An Evaluation of the Homunculi Approach as an Intervention for Pupils with Autism Spectrum experiencing Anxiety

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Abstract

Young people with Autism Spectrum (AS) are a population at risk of experiencing Mental Health Problems (MHPs); with anxiety being the most commonly reported internalising MHP for this population (Skokauskas & Gallagher, 2012). Schools have been identified as well placed to support pupils experiencing MHPs (DoH & DfE, 2017). The primary aim of the present research was to evaluate the Homunculi Approach (Greig & MacKay, 2013b) as an intervention for secondary aged pupils with AS experiencing anxiety. The secondary aim of the research was to explore factors affecting implementation of the Homunculi Approach. An embedded mixed methods design was utilised where the primary research aim (Phase 1) was supplemented by the secondary research aim (Phase 2).

Phase 1 consisted of an A-B single case experimental design (SCED) with four participants across four different secondary schools. Anxiety was measured through: repeated behavioural observations and a weekly anxiety questionnaire (PI-ED); pre and post intervention measures, completed by the young people, parents and teachers (SCAS, SAS-TF and SDQ); and measures which occur organically within the Homunculi Approach intervention.

Phase 2 of the research explored the factors which affected implementation of the intervention in schools by interviewing the school staff who delivered the Homunculi Approach. The data was collected using an activity theory framework.

The findings from the research indicated the intervention was effective in reducing anxiety for two participants, and ineffective in reducing anxiety for the other two participants. Several implementation factors were identified which may have impacted on the effectiveness of the Homunculi Approach when delivered by members of school staff in secondary schools. The findings are discussed in relation to the literature. Limitations of the research, such as the small sample size and possible impact of external factors, are acknowledged. Possible implications and ideas for future research are presented.

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Glossary

Abbreviation	Description
AS	Autism Spectrum
CAMHS	Children and Adolescent Mental Health Service
CBT	Cognitive-Behaviour Therapy
DV	Dependent Variable
EF	Executive Function
EP	Educational Psychologist
IV	Independent Variable
LA	Local Authority
MHP	Mental Health Problems
RCI	Reliable Change Index
RCT	Randomised Control Trial
SCED	Single Case Experimental Design
SEN	Special Educational Needs
SENCO	Special Educational Needs Co-Ordinator
TA	Teaching Assistant
TEP	Trainee Educational Psychologist
TOM	Theory of Mind
WCC	Weak Central Coherence

1. Introduction

This chapter sets out both the context of the research and its aims. The relevant terms are considered relative to literature.

1.1. Mental Health Context

The mental wellbeing of young people is of topical concern in schools due to the increasing number of young people experiencing Mental Health Problems (MHPs) (Collishaw, Maughan, Goodman & Pickles, 2004; Hagell, Coleman & Brooks, 2012). In 2016, government guidelines regarding mental health and behaviour in schools emphasised schools should be "alert to emerging difficulties and respond early", and identify clear ways in which young people with MHPs should be supported (DfE, 2016). In 2017, the Prime Minister unveiled plans for all secondary schools to receive training in mental health first aid (DoH & DfE, 2017). Research suggests, however, that although teachers recognise they should be involved in supporting pupils' mental health, they feel inadequately trained to do so (Reinke, Stormont, Herman, Puri & Goel, 2011; Rothi, Leavey & Best, 2008). It is therefore important schools have a good understanding of interventions which can support a pupil's mental wellbeing.

Factors which may increase a young person's risk of experiencing MHPs have been identified in the literature (DfES, 2001). By way of example, one risk factor is adolescence. Adolescents are more likely to experience MHPs than other age groups, and it has been theorised this may be due to significant changes in the brain at around this age (Kim-Cohen et al., 2003; Paus, Keshavan & Giedd, 2008). In addition, there are several populations, such as young people with Autism Spectrum (AS), who are more vulnerable to experiencing MHPs (National Institute for Health and Clinical Excellence (NICE), 2013).

1.2. Researcher's Interest

The researcher's personal interest in mental health began whilst working as a Learning Mentor in an inner city school in the West Midlands. The researcher found a number of pupils were experiencing MHPs, such as: self-harm; anxiety and; eating disorders. As a member of staff, the researcher felt she would have benefitted from training in evidence based interventions supporting young people experiencing MHPs. During the Applied Educational Psychology Doctoral programme the researcher

became aware of a variety of interventions which can support young people experiencing MHPs. The researcher was motivated to pass on appropriate knowledge to school staff so that they felt better able to support the young people they were working with.

The researcher developed a particular interest in young people with AS during her time as a Trainee Educational Psychologist (TEP). She became increasingly aware of the numerous challenges young people with AS encounter which increase their risk of experiencing MHPs (NICE, 2013). This awareness motivated the researcher to explore in greater depth interventions which might be able to support young people with AS in schools.

1.3. Contribution to the Local Authority (LA)

The LA with which the researcher was on placement during the Doctoral Programme, had implemented a Cognitive-Behavioural Therapy (CBT) intervention designed specifically for pupils with AS, called the Homunculi Approach, across several schools. Educational Psychologists (EPs) had either delivered the Homunculi Approach directly to the pupil or had trained staff to do so. The LA welcomed the researcher evaluating the Homunculi Approach to ensure EPs are recommending and delivering evidence-based interventions (Dunsmuir, Brown, Iyadurai & Monsen, 2009).

1.4. Aim of the Research

The aim of the research is to evaluate the effectiveness of the Homunculi Approach as an intervention tool to reduce anxiety in adolescents with AS when delivered by school staff. The Homunculi Approach is a 10 week CBT intervention designed specifically for pupils with AS and can be delivered by anyone (Greig & MacKay, 2013b). Evaluation research of the Homunculi Approach is currently limited to studies conducted by the founders of the intervention and research conducted with primary-aged pupils (Greig & MacKay, 2005; Downing, 2015), where the intervention has been delivered by EPs or TEPs. There has not yet been any research conducted to evaluate the Homunculi Approach when delivered by school staff.

In light of schools having been identified as being well positioned to support young people experiencing MHPs (i.e DoH & DfE, 2017) the secondary aim of the research is to explore the factors which affect the implementation of therapeutic

interventions in schools. This is achieved by interviewing school staff who delivered the Homunculi Approach.

1.5. Note on Terminology

1.5.1. Autism

There has been debate regarding the term which should be used when referring to individuals with an autism diagnosis. Within the literature, the most commonly used term is "Autism Spectrum Disorder" (ASD) in line with the Diagnostic Statistical Manual Criteria (DSM-IV; American Psychiatric Association (APA), 2013) diagnostic criteria. The term "autism-spectrum condition" (ASC) has been favoured by Baron-Cohen et al. (2009) as the author felt this reflected that individuals with autism have areas of cognitive strength rather than viewing autism as a disability. A recent survey asked individuals with autism, their families and professionals to comment on their preferred term. The majority of participants preferred the term "autism spectrum" (AS) to ASD or ASC (Kenny et al., 2016). The researcher decided to use the term "Autism Spectrum" throughout the thesis in line with the preferences of those surveyed. The term 'Autism' will also be used interchangeably throughout the research, as required.

1.5.2. Mental Health Problem

There is no universal definition of what constitutes a MHP in the literature. Keyes (2002) posited mental health can be viewed as being on a continuum ranging from "flourishing", where a person experiences positive feelings and has the resilience to cope with the challenges of life, to "languishing", where a person is more likely to experience MHPs and experience difficulties functioning in life (Rutter, 1990). Dogra, Parkin, Gale and Fake (2002) also acknowledged that mental health lies on a continuum. They argued, however, the precise threshold where a young person moves from positive mental health to mental ill-health is unclear. The Department for Children, Schools and Families and the Department of Health (DCSF, DoH, 2008) defines a MHP as a condition associated with "considerable distress and substantial interference with personal functions, such as family and social relationships, their capacity to cope with day to day stresses and life challenges and their learning" (p.20). It is this definition which is used in the present research.

1.6. Overview of the Research

The research is structured across 4 further chapters:

Chapter 2: The *Literature Review* provides a background to the relevant research. This includes: an introduction to AS; exploration of MHPs experienced by the AS population and; identification of interventions to support young people with AS experiencing anxiety. The research questions are subsequently presented.

Chapter 3: The *Methodology* considers alternative paradigms and designs before presenting the methods adhered to in the current research. This chapter is subsequently divided into Phase 1, to address the primary research question and, Phase 2, to address the secondary research question. Ethical issues and threats to reliability and validity are discussed.

Chapter 4: The *Results* is structured by considering methods of data analysis before presenting the analysis and results from Phase 1. Phase 2 results follow and a summary of the findings is set out.

Chapter 5: The *Discussion* summarises the findings in light of the literature. The limitations of the research are acknowledged and implications for future research are presented.

2. Literature Review

The following section explores the research relevant to the topic area. The role of EPs in the current context of mental health is set out. The literature review which follows focuses specifically on Autism and the prevalence of MHPs experienced within this population. The effectiveness of therapeutic interventions, in particular CBT interventions, which aim to support young people with AS experiencing anxiety are subsequently explored.

2.1. The Role of the Educational Psychologist within the Current Context

Whilst schools have been identified as suitable settings in which to support young people experiencing MHPs school staff do not feel confident in providing appropriate support to young people with MHPs (DoH & DfE, 2017; Rothi et al., 2008). Although specialist mental health services, such as Child and Adolescent Mental Health Service (CAMHS), are available to support young people experiencing severe MHPs nearly one quarter of young people are turned away from specialist mental health services as they do not meet the criteria (Frith, 2016). Additionally, CAMHS often operates through a clinic based approach. For young people with AS, developing a relationship with a therapist can be challenging due to social and communication difficulties (VanBergeijk, Klin & Volkmar, 2008).

Educational Psychologists (EPs) are well placed to support school staff in addressing the mental health needs of young people who do not meet the criteria for specialist mental health services. MacKay (2008) identified that EPs often lack the resources, such as time, to carry out therapeutic interventions to support young people's emotional wellbeing. The literature suggests EPs should use their expertise to assist school staff who work closely with young people (Gutkin & Conoley, 1990). EPs are well placed to deliver training to school staff in evidence based approaches and support implementation through ongoing supervision (Rait, Monsen & Squires, 2010; Reinke et al., 2011; Yeo & Choi, 2011). A benefit of EPs training and supporting school staff to deliver interventions is that EPs can have an impact on larger pupil populations (Yeo & Choi, 2011). A concern is whether the training can be implemented in practice as school systems may not be set up in a manner which is

conducive to staff delivering therapeutic interventions (Finney, 2006). In summary, there is currently a need for school staff to receive training and support relating to evidence-based interventions for pupils experiencing MHPs and EPs appear well placed to meet this need.

2.2. Autism

A population vulnerable to experiencing MHPs is young people with AS. A brief history of Autism is set out below followed by an exploration of the prevalence, cause and psychological theories of Autism.

2.2.1. History of Autism

In 1943, Leo Kanner, a child psychiatrist, first used the term "Autism" following observations of 11 children who presented similarly. The children displayed difficulties relating to others around them, a desire for sameness and dislike to changes in their environment. Conversely, the children exhibited behaviours which appeared remarkable given their deficits, such as being able to count to 100 at a young age (Kanner, 1943; Frith, 1993).

Around the same time, although independently, Hans Asperger (1944) used the term "Autism" to refer to young people displaying similar behaviours. Additionally, he coined the term "Asperger's Syndrome" to refer to a select group of young people he called "little professors". Whilst this group were able to talk about their area of interest for prolonged periods of time they experienced difficulties with social skills. The seminal case studies presented by Kanner (1943) and Asperger (1944) continue to be relevant today as they accurately reflect the presentation of young people with AS.

2.2.2. Diagnostic Criteria

Autism is a neurodevelopmental condition commonly characterised by a triad of impairments which include: a lack of flexibility in thought and behaviour; impaired social interaction and; deficits in social communication (Wing & Gould, 1979, see Figure 2.1.). At one time, several different diagnoses fell under the pervasive developmental disorder umbrella within the DSM-IV (APA, 2000), which included: Autistic Disorder; Asperger's Disorder; Pervasive Developmental Disorder and;

Childhood Disintegrative Disorder. Most recently, however, the DSM-V has combined these subtypes of Autism into one sole diagnosis of ASD (APA, 2013).

