS_JB**	**33**
		3	**16**	**SF_FB**	**30**
		4	**9**	**SLTS_IC**	**28**
		5	**3**	**MF_SJ**	**27**
	Lowest	1	**8**	**SM_FH**	**10**
		2	**7**	**SF_AS**	**12**
		3	**4**	**MF_CS**	**12**
		4	**17**	**SM_SW**	**13**
		5	**12**	**MF_FO**	**14**
Total SAS post-intervention	Highest	1	**3**	**MF_SJ**	**32**
		2	**16**	**SF_FB**	**32**
		3	**2**	**H_AG**	**31**
		4	**18**	**SLTS_JB**	**31**
		5	**9**	**SLTS_IC**	**29**
	Lowest	1	**7**	**SF_AS**	**8**
		2	**8**	**SM_FH**	**10**
		3	**4**	**MF_CS**	**10**
		4	**17**	**SM_SW**	**11**
		5	**15**	**R_RD**	**13[a]**

a. Only a partial list of cases with the value 13 are shown in the table of lower extremes.

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Total SAS pre-intervention	**.171**	**18**	**.173**	**.939**	**18**	**.279**

Total SAS post-intervention	**.173**	**18**	**.163**	**.889**	**18**	**.037**

a. Lilliefors Significance Correction

General Linear Model

Within-Subjects Factors

Measure: MEASURE_1

Time_PrePost	Dependent Variable
1	**TotSASPre**
2	**TotSASPost**

Between-Subjects Factors

		Value Label	N
Control or experiment	1	**Control**	**9**
	2	**Experimental**	**9**

Descriptive Statistics

	Control or experiment	Mean	Std. Deviation	N
Total SAS pre-intervention	1 Control	**20.00**	**7.159**	**9**
	2 Experimental	**22.22**	**8.729**	**9**
	Total	**21.11**	**7.828**	**18**
Total SAS post-intervention	1 Control	**21.22**	**9.909**	**9**
	2 Experimental	**20.11**	**8.038**	**9**
	Total	**20.67**	**8.772**	**18**

Box's Test of Equality of Covariance Matrices[a]

Box's M	**7.484**

F	**2.157**
df1	**3**
df2	**46080.000**
Sig.	**.091**

Tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups.

a. Design: Intercept + CorE
Within Subjects Design: Time_PrePost

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b]		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Time_PrePost	**1.000**	**.000**	**0**	**.**	**1.000**	**1.000**	**1.000**

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept + CorE
Within Subjects Design: Time_PrePost

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[c]
Time_PrePost	Pillai's Trace	**.007**	**.114[b]**	**1.000**	**16.000**	**.740**	**.007**	**.114**	**.062**
	Wilks' Lambda	**.993**	**.114[b]**	**1.000**	**16.000**	**.740**	**.007**	**.114**	**.062**
	Hotelling's Trace	**.007**	**.114[b]**	**1.000**	**16.000**	**.740**	**.007**	**.114**	**.062**
	Roy's Largest Root	**.007**	**.114[b]**	**1.000**	**16.000**	**.740**	**.007**	**.114**	**.062**

Time_PrePost * CorE	Pillai's Trace	.091	1.605[b]	1.000	16.000	.223	.091	1.605	.222
	Wilks' Lambda	.909	1.605[b]	1.000	16.000	.223	.091	1.605	.222
	Hotelling's Trace	.100	1.605[b]	1.000	16.000	.223	.091	1.605	.222
	Roy's Largest Root	.100	1.605[b]	1.000	16.000	.223	.091	1.605	.222

a. Design: Intercept + CorE

Within Subjects Design: Time_PrePost

b. Exact statistic

c. Computed using alpha = .05

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Time_PrePost	Sphericity Assumed	1.778	1	1.778	.114	.740	.007	.114	.062
	Greenhouse-Geisser	1.778	1.000	1.778	.114	.740	.007	.114	.062
	Huynh-Feldt	1.778	1.000	1.778	.114	.740	.007	.114	.062
	Lower-bound	1.778	1.000	1.778	.114	.740	.007	.114	.062
Time_PrePost * CorE	Sphericity Assumed	25.000	1	25.000	1.605	.223	.091	1.605	.222
	Greenhouse-Geisser	25.000	1.000	25.000	1.605	.223	.091	1.605	.222
	Huynh-Feldt	25.000	1.000	25.000	1.605	.223	.091	1.605	.222
	Lower-bound	25.000	1.000	25.000	1.605	.223	.091	1.605	.222
Error(Time_PrePost)	Sphericity Assumed	249.222	16	15.576					
	Greenhouse-Geisser	249.222	16.000	15.576					
	Huynh-Feldt	249.222	16.000	15.576					
	Lower-bound	249.222	16.000	15.576					

a. Computed using alpha = .05

Tests of Within-Subjects Contrasts

Measure: MEASURE_1

Source	Time_PrePost	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Time_PrePost	Linear	**1.778**	**1**	**1.778**	**.114**	**.740**	**.007**	**.114**	**.062**
Time_PrePost * CorE	Linear	**25.000**	**1**	**25.000**	**1.605**	**.223**	**.091**	**1.605**	**.222**
Error(Time_PrePost)	Linear	**249.222**	**16**	**15.576**					

a. Computed using alpha = .05

Levene's Test of Equality of Error Variances[a]