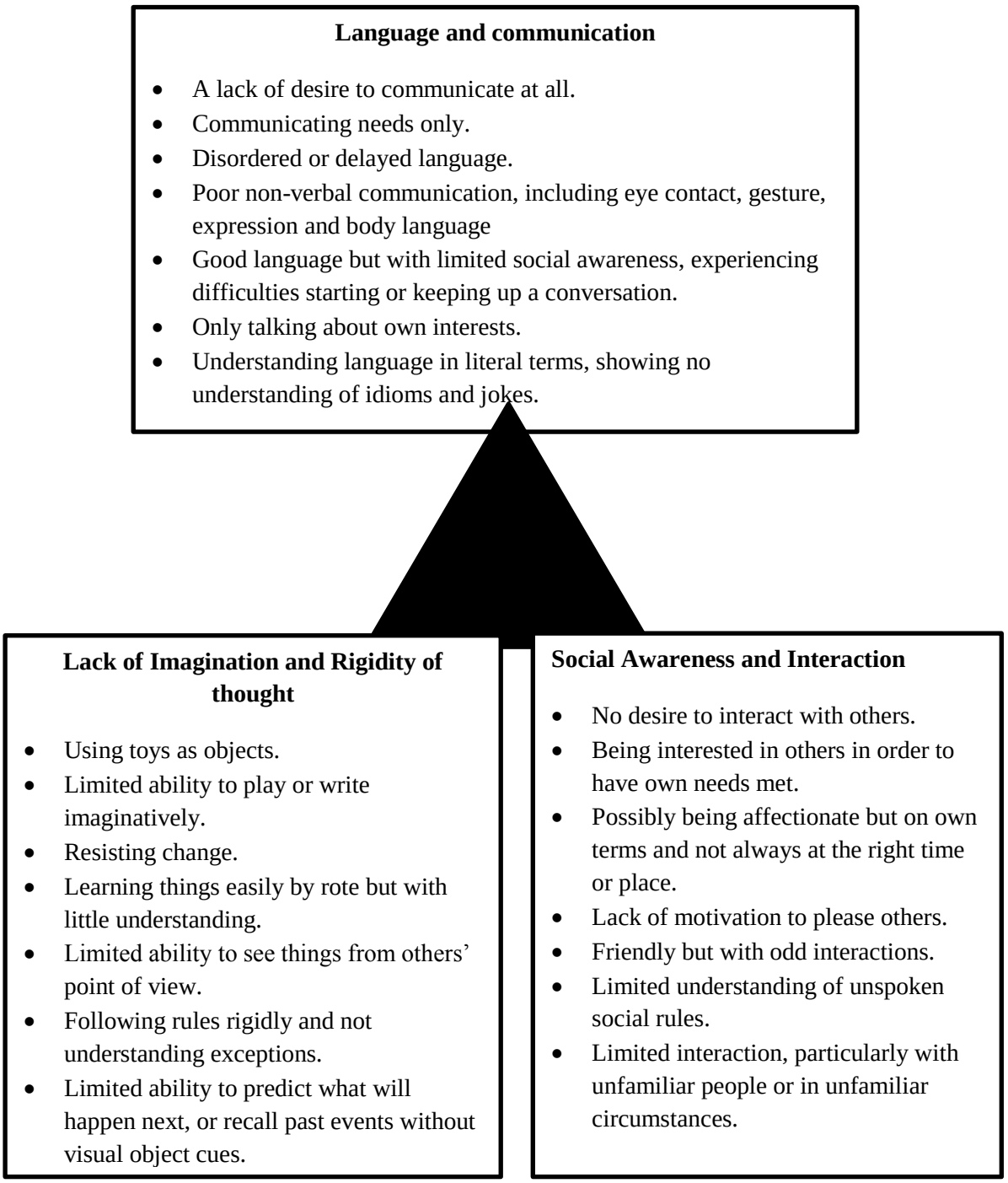


Figure 2.1: The Triad of Impairments. Adapted from Hannah (2011) and Ali and Frederickson (2006)

This change in diagnostic categorisation reflects the concept that autism lies on a spectrum. The spectrum ranges from a severe deficit in verbal and non-verbal communication to a mild lack of interest in social interactions with average or above average levels of intelligence (Frith, 2003). The criteria within the DSM-V for ASD include:

1. Persistent deficits in social communication and social interaction across multiple contexts,
2. Restricted, repetitive patterns of behaviour, interests, or activities,
3. Symptoms must be present in the early developmental period (but may not become fully manifested until social demands exceed limited capacities, or may be masked by learned strategies in later life).
4. Symptoms cause clinically significant impairment in social, occupational, or other important areas of current functioning.
5. These disturbances are not better explained by intellectual disability (intellectual developmental disorder) or global developmental delay (APA, 2013).

2.2.3. Causes and Prevalence of Autism

Despite extensive research, there is no known cause of Autism (Newschaffer et al., 2007). It is commonly recognised, however, that there is a genetic basis for Autism and it is likely a biological mechanism is involved in its development (Lewis, 2002). Ratajczak (2011) reviewed the possible environmental and biological causes of Autism and suggested in addition to its potential genetic basis, brain inflammation and parents conceiving children at an older age are additional contributory factors underlying the prevalence of Autism. Brain inflammation may be caused by, for example, a premature birth, a defective placenta or the immune response of the mother to an infection (Ratajczak, 2011).

Epidemiological studies suggest in the U.K. approximately 150 out of 100,000 children aged 5 to 16 have Autism (Baron-Cohen et al., 2009); this equates to approximately 1% of all children aged 2 to 18. Furthermore, Autism affects four times as many males as females (Ratajczak, 2011). The number of young people identified with Autism initially increased throughout the last few decades although in recent

years the number has stabilised (Baron-Cohen, Leslie & Frith, 1985). It is thought that the increase in the 1990's was associated with broadening of diagnostic criteria and an increase in public awareness of Autism (Taylor, Jick & MacLaughlin, 2013).

2.2.4. Psychological Theories of Autism

There are several theoretical perspectives, discussed below, which have been identified to further clarify the differences between individuals with AS and typically developing individuals.

2.2.4.1. Theory of Mind

Theory of Mind (ToM) refers to the metacognitive process of understanding other people's mental states (Premack & Woodruff, 1978). Frith (1989) argued it is ToM which allows individuals to "mind read"; to understand that other people have their own beliefs and wishes which may be different to our own.

Wimmer and Perner (1983) found that children without AS typically develop ToM by 4 years old. Interestingly, however, research suggests that 4 year olds with AS are much less accurate in successfully completing tasks which require ToM, when compared to children with other developmental disorders and neuro-typical children (Baron-Cohen et al., 1985). Similar results have consistently been found within the literature (i.e. Baron-Cohen, Wheelwright, Hill, Raste & Plumb, 2001).

A converse presentation of ToM deficits has been found in adults without AS who are experiencing social anxiety (Hezel & McNally, 2014). Participants were found to attribute greater emotion and greater meaning to what they thought others were feeling and thinking than adults without social anxiety. Generally speaking, a deficit in ToM can affect an individual's understanding of jokes, other's intentions and feelings as well as understanding novels and films when it is necessary to be aware of what a character might be thinking (Frith, 1989).

2.2.4.2. The Weak Central Coherence theory

Individuals with AS tend to show a preference for local rather than global processing; hindering them from "seeing the bigger picture" (Frith, 1989). This preference is known as Weak Central Coherence (WCC) (Baron-Cohen, 2002). The

capacity to function appropriately in social scenarios requires individuals to integrate local details, such as facial expressions and context dependent language, to form a global picture (Burnette et al., 2005). The WCC theory, therefore, may provide an explanation for social difficulties faced by individuals with AS.

Supporting evidence for the WCC theory has been found by numerous researchers. For example, Happé (1997) found individuals with AS did not use the context provided by a preceding sentence to predict how to read homophones in a following sentence. This finding suggests individuals with AS display a preference for viewing the individual components rather than viewing the information holistically. Furthermore, using the embedded figures task, where children are required to find a hidden figure within a larger meaningful picture, children with AS were superior to children in the control group (Shah & Frith, 1983). This indicated children with AS disregarded the context and instead focused on the individual parts.

Mood may also affect central coherence as typically developing adults are more likely to display a global bias if they have high levels of optimism and positive mood and a local bias if they have low mood (Basso, Schefft, Ris & Dember, 1996). A study which explored the possible link between local-global processing and anxiety, however, found no link between anxiety levels in children with AS and their score on the WCC task (Burnette et al., 2005). The authors acknowledged that solely using self-report measures to explore anxiety levels may have reduced the reliability of the research.

2.2.4.3. Executive Dysfunction

The executive dysfunction theory was initially posited to explain why individuals with AS displayed a preference for sameness and routine (Baron-Cohen, 2004). Executive functioning (EF) is the cognitive construct used to describe goal-directed, future-oriented behaviours, such as planning and organising, and is thought to be mediated by the frontal lobes (Duncan, 1986). A further aspect of EF is the ability to be flexible in thought and action, which is a core deficit for individuals with AS (Wallace et al., 2016).

Executive dysfunction has been found in individuals with AS (Rumsey, 1985), although there are many individuals with AS who display no executive functioning

difficulties (Baron-Cohen, Wheelwright, Stone & Rutherford, 1999). Similar to the WCC theory, mental wellbeing has been proposed as a possible link between EF difficulties and individuals with AS. For instance, inflexibility in individuals with AS has been linked to increased levels of anxiety (Strutt, Campbell & Burke, 2014). More research may be required to explore these links in greater depth and to explore whether interventions to support EF might influence psychological wellbeing in young people with AS.

2.2.4.4. The Empathising-Systemising Theory

The empathising-systemising theory is based upon the finding that individuals with AS have deficits in empathising, yet their ability to systemise is within the average or above average range. Baron-Cohen (2009) argued the discrepancy between an individual's ability to empathise and their ability to systemise is what determines an individual's likelihood of having AS. This theory has been criticised, for example, by Buchen (2011) who argued that much of Baron-Cohen's research was conducted with individuals with high-functioning AS. Baron-Cohen (2009) explained that the theory is applicable to low functioning individuals with AS who often show strengths in systemising, for example, by lining up objects (environmental systemising) or tapping repeatedly (sensory systemising).

In relation to mental wellbeing, anxiety levels have been associated with divergent empathising and systemising tendencies. Strutt and colleagues (2014) found participants with high anxiety without AS were more likely to demonstrate high systemising and low empathising tendencies whereas those with lower levels of anxiety were more likely to demonstrate a balance between systemising and empathising. The high anxiety group also displayed higher levels of AS traits in comparison to the low anxiety group. It is difficult to determine whether participants with anxiety are more likely to display AS traits to cope with their anxiety, such as systemising, or whether participants with AS traits are more likely to display anxiety due to the social difficulties they encounter.

2.2.5. Summary

In summary, Autism has been a recognised condition since 1943. Approximately 1% of children have received a diagnosis of Autism (Baron-Cohen et

al., 2009). The features of Autism can be characterised by a triad of impairments including: a lack of flexibility in thought and behaviour; impaired social interaction and; deficits in social communication (Wing & Gould, 1979). There are both biological and psychological theories to explain the causes and features of Autism. Within the psychological paradigm, there are four central theories which attempt to explain the differences between individuals with and without AS. Research suggests similar difficulties may be experienced by those without AS who are experiencing MHPs, such as anxiety.

2.3. MHPs and Autism

This section gives an overview of MHPs experienced within the AS population followed by a focus on anxiety which is the most prevalent MHP experienced by the AS population (Skokauskas & Gallagher, 2012). The term anxiety, in relation to the literature, is defined and research regarding how anxiety can present itself for young people with AS is set out.

2.3.1. MHPs in the AS Population

The prevalence of MHPs is considerably higher in the AS population compared to the general population. Statistics indicate approximately 70% of young people with AS will experience a MHP (NICE, 2013; Simonoff et al., 2008). The most common diagnoses include Attention Deficit Hyperactivity Disorder (ADHD), Oppositional Defiant Disorder (ODD) and anxiety. High rates of MHPs within the AS population have been found to continue into adulthood (Hofvander et al., 2009).

Identified protective factors to reduce the risk of experiencing MHPs at an individual level include: good communication skills; being able to plan and; being able to reflect (MHF, 1999). These abilities may be inherently challenging for individuals with AS who have difficulties with social interaction and communication. Researchers have described individuals with AS as being more vulnerable to stress due to having a restricted repertoire of appropriate coping mechanisms (Groden et al., 2001). The risk of individuals with AS experiencing MHPs is exacerbated by them being more likely to experience stressful life events such as unemployment, bullying and difficulties forming long term relationships (Hofvander et al., 2009).

2.3.2. Anxiety

Anxiety is a normal emotion individuals experience, for example, feeling fearful or worried (Bell-Dolan, Last & Strauss, 1990). Anxiety is the brain's response to danger and can be adaptive in many scenarios in order to avoid dangerous situations (Beesdo, Knappe & Pine, 2009). Children naturally experience different anxieties at various stages of development, for example, separation anxiety is common in infants between 7 and 9 months old (Schaffer & Emerson, 1964). When anxiety persists and interferes in daily functioning it can become a diagnosable condition (Roth & Fogarty, 2005). Similar to other MHPs, anxiety tends to develop during childhood and adolescence with approximately 10% of young people being diagnosed with an anxiety disorder by the age of 16 (Beesdo et al., 2009; Costello, Mustillo, Erkanli, Keeler & Angold, 2003). Additionally, females are more likely to experience anxiety than males with a ratio of approximately 2:1 or 3:1 during adolescence (Wittchen, Nelson & Lachner, 1998).

The concept of anxiety has been defined categorically, through the DSM-IV criteria, and dimensionally, by viewing anxiety as on a continuum (Keyes, 2002). Using a categorical perspective, anxiety becomes a diagnosable condition if an individual reaches a certain threshold. There are various subtypes within the DSM-V and International Classification of Diseases-10 (ICD-10), including separation anxiety disorder and social phobia. Anxiety disorders in young people use the same diagnostic criteria as for adults. Fewer symptoms are required, however, for young people to receive a diagnosis (APA, 2013; WHO, 1992). This diagnostic approach has been criticised for not taking into consideration how symptomology may vary depending on the developmental phase of the young person (Beesdo et al., 2009). Furthermore, it does not take into account an individual's experiences and their personal circumstances.

Anxiety has also been viewed from a dimensional perspective where anxiety is seen as on a continuum (Keyes, 2002). A dimensional perspective overcomes the challenges of attempting to define psychological constructs, such as anxiety, particularly as there is often an overlap of symptoms between various MHP's, e.g. anxiety has high rates of comorbidity with depression (Watson, 2005; Wigesworth, Humphrey, Kalambouka & Lendrum, 2010). The dimensional perspective views the

person as an individual, taking into account their experiences, rather than trying to fit them into a specific category (Tew, 2005). A dimensional definition of anxiety is referred to in the present research.

2.3.3. Anxiety in the AS Population

Anxiety is frequently the most commonly reported internalising MHPs for young people with AS (Skokauskas & Gallagher, 2012). Approximately 40% of young people with AS have been found to experience anxiety (Simonoff et al., 2008; van Steensel, Bögels & Perrin, 2011). There have been wide variations in these statistics, however, as, in the review paper by White, Oswald, Ollendick and Scahill (2009), between 11% and 84% of young people with AS experienced anxiety to some degree. Moreover, rates of anxiety are higher in young people with high functioning AS than with low functioning AS (White et al., 2009), which may be due to increased levels of awareness regarding their social differences.

The large variation in anxiety rates reported in the literature may be associated with the use of different measures as symptoms of anxiety can overlap with the core features of AS (White et al., 2013). It appears anxiety may have a bidirectional relationship with features of AS. On the one hand, anxiety has been found to exacerbate the core features of AS (Bellini, 2004) whilst, on the other hand, the features of AS may increase the probability of anxiety being experienced (Scattone & Mong, 2013). By way of example, difficulties with emotional regulation and hyperarousal as well as skill deficits, such as social and communication difficulties may cause this population to be more likely to experience anxiety (Gaus, 2007; Kerns, Renno, Kendall, Wood & Storch, 2017).

Anxiety can present itself in a traditional way; young people with AS can experience difficulties similar to neuro-typical young people experiencing anxiety, such as through an anxious cognitive style (Kerns et al., 2017). Anxiety has also been found to present itself differently in young people with AS in comparison to neuro-typical peers. Wigham and McConachie (2014) explain that a young person with AS who does not want to go to school is likely to have social anxiety as opposed to separation anxiety. Young people with AS are more likely to display anxiety through externalising behaviours, such as repetitive behaviours or aggression than are young people without AS (Kreslins, Robertson, & Melville, 2015).

In conclusion, anxiety is a common MHP experienced by young people with AS. Anxiety can present differently in young people with AS when compared with neuro-typical young people. Due to the overlap between anxiety and features of AS as well as the observation that anxiety can present differently in young people with AS, it is important to carefully consider what might be appropriate interventions to support young people with AS experiencing anxiety.

2.4. Anxiety Interventions

The following section explores the current literature base regarding anxiety interventions for young people with AS, with a particular focus on CBT based approaches.

Several meta-analyses have reviewed the literature regarding interventions which aim to reduce anxiety in young people with AS. Whilst the vast majority of studies reviewed employed CBT interventions, two further intervention types also met the systematic search criteria (White et al., 2009; Kreslins et al., 2015). The first study was a social skills intervention adapted for young people with AS. Schohl et al. (2014) found a reduction in levels of social anxiety, core autistic symptoms and problem behaviours as well as an improvement in social behaviours following the intervention, when compared to a waitlist control group.

The second study explored the effectiveness of Temple Grandin's hug machine (Edelson, Edelson, Kerr & Grandin, 1999). The hug machine aimed to reduce anxiety and high arousal through application of deep lateral body pressure. The 5 participants in the intervention group, who ranged significantly in their verbal ability, received regular time in the hug machine. Although there were significant reductions in tension and hyperactivity, there was only a small significant reduction in anxiety overall. This study was novel in terms of the intervention implemented. The findings may have shown a more significant result had a larger sample size been employed.

Other than these two interventions the rest of the studies used CBT approaches. The following section provides a brief overview of CBT before exploring the current literature base.

2.4.1. CBT

CBT is a talking therapy, founded by Beck and Emery, which focuses on the "here and now" (Beck, 1963, Emery, 1985). Traditionally, CBT is based on the assumption that our thoughts influence our actions and feelings and that the same event can be interpreted in several different ways. For example, if a group of people were laughing, depending on an individual's thought process, the person might either join in with the group or might think the group is laughing at them and feel self-conscious. An individual's feelings and actions, therefore, can become maladaptive as a result of dysfunctional thinking. CBT aims to bring about changes in thinking to reduce or diminish emotional distress and maladaptive behaviours (Beck, 1976).

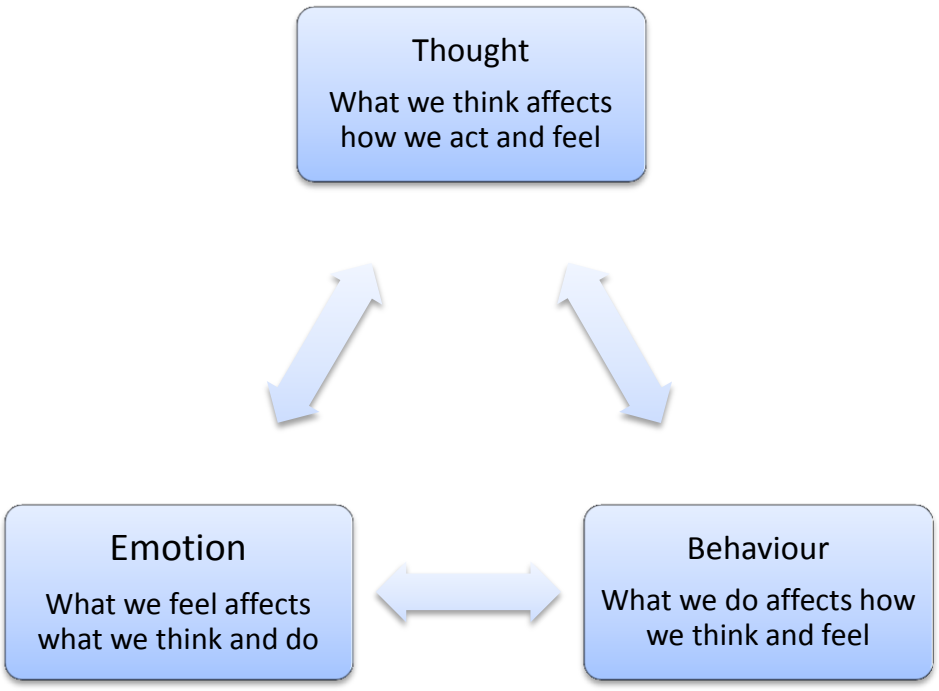


Figure 2.2: CBT triangle to visually depict how an individual's cognitions affect their emotion and behaviour (based on Teasdale & Barnard, 1993).

An essential element of CBT is an individual's core beliefs. Core beliefs are firmly developed schemas based on experiences. Throughout life, information received from the outside world is viewed as either being consistent with an individual's schemas, and thus expected, or in conflict with their schemas. Information which conflicts with an individual's schemas is either distorted to reduce

the discomfort felt or, more adaptively, the information is incorporated into a modified schema (Graham, 2005). Negative automatic thoughts arise, therefore, from habitual schemas (Greig, 2007). For example, an individual may have developed a schema bad things will happen if they go to school and, therefore, the individual may be more likely to interpret events which happen at school negatively, regardless of evidence to the contrary.

In recent times, the concept of CBT has been taken more broadly, accepting that our thoughts, feelings and behaviours are all interlinked (see Figure 2.2) (Graham, 2005). By this definition, feelings, for example, can influence thoughts (e.g. Teasdale & Barnard, 1993). Feeling upset may cause thoughts to become dysfunctional. The extent to which the emphasis is placed on the *cognition* element as opposed to the *behavioural* element of CBT varies depending on the needs of the individual. It is this broader definition of CBT which will be adopted in the current research.

2.4.2. The Effectiveness of CBT

CBT was designed initially as a therapeutic intervention for adults with MHPs. In 1994 the first Randomised Control Trial (RCT) for children with anxiety was published (Kendall, 1994) using the Coping Cat programme. Kendall found 64% of children aged 9 to 13 years who received the intervention no longer fulfilled the criteria for anxiety post intervention- this was in comparison to 5% in the waitlist control group. Similar findings have been replicated multiple times in the literature for a range of different MHPs, including depression and obsessive compulsive disorder (OCD; Harrington, Whittaker, Shoebridge & Campbell, 1998; Watson & Rees, 2008). Additionally, the principles of CBT can be adapted for children of younger ages, indicated by Stallard's study (2004) which recruited children aged 8 and 9. Due to its effectiveness, CBT is one of the recommended psychological treatments within the NICE guidelines for treating anxiety, depression and OCD in young people (NICE, 2005, 2014 & 2015).

There are several factors which can influence the effectiveness of CBT interventions. Firstly, the research regarding the effectiveness of parent involvement is conflicting. Spence, Donovan and Brechman-Toussaint (2000) found the outcomes of interventions were more positive when parents were involved than when parents

were not involved. A recent Cochrane review (James, James, Cowdrey, Soler & Choke, 2015) exploring the effectiveness of CBT interventions in reducing anxiety in children, found no difference in effectiveness of interventions when parents and family were involved. Secondly, James et al. (2015) found no difference between interventions delivered to participants on either an individual or group basis. There is a paucity of research directly comparing individual to group therapy making it difficult to reach a firm conclusion.

CBT interventions may not always be appropriate. Graham (2005) found the young person should have certain pre-requisite skills, such as, recognising a need to change and accepting CBT would provide a good opportunity for change. In order to assess this readiness motivational interviewing has been implemented in previous CBT interventions (Schmidt, 2004).

Limitations of CBT interventions have been documented within the literature. CBT interventions have been found to be less effective in treating severe as opposed to mild to moderate symptoms of MHPs (Harrington et al., 1998). There has been limited research comparing CBT to an active control group. It is difficult to know, therefore, whether it is the CBT principles or the consistent time with an adult which is effective. James et al. (2015) reviewed studies which used an active control group and concluded that although CBT is an effective intervention in reducing anxiety, the evidence to suggest it is more effective than non-CBT active control treatments or treatment as usual is inconclusive. Research has suggested CBT interventions are less effective when delivered by less highly trained and unmotivated individuals (Kerfoot, Harrington, Harrington, Rogers & Verduyn, 2004).

2.4.3. CBT Interventions for Young People with AS

The literature has posited whether young people with AS are able to access CBT interventions due to the characteristics and features of AS (Scattone & Mong, 2013).

There are several potential barriers which may limit the effectiveness of CBT within the AS population, including difficulty regulating emotions, communication deficits (e.g. literal interpretation), cognitive inflexibility, executive function deficits, generalising learning across settings, and ToM deficits (Gaus, 2013; Scattone & Mong, 2013). Multiple modifications have been made to CBT interventions to help

overcome such barriers, including an increased use of concrete visuals, such as social stories (Gray, 1998), and associating emotions with tangible objects to increase understanding (Kerr & Durkin, 2004). Utilising highly structured sessions have increased predictability (Ozsivadjian & Knott, 2011) and focusing the intervention on coping strategies which do not require abstract language, such as relaxation strategies, have reduced cognitive load (Attwood, 2004).