		Levene Statistic	df1	df2	Sig.
Total SAS pre-intervention	Based on Mean	**.862**	**1**	**16**	**.367**
	Based on Median	**.438**	**1**	**16**	**.517**
	Based on Median and with adjusted df	**.438**	**1**	**15.579**	**.518**
	Based on trimmed mean	**.824**	**1**	**16**	**.377**
Total SAS post-intervention	Based on Mean	**1.834**	**1**	**16**	**.195**
	Based on Median	**.459**	**1**	**16**	**.508**
	Based on Median and with adjusted df	**.459**	**1**	**13.053**	**.510**
	Based on trimmed mean	**1.790**	**1**	**16**	**.200**

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + CorE
Within Subjects Design: Time_PrePost

Tests of Between-Subjects Effects

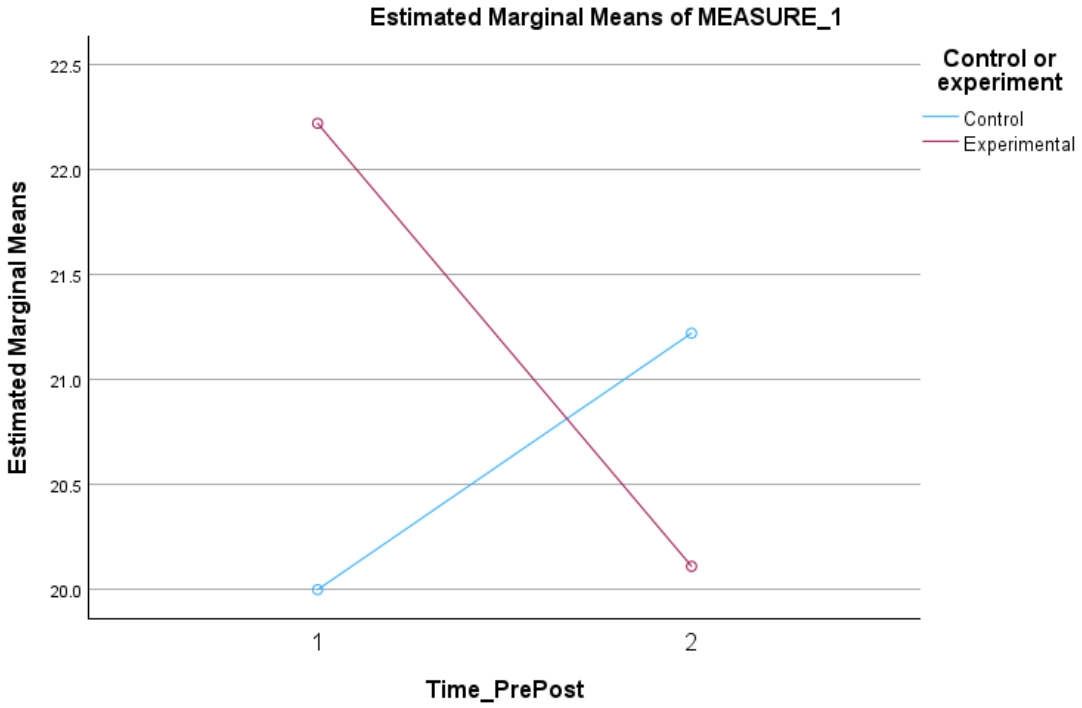
Measure: MEASURE_1
Transformed Variable: Average

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	**15708.444**	**1**	**15708.444**	**121.255**	**<.001**	**.883**	**121.255**	**1.000**

CorE	**2.778**	**1**	**2.778**	**.021**	**.885**	**.001**	**.021**	**.052**
Error	**2072.778**	**16**	**129.549**					

a. Computed using alpha = .05

Profile Plots



7.19 Appendix S: Example interview transcript

Researcher: OK. So thinking back to the first half term of this academic year before you started the intervention, what signs did you or anyone else noticed that the child was experiencing anxiety?

Facilitator: Well, she'd actually verbally communicated that to us, and so had her mum. The impact in school was that attendance was becoming sporadic. She was a frequent late attender and on certain days she was not coming in and some sometimes mum would phone up and say she was ill. But sometimes mum was explaining that it was sheer anxiety that it had made her unable to face the day at school.

Researcher: OK. And have you noticed any changes in the child since they participated in the intervention?

Facilitator: Yes, her attendance has been much more regular.

Researcher: OK.

Facilitator: Also the teacher, had made some accommodations around break time and lunchtime for her because she was finding the playground overwhelming and in since coming back after January, she's also started to take some break times and lunch times outside. And I still meet with her fairly regularly. I just want to in my Elsa role, wanted to keep in touch and make sure she's doing OK.

Researcher: Yeah.

Facilitator: And she seemed quite calm, quite confident. Reasonably content with how things are going at school. I understand from the teacher that she had a little wobble last week. And then when I went to collect her, she wasn't in. But I've spoken with her this week and she seems settled again.

Researcher: OK, good. So it sounds like she's feeling a lot calmer at school, a lot more able to manage the environment with some adjustments, but she's actually going out on the playground a little bit more as well. So she's actually got a bit more of those regulation skills to manage those environments that she was finding really tricky before as well.

Facilitator: Yes. I would say that the progress she's made. Since we started the intervention. In my experience, has been a little unusual compared with other children I've worked with, so she does seem to have sort of found the courage or the wherewithal or the tools to be able to manage much better in school. Yeah.

Researcher: OK. OK. That's really good. Has she shown any signs that she's understanding her emotions anymore?

Facilitator: I think when I started working with her, I found that she was fairly emotionally aware and quite reasonably articulate. Again, compared with a lot of the children that I work with, but one of the issues I think to me, I felt as if she kind of over focused... She was sort of overwhelmed by the negative, the more negative, uncomfortable emotions.

Researcher: OK.

Facilitator: And was beginning to identify as an anxious person. That was, that was how she viewed herself. And I think that's that with the work that we've done, that's what we've tried to make inroads into. And her mom's been really supportive. I've met with her mom as well. She's been brilliant.

Researcher: OK, lovely. And have you had any communication with the class teacher for the child? I know you mentioned that they put some things in place as well.

Facilitator: Yes. Yeah, as far as the class teacher was concerned until the little wobble the other week, this child was performing as well as any other child in the classroom, so she was very pleased with her, giving her lots of positive feedback. She is a teacher who works hard at maintaining communication. I mean, all of our teachers, I think, are very good on the pastoral level. But this teacher in particular is very open door with trying to maintain communication with the children. She'd rather they bring things to her than sit and worry about them or try to solve them in an unhelpful way. So she's very good.

Researcher: OK. Are you aware of any other changes for the child in the classroom, any other strategies that might have been put in place?

Facilitator: I think the teacher has certainly discussed where the child sits in the classroom, they do move around a little for different subjects, but I think they always try to make sure

that this child is not sat with someone that she struggles to connect with or that she finds in any way difficult to socialise with. So she's been put in places where she feels supported by the people around her, so I know that they're doing that, but I think apart from that, she's accessing lessons normally.

Researcher: OK. Yeah, lovely. And the next few questions are more around sort of the implementation and the intervention itself. So starting with what, if anything, do you think has supported the delivery of the intervention?

Facilitator: Supported the delivery.

Researcher: Yeah.

Facilitator: The having the book, obviously, that that was essential. The training was really helpful to give you an insight at the beginning.

Researcher: OK.

Facilitator: One of the things that I would comment on is that just, just, I don't know that you could do anything about it, but when we were on the training, and you had some of those sort of breakout rooms listening to other people's thoughts and ideas was really helpful.

Researcher: Yeah.

Facilitator: And then when I've come to do this in school, I'm isolated with it. So that has been a little bit more challenging, which is why I think the book is particularly helpful because I've been able to follow that pattern and read around it a little bit. And I think my training and experience as an ELSA has helped with that a lot as well because there are aspects of it that I recognise very much from the work I do as an outsider.

Researcher: Yeah. OK. So it sounds like some more maybe opportunities to discuss with other members of staff that are using the same approach across different schools or something could have been useful.

Facilitator: Yes.

Researcher: And sort of setting up that support network, I guess maybe like you have with Elsa supervision, but more specifically around that intervention could have been useful?

Facilitator: Yes, yes. I think when you're new to using it, yes, that that would have been helpful. Or alternatively, because I'm lucky, we do have more than one ELSA in our school. With hindsight, I wish I'd asked if one of the other ELSAs could have taken part as well and then we could have supported each other. So that would also have worked.

Researcher: Yeah. OK, thank you. Is there anything that you think worked particularly well about the intervention for this child?

Facilitator: She is very craft orientated and artistic and I think being able to express her ideas as pictures was really helpful. I think it helped... at the beginning, she found it quite difficult to reflect on, although she would talk about her general feelings, she found it difficult to reflect on actual incidents in school that had provoked anxiety and made it difficult to cope. And at the beginning, when we had picked one event and that's what we were working on with our development of the cartoon. Having to revisit that more than once, she was finding tricky, and she did actually go home and say to her mum at one point I don't want to talk about this anymore and we were able, through a discussion with mum, we were nearly at the end of what we were doing, um got to look at how amazing the artwork was, and it is. It's a fabulous piece of work, really, really lovely. And the first meeting we had was to share that with mum at the end. And I think that gave her impetus to sort of think well, OK, if I finish this, I can share it. I can share it with them.