One research paper explored whether young people with AS had the prerequisite skills required for CBT interventions. It found a large proportion of children aged 7 to 12 with AS were successful in completing CBT based tasks such as, differentiating between feelings, thoughts and behaviours (Lickel, MacLean, Blakeley-Smith & Hepburn, 2012). The young people with AS found it more difficult, however, to identify emotions than the control group, indicating the importance of adapting the intervention to the individual and their needs (Burke, Prendeville & Veale, 2017).

Despite initial reservations, CBT interventions do appear appropriate for young people with AS as they have the necessary prerequisite skills to access CBT interventions. Suitable adaptations can be made to tailor CBT interventions for this population. The Homunculi Approach, the CBT based intervention evaluated in the present research, is introduced below.

2.4.3.1. The Homunculi Approach

The Homunculi Approach is a relatively recent intervention designed specifically for pupils with AS. It has its theoretical underpinnings in CBT and metacognition (Greig & MacKay, 2013b). Metacognition, first defined by Flavell (1976), is "one's knowledge concerning one's own cognitive processes" which can be more simply conceptualised as, thinking about your own thinking. Within the research, metacognitive strategies have been used to support problem solving and learning as it promotes young people to reflect upon their own thinking in order to understand their behaviour (Greig & MacKay, 2013b).

The Homunculi Approach is designed to address the four psychological theories of Autism referred to in Section 2.2.4. Firstly, ToM difficulties are addressed by providing opportunities for the young person to find new perspectives which take into consideration other people's thoughts, feelings and behaviour. Secondly, WCC is

taken into consideration by the young person reflecting on situations to build up the bigger picture as to how thoughts, feelings and behaviour are linked. Thirdly, to support EF deficits, the young person is provided with worksheets to support planning, set goals to work towards during the intervention and strategies to inhibit impulsive responses. Fourthly, the emphasising- systemising theory is taken into consideration by directly teaching the young person with AS about emotion and understanding feelings (Greig & MacKay, 2013b).

The Homunculi Approach is a flexible intervention which can be delivered on an individual or group basis (MacKay & Greig, 2008). It is designed to address a wide range of difficulties, including anxiety, and is suitable for young people aged 7 to 18. The researchers emphasise the intervention does not need to be delivered by a professional and, due to the resource itself being inexpensive, by implication the Homunculi Approach could be used widely within schools (Greig & MacKay, 2013b).

The Homunculi Approach is based on the concept there are a series of Homunculi, 'little people' in Latin, in the young person's brain. The Homunculi are designed to address each of the problems (missions) which the pupil wishes to resolve. Each of the characters has a special gadget to help them carry out their mission. There is a character in charge in the brain who detects when a problem arises by monitoring the 'thoughts and feelings screen' inside the skull. The head Homunculi responds to the thoughts and feelings screen through a traffic light system: red=stop; amber=think; green=do (Greig & MacKay, 2013a; Petersen, 1995). The therapeutic sessions involve visually working through a specific problem using storyboards, cartoon strips or video recordings (Greig & MacKay, 2013b).

The research to date is limited although the initial findings are positive. Greig and MacKay (2005) conducted a case study with a 13 year old pupil with Asperger's Syndrome - a high functioning subtype of AS. Pre and post measures were obtained which explored mental wellbeing, social competence, and behaviour in school. Emotional wellbeing levels reduced to average levels with the exception of anger, which was slightly higher than the mean. Social competence scores and concerns regarding the young person's behaviour in school improved as a result of the intervention. The intervention was delivered by an EP who was a member of the

research team. The researchers who conducted this study were also the founders of the approach making the validity of the findings vulnerable to experimenter expectancy effects (Robson, 2011). A research thesis by Downing (2015) provided the first objective evaluation of the Homunculi Approach with primary aged pupils. The researcher found mixed results on emotional wellbeing through quantitative data collection although qualitative findings did indicate some positive effects on emotional regulation.

2.5. Systematic review

The systematic review aims to explore the effectiveness of CBT interventions in reducing anxiety for young people with AS.

2.5.1. Rationale and Area of Research

The effectiveness of CBT interventions for young people with AS has been systematically reviewed multiple times (Danial & Wood, 2013; Sukhodolsky, Bloch, Panza & Reichow, 2013; Ung, Selles, Small & Storch, 2015). Reviews conducted in 2013 commented on the methodological limitations apparent within the included studies, such as small sample sizes (Danial & Wood, 2013; Sukhodolsky et al., 2013). A more recent systematic review found the methodological rigour has increased over time and concluded that CBT interventions have a moderate effect (Ung et al., 2015). The systematic reviews have built on earlier findings as the evidence base in this area continues to grow (Ung et al., 2015). Further research has been published since 2015 and thus the following systematic review aims to provide an up to date review of the literature. The question the systematic review aimed to address was:

What is the effectiveness of CBT interventions for reducing anxiety in young people with AS?

In order to provide a reliable and valid review of the literature, a structured systematic review using an aggregative approach was conducted (Robson, 2011). Systematic reviews have been criticised for being too simplistic and inflexible which can limit their applicability to more complex questions (Petticrew, 2015). For the purposes of the present research, a systematic review was deemed an appropriate tool to use to objectively evaluate the evidence base by reviewing a number of studies which have taken place across multiple settings. Additionally, the systematic review

provides an opportunity to review previous and new research to identify current gaps within the literature (Gough, Oliver & Thomas, 2012).

2.5.2. Criteria and Search Strategies

The method utilised in the present systematic review was based upon Gough's framework (2007). Gough's framework allows for comparisons between studies implementing differing interventions and methodologies. It was deemed an appropriate model to use in relation to the review question. According to Gough (2007) there are two phases to consider when conducting a systematic review. The first phase, outlined in Figure 2.3, states that following formulation of a research question, the process of selecting studies for the review should be documented.

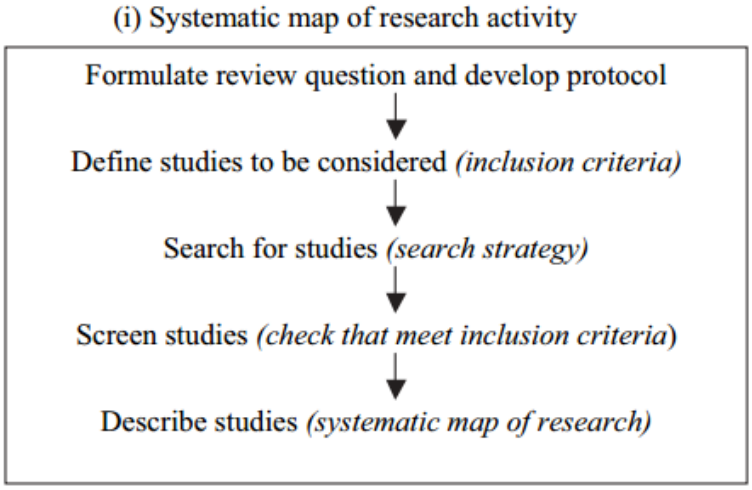


Figure 2.3: Gough's (2007) first stage of a systematic review

Inclusion Criteria

Articles were included in the review if:

- The participants had received a diagnosis of AS.
- The study was an empirical piece of research implementing a CBT intervention.
- The aim of the research was to reduce anxiety in participants.
- The participants were of secondary school age in relation to UK laws (11 to 16 years).

- The research implemented either a RCT or Quasi-experimental methodology. Within the hierarchy of evidence model (Scott, Shaw, & Joughin, 2001) these two methods are relatively highly regarded, thus ensuring the studies included were of medium to high methodological quality.
- The study implemented quantitative or mixed methods analyses rather than qualitative to aid comparability of the studies.
- The study was written in English and the full article could be accessed.

Exclusion criteria

- Duplicates were removed.
- Studies which focused on family therapy were removed.

Search Strategy

The literature search was conducted in February 2018 and aimed to find and select articles relevant to the question through a rigorous systematic search. Initially searches were conducted across three databases relating to the field of psychology: *ERIC*, *PsycINFO* and *Web of Science*. Supplementary searches of grey literature, which included *ProQuest Dissertation and Theses*, were carried out to ensure the search was as comprehensive as possible. A flow-diagram of the search process can be shown in Figure 2.4 and more detailed information regarding the search terms used can be found in Appendix A.

The screening process occurred in two stages. Firstly, the initial search retrieved 405 studies. Following removal of duplicates, the title and abstract were screened using the inclusion and exclusion criteria. Irrelevant studies which commonly appeared during this phase included studies which recruited young people with OCD and meta-analyses as oppose to empirical papers. This process excluded 260 studies. Secondly, the final 47 studies were reviewed by screening the full article in relation to the inclusion and exclusion criteria. In order to include a sufficient number of studies, studies which recruited participants with an age range which spanned below 11 years or above 16 years of age were included if the mean age of participants was of secondary school age (i.e. between 11 and 16 years). There were 34 studies excluded at this stage, the reasons for which can be viewed in Figure 2.4.

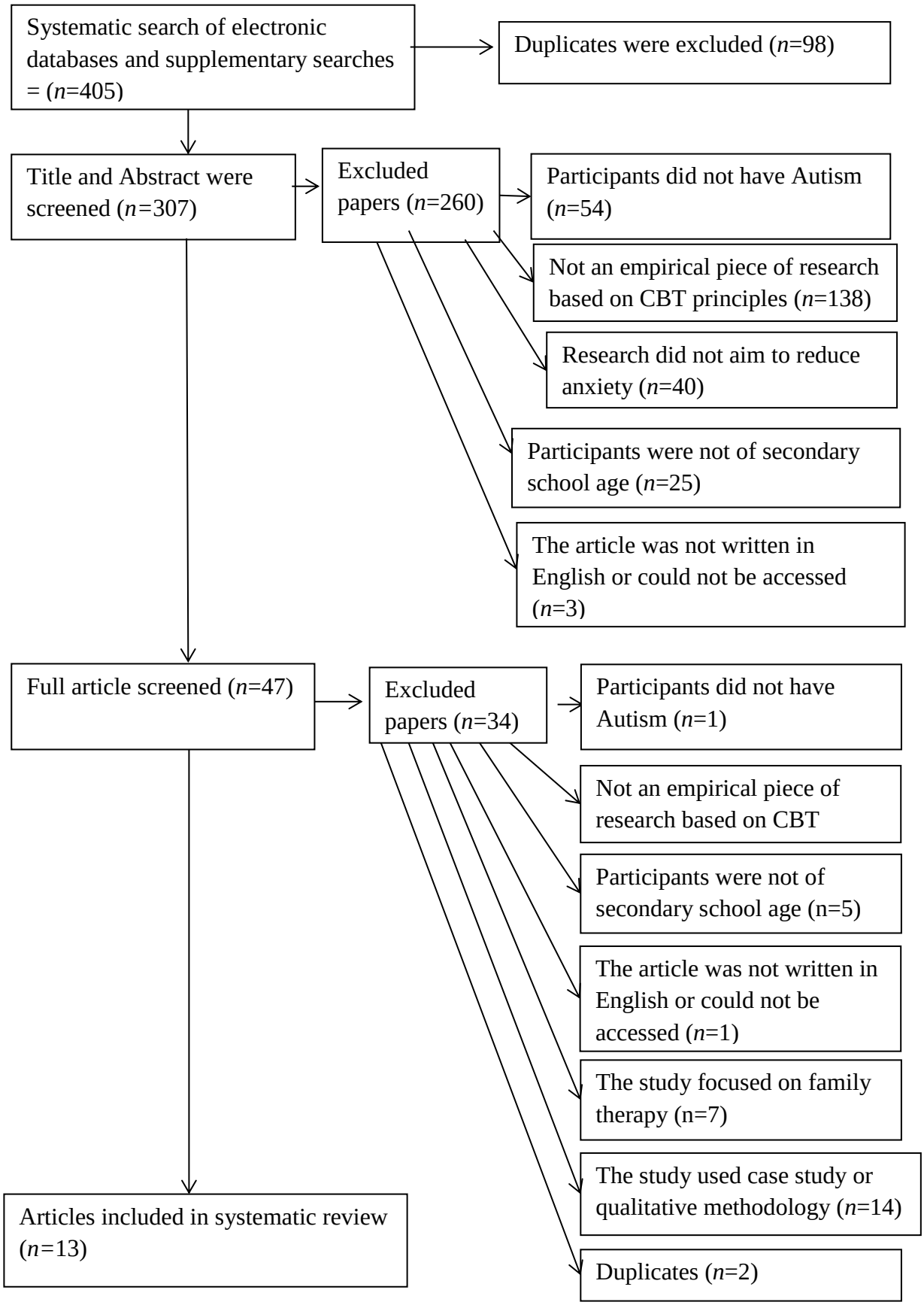


Figure 2.4: Flowchart to display the search strategy process

2.5.1. Synthesis of Research

The next stage of Gough's systematic review process was to synthesise the 13 studies which met the inclusion and exclusion criteria (Gough et al., 2012). The following review provides a synthesis of the main themes and factors relevant to the review question. If a study used mixed methods methodology, only the quantitative data is referred to in the review to aid comparability of the studies. A summary of the studies, including methodology and results, can be viewed in Table 2.1. As many of the studies implemented different interventions a brief outline of each programme can be viewed in Appendix B.