Researcher: Yeah. OK. So it sounds like it was sometimes a bit overwhelming to consider those situations for too long for her, but the sort of art side, the craft side of it really helped her engage and she was really enjoying that side of it by the sounds of it.

Facilitator: Yes.

Researcher: OK. And what, if anything do you think has been a barrier to the delivery of the intervention?

Facilitator: I think I put in an email to you at the beginning, the videos that we were able to access online, none of them quite fit our circumstances, I felt.

Researcher: OK.

Facilitator: And perhaps that's me not looking at the resources in the right light. And in some ways I think the child access the intervention far better than I did. I was really lucky that she just really ran with it. She was she was very, very good. But it felt as if it was quite orientated towards boys and to avoid towards boys, particularly on the autistic spectrum perhaps.

Researcher: Yeah, yeah.

Interview 2: And I think this little girl may have ADD elements, but I'm no expert, but I wouldn't myself see her on the autistic spectrum. I guess we're all on there somewhere, aren't we? But. So I think at the beginning it would have been nice to have artwork that felt more relevant to the child and also there were examples in the book of cartoons other children had drawn, and again it was um, some of those were a little bit hard to unpick. Both, because I'm doing it now with the other child, the control child and both of them have looked at the cartoons and even though they haven't identified with them, they kind of appreciated what the other child was trying to say. So that's been nice in that way. So whether that was our selection that she didn't quite fit the category that this intervention is aimed at. Because I know you mentioned difficulty with social communication, and I think she's quite articulate. She's reasonably emotionally aware. Her difficulty was bringing that to bear on her own circumstances. So I guess the cartoon was the way of looking at it without feeling it personally, perhaps.

Researcher: Yeah. OK. So it sounds like actually social communication wasn't as much of an area of difficulty for her, which I guess a lot of the examples that you mentioned in the videos are more targeted for children with those needs.

Facilitator: Yes, they are for children who struggle to find their words. I think yes.

Researcher: Yeah, yeah. So I can see how that might not have married. It sounds like she still engaged with it and went with it herself. But having a more relevant and representative example for her would have been useful?

Facilitator: Yes. Yeah.

Researcher: OK. So is there anything that you think didn't work very well about the intervention for the child, apart from the sort of video examples and resources that you mentioned?

Facilitator: Um, no, I think she... what helped. I'm struggling more with the second child. The first child very much felt strongly about what environment she wanted to work in. So you talk about imagining the headspace as a particular type of environment. And in the past she's been quite theatrical, something she doesn't do so much of now, but she's sort of danced and performed on stage. So she went with the stage setting. And so the characters she used for her, her homunculi, were all linked with that. And she just... I think having got that hook, that reach really, really well for her. So if I use this again I think I will spend longer before I start the intervention working with the child so that I can get a sense of what might

be a good hook for them because I think in the time frame we were working in, reflecting back on it, I was really lucky that that she had that idea and she developed the little characters and they link themselves to... It was really logical, sort of the way that she sort of developed these kind of characters and it sort of worked, made a lot of sense and worked really well I think.

Researcher: Yeah, OK. That's lovely. So it sounds like having a kind of key interest or key area that they can link to and connect with has really helped that young person engage with the intervention.

Facilitator: Yes, I think with the second one, it's my gap. It's me not being, if they don't develop that idea quickly themselves, I think my lack of experience in this with this particular intervention hinders me a little bit with helping them find the right hook for them. that will set the whole thing flowing. So I think that possibly was the issue.

Researcher: Mm. It sounds like having some time to get to know the child and their interests before beginning the programme could be useful?

Facilitator: One of the things we did do was once we've made our selection of children and the first child was selected, because we have had issues with children who have emotionally based school avoidance issues and we could see this developing with her. That's where we thought it might be going and we were keen to intervene. So once we kind of decided that she would probably be in, in our project I started ELSA one to one before, so I had two or three opportunities to chat with her. She also happens. I used to be an LSA as well, and she

happens to be a child who a couple of years ago I was in her classroom as well. So we have that contact. We knew each other from that setting. So definitely, I think if you're working with a child, you've had no contact with before, it would make sense to have a number of weeks so that you feel, yes, I think we can run with this now and then you're better able to support and guide the child then I think.

Researcher: Perfect. Thank you. Do you have any sort of further comments or on any changes that you've perceived for the child or the impact of the intervention in general?