2.5.2. Participants

Regarding the nationality of the pupils, 10 of the studies were conducted in Westernised countries; five in the USA (Ehrenreich-May et al., 2014; McNally Keehn, Lincoln, Brown & Chavira, 2013; Storch et al., 2015; White et al., 2013; Wood et al., 2015) and five in the UK (Clarke, Hill & Charman, 2016; Luxford, Hadwin & Kovshoff, 2017; McConachie et al., 2014; Murphy et al., 2017 & Skipper, 2011). Three of the studies were conducted in Singapore (Drmic, Aljunied & Reaven, 2017; Ooi et al., 2008; Sung et al., 2011) - a country with a primarily Eastern culture. The findings from the Singaporean studies may be less relevant than those conducted in Western settings due to cultural differences.

The sample size varied significantly between studies as the number of participants ranged from 6 (Ooi et al., 2008) to 70 participants (Sung et al., 2011), with an average sample size of 30 participants. A limitation of using small sample sizes, such as in Ooi et al.'s study (2008), is that the study may lack external validity, reducing the degree to which the results can be generalised across the population.

The age of participants ranged from 8 to 17 years old with an average age of 13 years old. All participants had received a diagnosis of AS which were confirmed by the researchers either conducting their own assessment of AS using the Autism Diagnosis Observation Schedule (ADOS) (Ehrenreich-May et al., 2014; McNally Keehn et al., 2013; McConachie et al., 2014; Murphy et al., 2017; Storch et al., 2015; Sung et al., 2011; White et al., 2013; Wood et al., 2015), or relying on diagnostic

reports from professionals (Clarke et al., 2016; Drmic et al., 2017; Luxford et al., 2017; Ooi et al., 2008; Skipper, 2011).

Intelligence quotas (IQ) were frequently assessed pre-intervention using a standardised measure, such as the Wechsler Individual Achievement Test (WIAT) or the Wechsler Abbreviated Scale of Intelligence (WASI). Ten of the studies required participants' general or verbal IQ to exceed a set cut off point which ranged from 69 (McConachie et al., 2014) to 85 (Ehrenreich-May et al., 2014; Wood et al., 2015). The three studies which did not specify IQ levels recruited participants from mainstream secondary schools and assumed general IQ to be above 70 (Clarke et al., 2016; Drmic et al., 2017; Murphy et al., 2017). This indicates it is likely that participants in all 13 studies would be classified as having high functioning AS.

Nine studies used interview schedules and questionnaires, such as the Anxiety Disorder Interview Schedule (ADIS), to identify participants with an anxiety disorder (Drmic et al., 2017; Ehrenreich-May et al., 2014; Luxford et al., 2017; McNally Keehn et al., 2013; McConachie et al., 2014; Murphy et al., 2017; Storch et al., 2015; White et al., 2013; Wood et al., 2015). An ethical challenge of implementing a cut off score for an anxiety disorder is that young people with a lower severity score are not considered anxious enough to take part and therefore did not receive the intervention. Three further studies asked teachers (Clarke at al., 2016; Skipper, 2011) or school psychologists (Ooi et al., 2008) to identify pupils with elevated levels of anxiety. Whilst teachers and school psychologists may be a less reliable source than standardised diagnostic tools they may, nevertheless, provide a more valid source of information as they interact with the young person on a daily basis benefitting from a greater understanding of the young person's presentation.

Table 2.1: A table to summarise the methodology and results from the studies included in the review

Study	Country	Study Design	Population	Intervention	Intervention delivery (i.e. individual vs. group)	Setting	Outcome Measures	Results
1. Clarke et al. (2016)	London, UK	Quasi-experimental RCT Pre-, post & 6-8 week follow up (FU) measures	Aged 11 to 14 (mean=12.75) Intervention=14 Waitlist control=14 6 secondary schools	Exploring Feelings (Attwood, 2004) Duration: 6 weekly 1 hour sessions	Group intervention (4 to 6 pps)	Schools	Self-report (anxiety, coping behaviours) Parent report (anxiety) Qualitative Interviews	Anxiety + Coping behaviours: behavioural avoidance + problem solving +, cognitive avoidance 0 (+ at FU) assistance seeking 0
2. Drmic et al. (2017)	Singapore	Mixed methods design: single group pre post design	Aged 13 to 15 35 participants across 22 secondary schools	Facing Your Fears: Group therapy school based version (Reaven et al., 2011) Duration: 10 sessions, 1-1.5 hours	Group intervention (2 to 3 pps)	Schools	Self-report: anxiety Parent: anxiety Teachers: behavioural and emotional problems	Self-report: anxiety + Parent: anxiety + Teachers: behavioural and emotional problems 0
3. Ehrenreich-May et al. (2014)	Florida & Los Angeles, USA	Quasi-experimental: Single group pre-post design Pre-, post & 1 month FU	IQ > 85 Aged 11 to 14 (mean=12.19) Intervention=20	BIACA (Wood, McLeod, Hiruma, & Phan, 2008) Duration: 16 weekly sessions, 60 to 90 minutes each	Individual intervention, parents simultaneously received CBT intervention	Research sites	Clinician rating: Diagnostic severity & improvement Self-report: anxiety Parent: anxiety, internal/external behaviours Qualitative interviews	Anxiety-parent rated + Anxiety-self rated 0 Diagnostic severity + Diagnostic improvement +

4.	**Luxford et al. (2017)**	South-East of England, UK	RCT Pre, post and 6 week FU measures	IQ > 70 Aged 11 to 16 (mean =13.2) Intervention= 18 Waitlist control= 17 4 secondary schools	Exploring Feelings (Attwood, 2004) Duration: 6 weekly 90 minute sessions	Group intervention (4 to 6 pps)	Schools	Parent: anxiety, social impairment Self-report: anxiety, social worries and attention Teacher: anxiety, social worries and social impairment	Parent: Anxiety + Social impairment 0 Self-report: Anxiety + Social worries 0 Attention 0 Teacher: Anxiety + Social worries/impairment 0
5.	**McConachie et al. (2014)**	Newcastle, UK	RCT Pre & post measures	IQ > 69 Aged 9-13 (mean=11.7) Intervention=17 Waitlist control=15	Exploring Feelings (Attwood, 2004) Duration: 7 sessions, 2 hours long	Group intervention, parents simultaneously received CBT intervention	Clinic	Clinician rating: diagnostic improvement, anxiety diagnosis Self-report: anxiety Parent report: anxiety Qualitative interviews	Diagnostic improvement 0 Anxiety diagnosis + Self-report anxiety: 0 Parent report anxiety: 0
6.	**McNally Keehn et al. (2013)**	South California, USA	RCT Pre, post & 2 month FU measures	IQ > 70 Aged 8 to14 (mean=11.26) Intervention=12 Waitlist control=10	Adapted version of Coping Cat (Kendall & Hedtke, 2006) Duration: 16 weekly sessions, 60 to 90 minutes long	Individual intervention, 2 parent sessions	Clinic	Clinician rating: anxiety diagnosis Self-report: anxiety Parent report: anxiety	Anxiety diagnosis + Anxiety- parent rated + Anxiety-child rated 0
7.	**Murphy et al. (2017)**	South of England, UK	RCT Pre, post and 12 week FU measures	Mainstream school Aged 12- 18 (mean=15.3) CBT Intervention= 17 Counselling intervention= 19	CBT: MASSI intervention Counselling: NHS intervention Both groups received 12 individual and 5 group sessions	Individual and group intervention	Clinic	Clinician rating: Anxiety diagnosis, Parent report: anxiety, social impairment Teacher report: social impairment	Clinician rating: pre-post Anxiety: separation index + (between group difference) Anxiety: social, phobia, generalised 0 (both groups) Parent report anxiety: no group differences 0 Social impairment: no group differences 0 Teacher social impairment: no group difference 0

8.	**Ooi et al. (2008)**	Singapore	Quasi-experimental: Single group pre-post design	IQ > 80 9-13 age (mean=11.5) Intervention= 6	Modified versions of Coping Cat & Exploring Feelings, 16 weekly sessions, 90 minutes long	Group intervention (3 pp's)	Schools	Self-report: anxiety Parent: anxiety & parent stress Teacher: anxiety & teacher stress	Parent stress + Anxiety: 0 Teacher stress: 0
9.	**Skipper (2011)**	London, UK	Quasi-experimental: Single group pre-post design, 10 week FU	IQ >70 Aged 11-13 (mean=12.5) Intervention=12 4 secondary schools	ASC@KS3 10 weekly sessions, 1 hour long	Group intervention (3 pps and 3 neurotypical peers)	Schools	Self-report: anxiety and coping strategies Parent: anxiety Peers: social inclusion Qualitative Data	Self-report: Anxiety +, coping strategies + Parent report: Anxiety + (at 10 week FU) Peers: social inclusion +/-
10.	**Storch et al. (2015)**	USA, Florida	RCT Pre, post and 1 month FU measures	IQ > 80 Aged 11-16 (mean=12.74) Intervention=16 TAU=15	BIACA (Wood et al., 2008) 16 weekly sessions, between 60 and 90 minutes long	Individual intervention, parents simultaneously received a CBT intervention	Clinic	Clinician rating: anxiety, anxiety diagnosis, severity & improvement Parent: perceptions of YP's functioning, behaviours, anxiety & social functioning Self-report: anxiety	Severity: + Improvement: + Clinician report anxiety:+ Parent report anxiety: 0 Self-report anxiety: 0 YP's functioning: + **Child behaviours:** externalising: + Internalising: 0 YP's social functioning: +
11.	**Sung et al. (2011)**	Singapore	RCT Pre, post, 3 & 6 month FU	Verbal Comprehension > 80, Perceptual Reasoning > 90 Aged 9-16 (Mean 11.33) CBT intervention=36 Social recreational(SR) intervention=34	CBT: modified from Exploring Feelings, Coping Cat & unpublished CBT interventions 16 weekly sessions, 90 minutes SR: designed by researchers to support social & independent skills	Group intervention (3-4 pp's)	Clinic	Clinician rating of severity Self-report: anxiety	Severity: + (in both groups) Total anxiety: + (in both groups)

12. White et al. (2013)	Virginia, USA	RCT Pre & post measures	Verbal IQ > 70 Aged 12 to 17 (mean=15) Intervention=11 Waitlist control=12	MASSI 14 twice weekly sessions, 60 to 75 minutes	Combination of individual therapy, group therapy & parent education/ coaching	Clinic	Clinician rating: anxiety, anxiety improvement & global functioning Parent report: social skills, anxiety	Parent report: social skills + Anxiety 0 Clinician report: anxiety 0 Anxiety improvement 0 Global functioning: +
13. Wood et al. (2015)	Florida & Los Angeles, USA	RCT Pre, post & 1 month FU measures	IQ > 85 Aged 11-15 (mean=12.3) Intervention=19 Waitlist control=14	BIACA (Wood et al., 2008) 16 sessions, 90 minutes	Combination of participant therapy, parent therapy & participant and parent therapy	Research Centre	Clinician rating: anxiety, anxiety severity & improvement Self-report: anxiety Parent: anxiety, social skills	Clinician rating of anxiety (*d*=0.74)+ Improvement + Severity 0 Social skills (*d*=1.17) + **Self-report: anxiety** post treatment: *d*=0.02) 0 1 month FU: *d*=0.96 + **Parent: anxiety** Post treatment: *d*=0.59 + 1 month FU: *d*=.74

2.5.3. Study Design

Nine studies implemented RCT methodology (McNally Keehn et al., 2013; Luxford et al., 2017; McConachie et al., 2014; Murphy et al.., 2017; Storch et al., 2015; Sung et al., 2011; White et al., 2013; Wood et al., 2015). Seven studies assigned participants or schools to either a CBT intervention or a waitlist control group. In two studies participants in the control group were assigned to an active control group which consisted of a social responsiveness or a counselling intervention (Sung et al., 2011; Murphy et al., 2017). Active control groups can be beneficial to control for additional variables which may influence intervention effectiveness, such as increased time with an adult. Four studies used quasi-experimental single group pre and post-test designs (Drmic et al., 2017; Ehrenreich-May et al., 2014; Ooi et al., 2008; Skipper; 2011). Whilst quasi-experimental designs are often more practical in social sciences research they are subject to many limitations, including the possible influence of confounding variables and the difficulty in determining cause and effect.

In order to examine the longer term effects of the intervention, follow-up data was collected in nine studies. The majority of studies conducted follow up measures one month following the intervention (i.e. Clarke et al., 2016), three studies collected measures 2 to 3 months later (McNally Keehn et al., 2013; Murphy et al., 2017; Skipper, 2011) and one study collected measures at 3 months and 6 months post intervention (Ooi et al., 2008).

2.5.4. Setting

The settings varied between studies; six studies took place in a clinic setting (McNally Keehn et al., 2016; McConachie et al., 2014; Murphy et al., 2017; Storch et al., 2015; Sung et al., 2011; White et al., 2013) and two studies were based in research centres (Ehrenreich-May et al., 2014; Wood et al., 2015), thereby having a similar setup to a clinic. Whilst clinic based samples are often a useful way of recruiting larger numbers of participants they lack generalizability to other settings, for example, to pupils with AS in schools (White et al., 2009). A further five studies carried out their research in schools. Skipper (2011), Clarke et al. (2016), Drmic et al. (2017) and Luxford et al. (2017) based their research in secondary schools whilst Ooi et al.'s (2008) research was conducted in a specialist school. It has been assumed research

conducted in schools may support young people with ASs' generalisation of skills as they received interventions in a familiar setting (Clarke et al., 2016).

2.5.5. Intervention

There were seven different interventions employed within the 13 studies. Six studies implemented interventions which were run as groups (Clarke et al., 2016; Drmic et al., 2017; McConachie et al., 2014; Ooi et al., 2008; Skipper, 2011; Sung et al., 2011). Interestingly, the groups in Skipper's research (2011) consisted of 3 participants with AS and 3 neuro-typical peers to provide support. A further five studies ran interventions on an individual basis (Ehrenreich-May et al., 2014; Luxford et al., 2017; McNally Keehn et al., 2013; Storch et al., 2015; Wood et al., 2015) and two studies used a combination of both individual and group methods (Murphy et al., 2017; White et al., 2013).

In terms of the programmes used, seven studies implemented an intervention specifically designed for young people with AS (Clarke et al., 2016; Drmic et al., 2017; Luxford et al., 2017; McConachie et al., 2014; Murphy et al., 2017; Skipper, 2011; White et al., 2013). The remaining six studies adapted programmes originally designed for neuro-typical young people (Ehrenreich-May et al., 2014; McNally Keehn et al., 2013; Ooi et al., 2008; Storch et al., 2015; Sung et al., 2011; Wood et al., 2013). The adaptations often included either increased levels of parental involvement to support generalisation of strategies (i.e. Storch et al., 2015) or increased length of intervention (McNally Keehn et al., 2013). In the majority of the studies professionals delivered the interventions whereas Skipper (2011) and Drmic (2017) trained school staff to deliver them.

The duration of the interventions varied significantly between studies. The shortest intervention lasted for 1 hour per week across 6 weeks (Clarke et al., 2016). The longest and most frequent length of intervention lasted for 60 to 90 minutes per week over a course of 16 weeks (Ehrenreich-May et al., 2014; McNally Keehn et al., 2013; Ooi et al., 2008; Storch et al., 2015; Sung et al., 2011; Wood et al., 2015).

A crucial consideration is adherence to the programme. Fidelity measures provide information regarding how accurately and consistently the interventions are being delivered. There were eight studies which conducted fidelity checks

(Ehrenreich-May et al., 2014; McNally Keehn et al., 2013; McConachie et al., 2014; Murphy et al., 2018; Storch et al., 2015; Sung et al., 2011, White et al., 2013; Wood et al., 2015). In these studies adherence to the programme varied from 75.4% (Wood et al., 2015) to 100% (McConachie et al., 2014; White et al., 2013). White et al. (2013) found that the therapists level of adherence to the programme was greater during group sessions (100%) than individual sessions (between 87.5% and 100%). This may have been due to individual sessions requiring a higher degree of flexibility than group sessions. The five studies conducted in schools did not report fidelity checks which may be due to the challenges of conducting research in real world settings.

2.5.6. Outcome Measures

In terms of measures employed to assess the effectiveness of the interventions, there was consistency regarding the behaviours and constructs amongst the studies (see Appendix C for all measures). All the studies used measures which assessed a participant's anxiety levels either through self, parent or clinician report. Many of the studies collected data regarding participant's anxiety levels using more than one data source. Previous research suggests young people with AS may not be accurate informants as they lack insight into their emotional states (Ozsivadjian, Hibberd & Hollocks, 2014); thus indicating the importance of collecting data regarding anxiety levels from multiple informants.

Seven of the studies used Spence's Children's Anxiety Scale (SCAS, Spence, 1997) to measure anxiety. Despite concerns there may be an overlap between features of AS and symptoms of anxiety in questionnaires initially designed for typical populations (White, Schry & Maddox, 2012), the SCAS is considered an appropriate measure to use for young people with AS (Sofronoff, Attwood & Hinton, 2005). Murphy et al. (2017) and White et al. (2013), however, chose to use the Child and Adolescent Symptom Inventory-4 ASD Anxiety Scale (CASI-anx, Sukhodolsky et al. 2008) which has been specifically designed for children with AS.

Four studies measured young people's behaviours (Clarke et al., 2016; Drmic et al., 2017; Ehrenreich-May et al., 2014; Storch et al., 2015), which may have been because young people with AS have been found more likely to show their anxiety through behavioural symptoms than young people without AS (White et al., 2009). Four studies explored the effect of interventions on young people's social skills

(Luxford et al., 2017; Murphy et al., 2917; White et al., 2013; Wood et al., 2015). Less commonly used measures included: exploring levels of parenting and teacher stress (Ooi et al., 2008); the young person's global functioning (White et al., 2013); coping strategies and; the degree to which the young person was socially included by their peers (Skipper, 2011).

2.5.7. Findings

The findings were generally positive, with the majority of studies reporting significant reductions in participants' anxiety levels through either self, parent or clinician report measures. In the studies which reported effect sizes for anxiety, one study reported small effect sizes (White et al. 2013: CASI-anx d=0.30, PARS d=0.32), four studies reported medium effect sizes (Drmic et al., 2017: SCARED parent r=0.44; Murphy et al., 2017: separation anxiety r=0.43; Skipper, 2011: SCAS child r=0.57; SCAS parent r=0.51; Wood et al., 2015: PARS d=0.74) and two studies reported large effect sizes (Drmic et al., 2017: SCARED child r=0.85; Luxford et al., 2017: SCAS parent n^2_p=0.41, SCAS child n^2_p=0.12, SAS teacher n^2_p = 0.14).

Luxford et al.'s research (2017) was the only study which reported statistically significant results from all 3 sources. Two of the studies which did not find significant effects immediately post intervention reported significant findings at the follow up stage (Skipper, 2011; Wood et al., 2015). This is consistent with Sofronoff and colleagues' research (2005), which indicated it can take this population longer to implement strategies, thus delaying the effects of the intervention. No significant reductions in anxiety were found in White et al.'s study (2013), a finding the researchers ascribed to the small sample size and greater emphasis being placed on social skills than anxiety.

In the two studies which implemented an active control group, levels of anxiety reduced in both the intervention and control group. There were no statistical differences between the two groups (Murphy et al., 2017; Sung et al., 2011). In the literature, there are a limited number of studies which have implemented an active control group and consequently findings should be interpreted with caution. Such findings indicate, however, it may be the structured time with an adult which is effective rather than the CBT element itself.

There was no clear conclusion regarding whether group or individual interventions are more effective. The evidence was also inconclusive regarding the impact of parental involvement. Ung et al.'s (2015) meta-analysis found the modality in which the intervention was delivered (i.e individual vs. group therapy, parental involvement vs. no parental involvement) did not impact on its effectiveness. Conversely, Kreslins et al. (2015) found individual therapy either alongside or without group therapy was more effective than group therapy on its own and Sofronoff et al. (2005) found parent involvement had a significant impact in the reduction of anxiety. It appears the findings regarding intervention modality are inconclusive.

In terms of the different settings, when focusing solely on parent and self-reports, 4 out of the 5 school based studies found a significant effect on anxiety (Clarke et al., 2016; Skipper, 2011). Although only a small number of studies were carried out in schools, these findings suggest that school based interventions for young people with AS can be effective in reducing anxiety. The two studies which trained members of school staff to deliver the interventions found the interventions had a positive impact on reducing anxiety (Skipper, 2011; Drmic et al., 2017). These findings indicate that CBT interventions can be delivered effectively by individuals who may not be mental health professionals.

In conclusion, the studies reviewed generally found a positive impact of CBT interventions on the levels of anxiety experienced by young people with AS. When comparing CBT to other interventions, however, studies using active control groups indicate it may not be the CBT element itself which is effective.

2.5.8. Research Quality and Relevance Appraisal

The studies were reviewed using Gough's Weight of Evidence (WoE) model (Gough, 2004) to assess the quality and relevance of the studies. Gough's WoE framework is based on three sets of judgements which, when combined, form an overall assessment of the quality and relevance of the study in relation to the review question. The three sets of judgements can be viewed in Table 2.1. Systematic reviews are typically conducted by several researchers in order to consider different perspectives and critique various assumptions individuals may make (Gough et al.,

2012). The current systematic review was conducted solely by the primary researcher. A limitation of this approach is that the appraisal of the studies may have been influenced by the researcher's subjectivity.

Table 2.2: Table to define each set of judgements within the WoE model (Gough, 2007)

WoE	Definition
WoE A (Trustworthiness)	This is a generic criterion, not specific to the review question. It focuses on the general quality of the methodology, the accuracy of the data, the purpose of the study and its accessibility (Carpenter, Webb & Bostock, 2013).
WoE B (Appropriateness)	This criterion is specific to the review question and addresses the extent to which the design was applicable to the research question. For the present question, RCT's were deemed as most appropriate, followed by quasi-experimental RCT's and quasi-experimental one group pre-post designs. Published studies were viewed as more appropriate than unpublished theses as published research is more publicly available.
WoE C (Topic Relevance)	This criterion is also review-specific and focuses on how relevant the study is to the current piece of research and in answering the research question: "*What is the effectiveness of CBT-based interventions for reducing anxiety in young people with AS?"* The factors deemed particularly important to answering this question include: • The intervention is delivered solely to the young person rather than delivered in a group setting or with parent involvement, • The intervention is delivered within a school setting in a Westernised country and • The ages of all participants were of secondary school age.
WoE D (Overall WoE)	Combination of WoE A, B and C

In terms of Gough's WoE model (2007) Table 2.2 demonstrates that the majority of the studies were rated as providing a 'medium' WoE in addressing the systematic review question. This was primarily because the methodology tended to be of a relatively high standard as many of the studies employed RCT designs. These studies, however, were often subject to small sample sizes and did not include effect sizes. Five of the studies were rated as 'high' and these studies tended to employ

rigorous methodology using several different measures to assess anxiety. Only one study was rated as 'low' (Ooi et al., 2008). This was due to employing a single group design in an Eastern country making it difficult to draw accurate conclusions regarding the effectiveness of the intervention. The precise reasons regarding the ratings of each study can be viewed in Appendix D.

Table 2.3: A table to show the findings using the WoE framework to analyse the quality of the studies included in the review.

Study	A: Trustworthiness	B: Appropriateness	C: Topic Relevance	D: Overall
1. Clarke et al. (2016)	High	Medium	High	High
2. Drmic et al. (2017)	Medium	Low	Medium	Medium
3. Ehrenreich-May et al. (2014)	High	Low	Medium	Medium
4. Luxford et al. (2017	High	High	High	High
5. McConachie et al. (2014)	High	High	Low	Medium
6. McNally Keehn et al. (2013)	High	High	Low	Medium
7. Murphy et al. (2017)	High	High	Medium	High
8. Ooi et al. (2008)	Low	Low	Medium	Low
9. Skipper (2011)	Medium	Low	High	Medium
10. Storch et al. (2015)	Medium	High	Medium	Medium
11. Sung et al. (2011)	Medium	High	Low	Medium
12. White et al. (2013)	High	High	Medium	High
13. Wood et al. (2015)	High	High	Medium	High

2.5.9. Conclusions and Implications for Practice

In conclusion, the outcomes of the interventions were generally positive with 9 out of the 13 studies finding a reduction in anxiety using at least 2 informants. These findings were consistent across different settings, cultures and programmes, indicating the findings from CBT interventions for young people with AS can be generalised.

There were, however, several limitations of the review. All of the studies recruited participants with high functioning AS- a finding consistent with studies reviewed in previous meta-analyses (White et al., 2009). It is unclear what the

evidence base is regarding the effectiveness of CBT interventions for young people with low functioning AS. Studies which recruited participants with higher levels of anxiety (i.e. McConachie et al., 2014) found less significant results than other studies, perhaps indicating CBT interventions are more effective for young people with AS who are experiencing mild to moderate, rather than severe, levels of anxiety.