Facilitator: Um... I would have from a from a personal point of view, I would have liked the opportunity, I think, to use that technique again to look at some of the other difficulties or the challenges that the child has and to do more work sharing with mum, because I think a parent's understanding of CBT and what it's about and the fact that actually we use it in a lot of ways, in everyday life all the time, we just don't realise we're doing it. And if you read anything about good parenting, a lot of that is CBT based. So I think giving parents that reassurance and helping them expand their toolkit has to be a good way forward as well. But we just felt for this little girl because she'd expressed concern midway through the intervention about finding it too tricky. I've deliberately stepped back and we're just doing ELSA one to one. We're just having general chats about her days, her weeks, how they're going and doing some little art projects and craft projects that interest her. But long term, I would be interested to revisit some other aspect of her anxiety using the same intervention and see if we can strengthen it even further. She's with us for another, she's in year five at the moment, so we've got another 12 months and that transition to secondary school is

such a challenging one, you know, for any child. But for children with any sort of additional issues, it's a big deal. So as much as we can do before they move up, we're keen to do.

Researcher: Yeah, yeah. So it sounds like having just more time and more opportunities to look at a variety of different things that the child might be struggling with would be useful. And even if you did more weeks and they were spread over more time, you had a bit of a break from it and then you came back to it. You think that would be really useful as well?

Facilitator: Hmm. Yes. And there are other children that I've worked with who are now in year six and I think we're sadly out of time. But for those children, when I'd started working with them earlier, it could have had over sort of two or three years, it could have had quite an impact. It could have been a way in to help unpick some of what goes on because that's what children struggle with. Isn't it? Kind of like working out for themselves exactly what's happening and then finding a way to express it. So I think the artistic element of this is really useful. I like that.

Researcher: OK, perfect. Thank you so much. I'm going to stop the recording there.

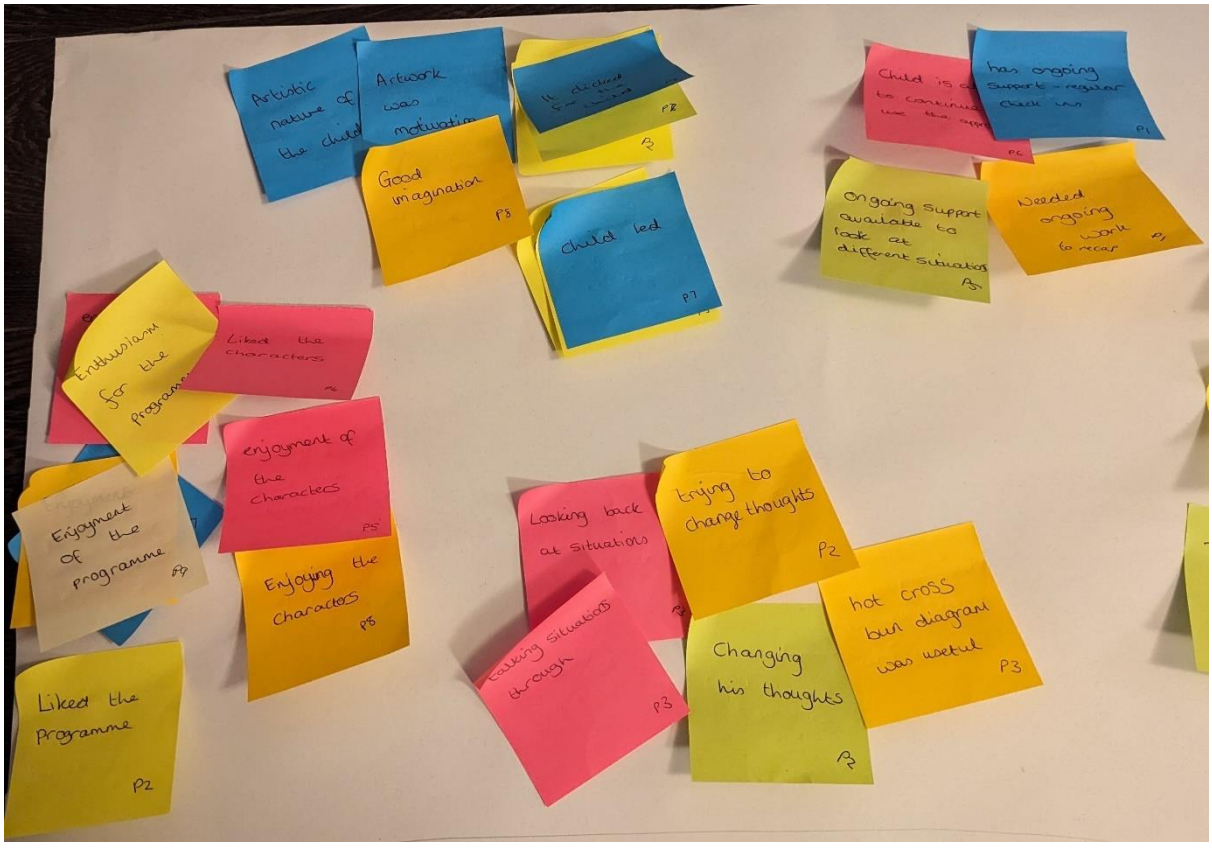
7.20 Appendix T: Thematic analysis pictures

Searching for themes:

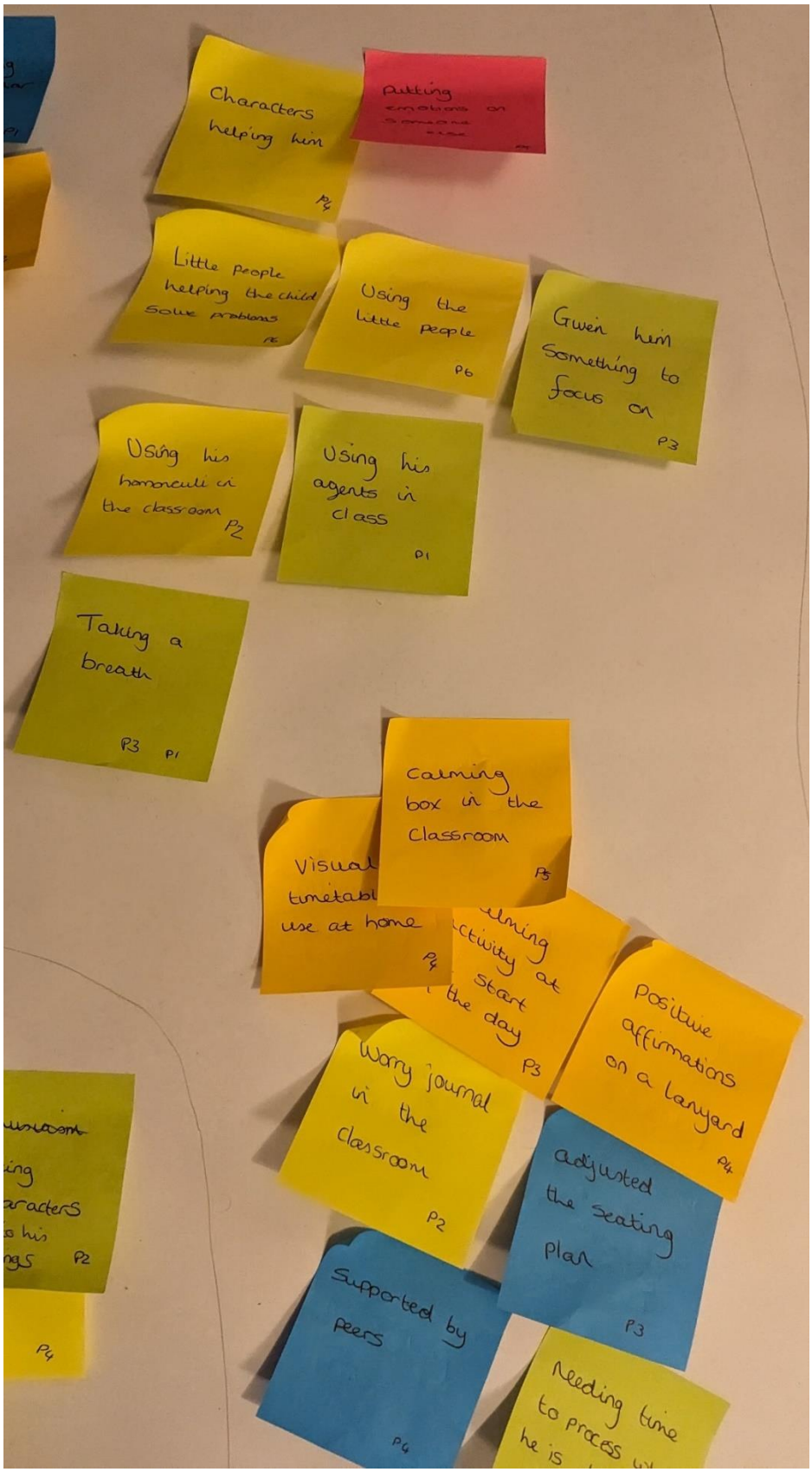
Reviewing themes:

Outcomes of the intervention:

Factors influencing the changes made:

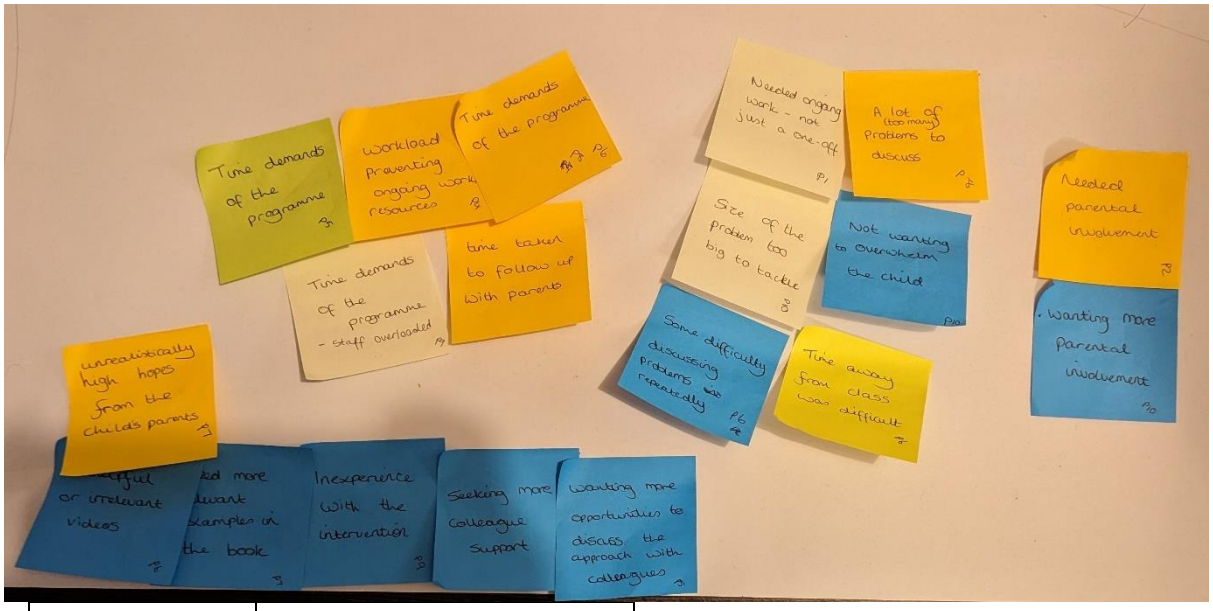


Further factors influencing the changes made:



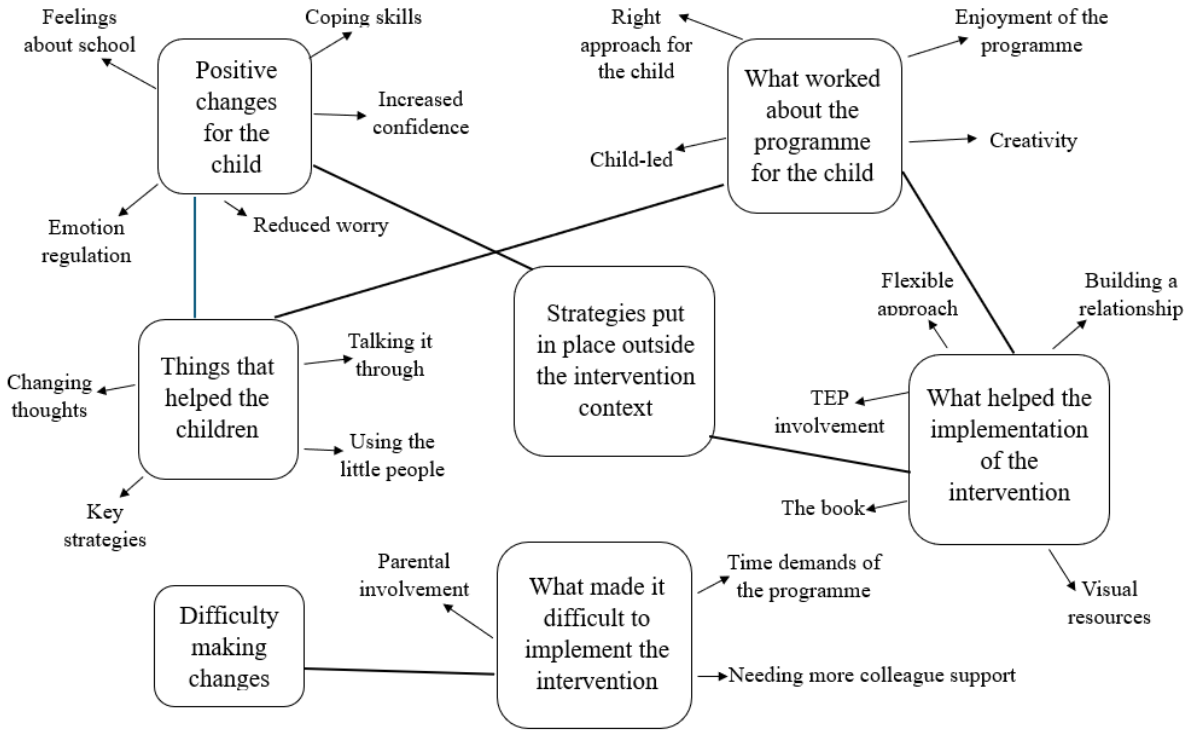
What helped the implementation of the intervention:

What hindered the implementation of the intervention:

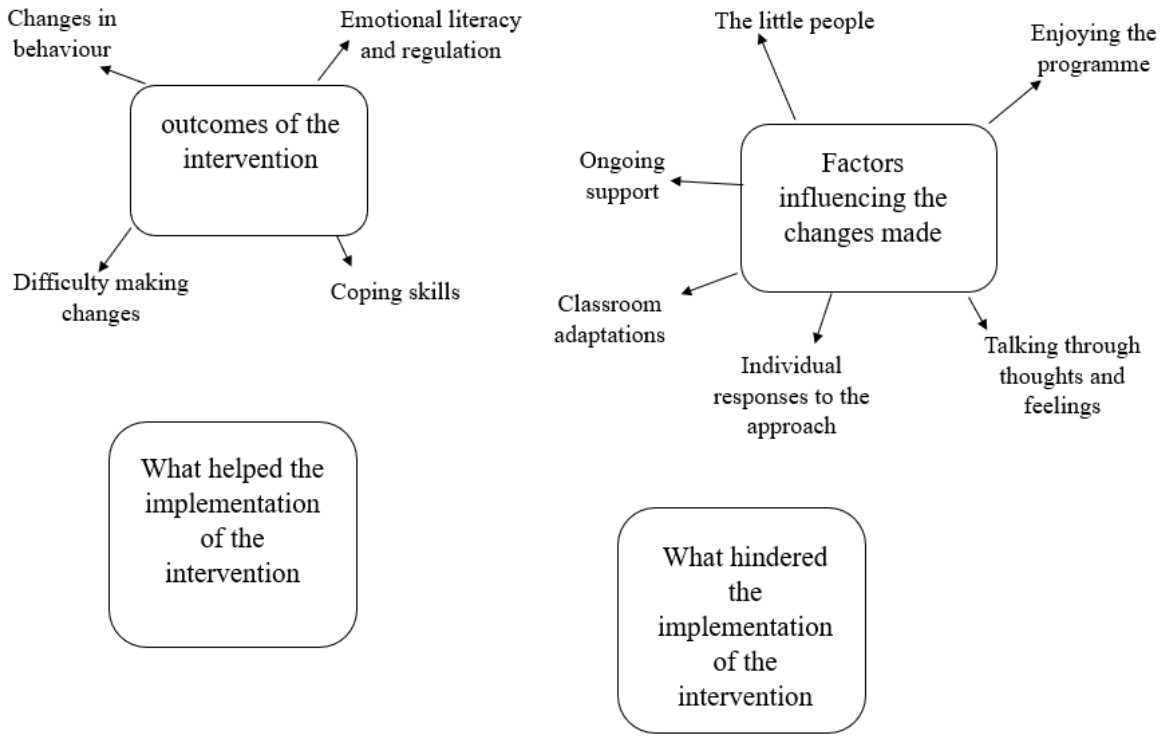


Key	Post-it colour
Participant 1	Pink
Participant 2	Blue
Participant 3	Bright yellow
Participant 4	Green
Participant 5	Orange and pale yellow

7.21 Appendix U: First thematic map



7.22 Appendix V: Second thematic map



7.23 Appendix W: Table of final themes and codes

Main themes	Subthemes	Codes
Perceived outcomes of the intervention	Changes in behaviour	-more comfortable in unstructured times and social situations -improved attendance -more content with school -improvements coming into school -excited about school -happier coming into school -more comfortable with unfamiliar peers -more confident -reduced separation anxiety -more able to cope with the unexpected -contributing more in class -increased confidence around school
	Emotional literacy and regulation	-thinking about emotions more -has tools to better manage anxiety inducing situations -views herself as less anxious -improved self-regulation skills -understanding emotions more -feeling less worried -feeling more settled -creating characters linked to his feelings -he knows he can work through things -understanding the link between thoughts and feelings -linking thoughts and feelings
	Difficulty making changes	-not developed problem solving skills -difficulties discussing the same problem repeatedly -difficulty changing thoughts
Possible factors contributing to the impact of the intervention	The little people	-putting emotions on someone else -using his homunculi in the classroom -characters helping him -little people helping him solve problems -agents telling him he can do it -given him something to focus on
	Individual responses to the approach	-made sense to him -enthusiasm for the programme -invested in the characters -enjoyed the characters -child led -it clicked for the child -linked to personal interests -liked the programme

		-enjoyment of the programme -good imagination -enjoying the characters
	Talking about thoughts and feelings	-looking back at situations -talking situations through -helped to understand what had happened and why -trying to change thoughts
	Ongoing support	-the child is able to continue to use the approach -has regular check-ins -ongoing support available to look at different situations -needed ongoing work to recap
	Classroom adaptations	-adjusted the seating plan -supportive class teacher -supported by peers -worry journal in the classroom -hiding in a tent -needing time to process what he is being asked -calming activity at the start of the day -visual timetable to use at home -positive affirmations on a lanyard -calming box in the classroom
Possible factors impacting the implementation of the intervention	TEP input	-training session was helpful -provided the opportunity to discuss with colleagues -value of the training session -access to support from the TEP
	Resources provided	-the book was useful -irrelevant videos -need more relevant examples in the book -videos were helpful -visual resources -creating characters and tools visually
	Time intensity of the programme	-time away from class difficult -time demands of the programme -taking time to settle into each session -facilitator managing workload