A further limitation was that no study compared a CBT intervention group both to an active control group *and* a treatment as usual group. It is difficult to assess the effectiveness of CBT interventions without both types of control groups. Sung et al. (2008) and Murphy et al. (2017) found both the CBT group and the active control group showed reduction in anxiety levels, raising the question of whether it is the CBT element itself or the time spent with an adult which is effective. This finding is in line with the conclusions reached in James et al.'s Cochrane review (2015) where CBT interventions were found to be no more effective than non-CBT active controls.

A positive finding resulting from the systematic review is that since Ung et al.'s review (2015) there have been multiple papers published in this field. The more recently published papers have tended to be of a high methodological quality. It can be challenging to recruit large sample sizes in atypical populations, however, several of the studies accomplished this (i.e. Sung et al., 2011). The numbers of more recently published studies indicate this is a growing area of research. There remain gaps in the research. For instance, only two of the studies (Skipper, 2011; Drmic et al., 2017) trained members of school staff to deliver interventions and this has been identified as an area for future research by several researchers (Clarke et al., 2016; Ehrenreich-May et al., 2014).

2.5.10. Limitations of Systematic Review

The systematic review was conducted by the sole researcher of this thesis, with support from a supervisor. No inter-rater checks have been conducted when reviewing the articles. The WoE rating provided for each of the articles may be subject to low levels of reliability and high degrees of subjectivity. The researcher aimed to increase the reliability by forming criteria for each category and providing the rationale behind the rating of each study to justify the decision.

2.6. The Present Research

The Homunculi Approach, the intervention evaluated in the current research, is a relatively new CBT intervention designed specifically for young people with AS which does not need to be administered by professionals (Greig & MacKay, 2013b). As previously stated, there is currently a lack of objective research evaluating the effectiveness of the Homunculi Approach. Anxiety is the most common MHP within the autistic population (Skokauskas & Gallagher, 2012). The research provides an objective evaluation of whether the Homunculi Approach is effective in reducing anxiety experienced by young people with AS. The research focuses on pupils of a secondary school age as it is during adolescence that the majority of MHPs become evident (Kim-Cohen et al., 2003).

There is currently a lack of research into the effectiveness of CBT interventions when delivered by a member of school staff. School settings have been identified as an "ideal location" for young people with AS due to the amount of time young people spend in school (Drmic et al., 2017). Schools are under increasing pressure to respond to and support pupils experiencing MHPs (DfE, 2016). It is vital school staff have sufficient knowledge of and confidence in implementing interventions to support the basic mental health needs of their pupils, particularly when such a high proportion of young people with AS experience anxiety.

In terms of a rationale for the EP profession, within the LA where the researcher was on placement, EPs have provided training to school staff in the Homunculi Approach. A further aim of this research is to ensure EPs recommend and support schools in delivering interventions for young people with AS which are evidence-based.

In recognising schools have been identified as well placed to support young people experiencing MHPs (i.e DoH & DfE, 2017) the secondary aim of the research is to explore the factors which affect implementation of therapeutic interventions in schools by interviewing school staff who have delivered the Homunculi Approach.

2.7. Research Questions and Hypotheses

The primary research question in the current study is:

1. Does the Homunculi Approach reduce anxiety in pupils with AS in secondary schools when delivered by school staff?

The experimental hypothesis, based on findings from previous research (Greig & MacKay, 2005), is:

The Homunculi Approach does reduce anxiety in pupils with AS in secondary schools when delivered by school staff.

The null hypothesis is:

The Homunculi Approach does not change the levels of anxiety in pupils with AS in secondary schools when delivered by school staff.

Within this research question, the following sub questions will be explored:

a) Does the Homunculi Approach reduce participants' anxiety as measured through questionnaires completed by young people and behavioural observations?

b) Does the Homunculi Approach reduce participants' anxiety measured by pre and post measures when completed by parents, teachers and the young person?

c) Do participants perceive their anxiety to decrease as a result of the intervention as measured by the Homunculi Approach programme?

The secondary research question is:

2. What are staff perceptions of the factors which may affect the implementation of the Homunculi Approach when delivered by school staff in schools?

3. Methodology

3.1. Introduction to Methodology

The following chapter commences by describing the relevant research paradigms, research purposes and research designs as a rationale for the methods chosen in the current research. Subsequently, the methodology section is divided into quantitative and qualitative research. In Phase 1 the effectiveness of the Homunculi Approach in reducing anxiety is explored using a Single Case Experimental Design (SCED) and in Phase 2 factors affecting implementation of the Homunculi Approach are explored using Activity Theory. Furthermore, consideration of ethical issues and threats to reliability and validity are presented.

3.2. Stakeholder Engagement

The main stakeholders in the project are outlined below:

- University of Nottingham: The piece of research was conducted as part of the training doctorate in Applied Educational Psychology. Tutors on the programme supervised the researcher throughout the project.
- LA and Educational Psychology Service (EPS): The EPS where the researcher was on placement as a TEP, based in the West Midlands, provided authorisation for the research. The researcher discussed the proposal with the Principle Educational Psychologist who welcomed the research topic in the Autumn Term 2016. Findings will be disseminated to the EPS service in Summer Term 2018.
- The Schools: The Special Educational Needs Co-Ordinators (SENCOs) of the recruited schools agreed to take part in the project and supported the identification of a young person who met criteria. The members of staff who delivered the intervention were crucial in order for data to be collected. The researcher liaised regularly with these members of staff.
- The Young People: The young people and their parents agreed to take part in the study. Time was taken to build a rapport with each of the young people taking part in the study to ensure they felt comfortable and able to ask any questions they had regarding the research.

3.3. Research Paradigms

A research paradigm, according to Guba and Lincoln (1994), is based on beliefs about ontology (nature of being), epistemology (nature of knowledge) and methodology (approach to systematic enquiry). The two opposing paradigms; namely the positivist and constructionist paradigms (Gage, 1989), will be outlined as a precursor to the paradigm adhered to in the current research.

3.3.1. Positivist Paradigm

The positivist paradigm is based on the ontological position there is one objective truth (Robson, 2011). The epistemological position, therefore, is that reality can be measured. Quantitative methodology tends to be employed in positivist research where a clear research topic is identified and structured research techniques are used in order to establish causality (Carson, Gilmore, Perry & Gronhaug, 2001). Within real world research, however, it can be challenging to meet the stringent methodological requirements to establish causality, such as randomisation of participants (Robson, 2011). Previously, positivism has been criticised for its reductionist and mechanistic nature as it defines life in measurable terms and does not take into consideration the experiences, beliefs and values of each individual (e.g. Nesfield-Cookson, 1987). Moreover, positivism assumes 'facts' can be separated from 'values'; it has been argued that this is both theoretically and practically implausible (Blaikie, 2007).

3.3.2. Constructionist Paradigm

The constructionist paradigm, on the other hand, is based on the ontological perspective there is no objective reality as reality is created by the individual (Creswell, 2014). As such, the epistemology positions the researcher as the interpreter of reality by discovering the underlying meaning of events and activities. When conducting research within the constructionist paradigm, typically, qualitative methods are employed. When analysing data, constructionists argue meaning does not exist in its own right as meaning is formed by individuals as they interact and engage in interpretation (Robson, 2011; Creswell, 2014). A limitation of the constructionist paradigm is that the data collected is subjective and can be incomplete and misleading (Bernstein, 1974), thus resulting in reduced external validity.

3.3.3. Pragmatic Paradigm

Traditionally, it was viewed inappropriate to combine positivist and constructionist methodologies due to the differing epistemological and ontological stances. This viewpoint has been referred to in the literature as the 'incompatibility thesis' (Sale, Lohfeld & Brazil, 2002) or 'paradigm wars' (Gage, 1989). More recently the pragmatic paradigm has emerged, which accepts a 'compatibility thesis' (Feilzer, 2010). Within the pragmatic approach, the traditional view of dualism is rejected as pragmatism is not concerned with one particular philosophy or view of reality.

Pragmatism holds the ontological position that reality is guided by personal value systems and thus the researcher studies what they deem to be important (Teddlie, 2005). Pragmatic researchers, therefore, focus on selecting the methodological approach best suited to answering the question (Creswell, 2014). Pragmatists often use mixed methods approaches within their research whereby the findings from one method can be used to inform the other method (Greene, Caracelli & Graham, 1989) or both methods can be used concurrently to provide insight at different levels (Tashakkori & Teddlie, 1998).

The pragmatic paradigm is beneficial as the limitations of one paradigm can be neutralised by using a second contrasting paradigm (Teddlie & Tashakkori, 2009). One of the challenges for the pragmatic researcher, however, is ensuring they have the necessary skills and knowledge to implement two very different epistemological and methodological approaches. Furthermore, combining qualitative and quantitative approaches has been criticised by being described as akin to mixing oil and water; where the result is a diluted version of two pure research methods (Cohen, Manion & Morrison, 2011).

3.4. Research Purpose

Three research purposes related to the current study will be briefly presented.

3.4.1. Real World Research

Real world research seeks to find answers to current problems conducted in applied social sciences (Robson, 2011). Real world research tends to be change or

policy driven and thus there is an emphasis on ensuring the study has high external validity to ensure findings can be generalised to the population (Roche et al., 2014). Challenges are commonly encountered when conducting real world research. For example, there are many variables which cannot be controlled for. Despite such challenges, conducting research in educational settings is becoming increasingly important due to the recognition that young people should be receiving evidence based interventions (No Child Left Behind, 2001). When examining the evidence-base for interventions, the hierarchy of evidence model is often used to assess the quality of the methodology. The hierarchy of evidence model (Ramey & Grubb, 2009) can be viewed below, beginning with the most highly regarded methodology.

1. Systematic reviews of several RCTs or group studies

2. Single RCTs

3. Quasi-experimental trials

4. Case studies

5. Expert opinion

(Ramey & Grubb, 2009)

3.4.2. Implementation research

Implementing interventions in real world settings has had variable results when compared to findings from highly controlled research, such as RCTs (Horner, Sugai & Fixsen, 2017). Implementation research provides an opportunity to identify and address possible barriers which might influence the effectiveness of the intervention in real world contexts (Kelly & Perkins, 2012; Dane & Schneider, 1998). Horner et al. (2017) recommended that the factors which affect implementation should be documented to identify which core features are necessary in order for the intervention to be effective, thus promoting evidence-based practice (Horner et al., 2017).

Schools have been identified as complex systems where there are a variety of factors which may influence the effectiveness of interventions (Gillham et al., 2007). Within the school microsystem, each person involved in implementing the intervention can affect its implementation (Kelly & Perkins, 2012). Staff attitudes

toward the intervention, such as readiness for change, and their familiarity with the intervention materials have been recognised as factors which influence implementation (Rohrbach, Graham & Hansen, 1993). Furthermore, within the school exosystem, Kelly and Perkins (2012) recommended researchers consider the influence of systemic factors, such as school resources and policies. In addition to the school context, factors at the level of the child and family have also been identified as likely to affect intervention outcomes (Greenberg, Domitrovich & Bumbarger, 2001).

3.5. Research Designs

The researcher presents an introduction to quantitative, qualitative and mixed methods research designs as a precursor to presenting the design used in the current study.

3.5.1. Quantitative Designs

Quantitative designs tend to be fixed methods which employ a deductive approach to test hypotheses based on theory (Robson, 2011). Generally, data is collected objectively through, for example, questionnaires or surveys, and can be analysed numerically using statistical methods (Robson, 2011). There are several different types of quantitative designs including, but not exhaustive of, the designs presented below.

3.5.1.1. Group Designs

Group designs typically consist of RCTs and quasi-experimental approaches. RCTs are commonly referred to as the 'gold standard' of research (e.g. Kourea & Lo, 2016). Due to its rigorous methodology, RCTs are considered to be able to determine cause and effect (Sibbald & Roland, 1998). In RCTs, groups of participants are randomly assigned to either an intervention or comparison group. Typically, such studies employ relatively large sample sizes in order for statistical analyses to be conducted, thus increasing the generalisability of results.

It can often be impractical or inappropriate to conduct RCTs in education as, for instance, it can be challenging to randomise participants and unethical to withhold treatment from one group of participants for prolonged periods of time (Cutspec, 2004; McDonnell & O'Neill, 2003). Quasi-experimental designs, referred to as

'compromise designs', do not require randomisation of participants and the recruitment of comparison groups (Kerlinger, 1970). As such, quasi-experimental designs have been viewed as a practical alternative to RCTs in real world settings, such as education, in order to test causal hypotheses (Campbell & Stanley, 1963). Quasi-experimental designs are subject to greater threats to internal validity, such as history, which affects the extent to which quasi-experimental designs can determine cause and effect (Cook & Campbell, 1979).

3.5.1.2. Single case experimental designs (SCEDs)

In SCEDs, detailed data is gathered regarding an individual's response to the intervention. This provides an opportunity to explore possible individual differences which may influence the effectiveness of the intervention. SCEDs are discussed in more detail in Section 3.5.1.

3.5.2. Qualitative Designs

Qualitative designs are flexible approaches which tend to use inductive logic where theoretical concepts emerge from the data (Robson, 2011). Qualitative studies typically recruit small numbers of participants as the analysis is in depth and data is often presented as a narrative.

Qualitative approaches are advantageous as they obtain data not likely to emerge from quantitative methods by considering human experiences, values and beliefs to explore how people feel and react to their situation (Kazdin, 2003). Furthermore, thorough multi-level data analysis using systematic approaches are implemented to gain participants' views and experiences. This data collection technique can provide an accurate and valid basis on which to develop theory regarding a particular phenomenon or concept (Brantlinger, Jimenez, Klingner, Pugach & Richardson, 2005).

Qualitative approaches value the researcher's own views, beliefs and experiences and recognise these will affect the way in which the data is analysed. This subjectivity, however, may be challenging in real world research where the researcher may be biased in their interpretation of the data in order to promote a particular change in policy. Furthermore, findings are specific to the participants interviewed

and therefore often lack generalisability to the wider population, thus affecting the external validity (Atieno, 2009).

3.5.3. Mixed Methods designs

Mixed methods or 'multi-strategy' designs use a combination of inductive and deductive reasoning. They have been defined as "the class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study" (Johnson & Onwuegbuzie, 2004, p.17). There are various mixed methods designs which differ depending on the degree to which the emphasis is placed on the qualitative or quantitative method or the order in which the methods are employed (Creswell, 2014).

An advantage of utilising a mixed methods approach is researchers can form their research questions and choose the appropriate method accordingly rather than being confined to research questions based on one methodology (Bryman, 2006). Mixed methods research allows researchers to mix different design components to form a method which utilises the strengths and minimises the weaknesses of each methodology. This concept has been termed the Fundamental Principle of Mixed research (Johnson & Turner, 2003). Mixed methods research can be challenging, however, as researchers are required to have a knowledge base which encompasses a wide range of methods; this may require a team of researchers (McKim, 2017). Furthermore, mixed methods research can be more time consuming and more expensive than research which employs a single methodology (Johnson & Onwuegbuzie, 2004).

3.6. Present Research

The present research is based on the pragmatic paradigm, where an embedded mixed methods design was implemented to address the research questions presented in Section 2.7 (Creswell, 2014) (Figure 3.1). The primary research purpose, referred to as Phase 1, was to implement the Homunculi Approach in a real world setting using a SCED to evaluate its effectiveness in reducing anxiety for pupils with AS. RCTs and quasi-experimental designs were deemed inappropriate as the authors of the Homunculi Approach explained the programme should be used flexibly to meet the

needs of the individual (Greig & MacKay, 2013b). It was, therefore, important to select a methodology which took into account individual differences.

The quantitative research was supported by the secondary research, referred to as Phase 2. The purpose of Phase 2 was to explore the factors which affected implementation of the Homunculi Approach in schools. The aspect of the research was conducted by collecting data through semi-structured interviews employing an Activity Theory framework.

The research design, methodology and procedure for Phase 1, and subsequently Phase 2, will be presented. The timeline for the data collection process can be viewed in Appendix E.

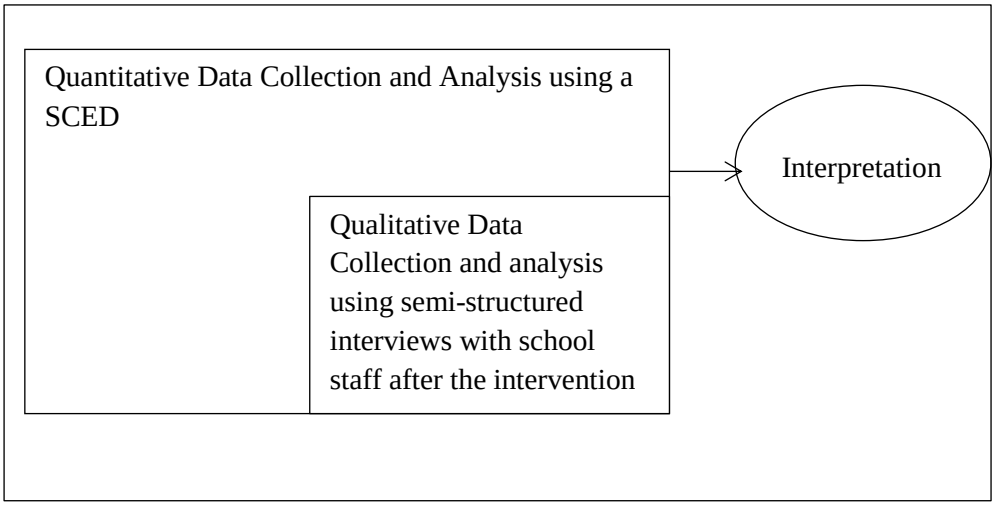


Figure 3.1: *Diagram depicting the embedded mixed methods research strategy (Creswell, 2014).*

3.7. Phase 1

Following an introduction to SCEDs, the procedure for Phase 1 of the research is described below to address the primary research question of: *Does the Homunculi Approach reduce anxiety in pupils with AS in secondary schools when delivered by school staff?*

3.7.1. Research Design

To address the primary research question outlined in Section 2.7, quantitative data was collected using a SCED in addition to pre and post measures. A background to SCEDs will be described before introducing the method used in the present research.

3.7.1.1. What is a SCED?

SCEDs originate from Skinner's work in applied behaviour analysis (1974) and aim to produce "meaningful and reliable data at the level of the individual" (Robson, 2011). SCEDs have been regarded as an appropriate method to use when evaluating interventions to explore the effects on a participant's behaviours (Johnston & Pennypacker, 2008; Plavnick & Ferreri, 2013). As SCEDs gather in depth information regarding each participant, the method provides an opportunity to explore under what conditions and for which participants the intervention is or is not effective (Kratochwill et al., 2010).

There are certain features of SCEDs which distinguish this methodology from other approaches (Kratochwill et al., 2010). SCEDs tend to recruit small sample sizes of between three to eight participants to explore how the individuals respond to the intervention (Horner et al., 2005). The method evaluates the participant's response to the intervention by isolating the independent variable (IV) and measuring the individual's behaviours, the dependent variable (DV), before and during the intervention (Shapiro, 1966). In SCEDs, the DV should measure a clearly defined and observable target behaviour, such as the frequency of on task behaviours displayed in class (Allday & Pakurar, 2007). As the DV is measured repeatedly it is important that the measure is both repeatable and reliable (Kratochwill et al., 2010). To aid reliability, Barlow et al. (2009) highlight the importance of the repeated measures being carried out under exacting and standardised conditions, such as the same time of day and with the same adult.

The majority of SCEDs incorporate two phases: a baseline phase and intervention phase. During the baseline phase, data is collected without the IV present in order to: a) describe the participant's current levels of performance and b) predict future performance if treatment should not be provided (Kazdin, 1978).

Ideally, baseline data should be stable before the intervention begins to ensure any changes in behaviour during the intervention phase can be attributed to the intervention itself rather than extraneous variables. There are no consistent rules regarding how long the baseline period should be or what constitutes a "stable" baseline phase (Barlow et al., 2009): some argue 5 observations are needed (Horner et al., 2005), whilst others argue that 3 data points are sufficient (Kratochwill et al.,

2010). Baer, Wolf and Risley (1968) argued it is vital to withhold treatment until behaviour has stabilised, whilst Todman and Dugard (2001) acknowledged it is not always possible to establish a stable baseline due to participant variability. Kazdin (1978) acknowledged it can be unethical to withhold treatment in clinical settings until data is stable.

Following baseline phase, traditionally, the intervention phase begins when the IV is introduced (Barlow et al., 2009). Visual analysis is typically used to analyse data within and between each phase to explore whether changes are reliable, predictable and verifiable (Horner et al., 2005; see Section 4.2.1.1). At this point, it is important to acknowledge the different variations of SCEDs.

3.7.1.2. Different types of SCED designs

According to Hayes (1981) there are three main types of SCEDs. Firstly, a phase change design, the simplest of which is known as an A-B design, consists of changing one variable between phases. If the trend shown during phase A (baseline phase) changes during phase B (intervention phase) the researcher can be confident it was the intervention that affected the participant's behaviour. A limitation of the A-B design is that behaviour change during phase B may be attributed to factors other than the intervention, such as maturation or coincidental external effects (Kazdin & Kopel, 1975). It is important, therefore, when implementing this design that the effect is replicated with multiple participants and across multiple settings to increase the validity of findings. Barlow et al. (2009) states that "with some major reservations" changes between baseline and intervention phases in A-B designs can be attributed to the effects of the intervention (p.137).

A development of the A-B design is the reversal design (or A-B-A) where, following the intervention phase, there is a period of time where the intervention is withdrawn in order to observe whether the participant's behaviours return to baseline levels (Neuman & McCormack, 1995). Whilst this design is powerful for inferring causal effects (Cook & Campbell, 1979), researchers have acknowledged there may be possible carry over effects from the intervention which may threaten internal validity (Gast & Ledford, 2009). More complex versions of phase change designs include changing criterion designs, where the participant is required to reach a certain

criterion in their behaviour before progressing to the next phase (Kratochwill et al., 2010).

The second type of SCED is the alternating treatment design where, following the baseline phase, participants receive 2 or more treatments in alternation, for example on subsequent days (Barlow & Hayes, 1979). Using an alternating treatment design can be beneficial to explore the effectiveness of different treatments without the challenge of intra-subject variability of group designs. This method cannot be used, however, when there may be carry over effects between treatments.

The third type of SCED is a multiple baseline design. Unlike alternating treatment designs, multiple baseline designs can be used when the intervention involves learning new skills, such as language acquisition (Neef, 2006). Baselines vary in length so the introduction of the intervention is staggered across time points (Kratochwill et al., 2010), thus increasing the chance that changes during phase B are attributable to the intervention rather than other extraneous variables (Kazdin & Kopel, 1975). Multiple baseline designs can be used in various ways, such as, to explore two or more behaviours exhibited by the participant or the same behaviour across two or more participants (Plavnick & Ferreri, 2013). A consideration of multiple baseline designs is that it may be unethical to postpone treatments to participants for prolonged periods of time (Cooper, Heron & Heward, 2007).

3.7.1.3. SCED in present research

Within the present research an A-B phase change SCED was implemented to address the primary research question. A reversal design and an alternating treatment design were deemed inappropriate as the intervention involved participants developing new skills which could not be "unlearned" (Shaughnessy, Zechmeister & Zechmeister, 2015). A multiple baseline design was not feasible due to time constraints within the school calendar, hindering participants from starting the intervention at staggered time points.

The current research implemented a series of A-B SCEDs where repeated measures were collected for approximately four weeks prior to the intervention and throughout the intervention period. In order to triangulate the data, measures were also collected at two time points: pre and post intervention. Repeated measures data

was analysed using visual analysis and pre and post data was analysed using the Reliable Change Index (RCI).

The IV was the Homunculi Approach intervention and the DV was the participant's levels of anxiety. Anxiety was explored using a dimensional, as opposed to categorical, definition of anxiety whereby anxiety is viewed as on a continuum (Keyes, 2002).

3.7.2. Sampling Strategy

A purposive sampling method was employed for recruitment (see figure 3.2 for recruitment process). As anxiety disorders are most prominent in cognitively high functioning young people with AS (White et al., 2010), participants were recruited from mainstream secondary schools or AS units attached to mainstream secondary schools within the LA where the researcher was on placement. Initially, EPs within the EPS were asked to identify schools which may be interested in the project. These schools were initially contacted by email (Appendix N) and telephone contact.

3.7.2.1. School Inclusion Criteria

The secondary schools were required to meet the following criteria:

- The school had capacity of both time and space for a member of staff to receive training and deliver the intervention with a pupil.
- The school could provide time for a member of staff to complete questionnaires before and after the intervention, as well as conduct weekly observation measures.
- The school could accommodate the pupil/s to receive the intervention for 1 hour per week during school hours.
- The school could pay for 1 session of EPS time to cover the training and regular support throughout the delivery of the intervention. This was a requirement to take part as the EPS where the researcher was on placement operated a traded service. Additionally, schools were required to purchase the intervention book which cost between £17 and £20. All the resources within the book could be reused.

Several of the schools approached were unable to partake in the research due to staffing and time constraints. Overall, four schools were recruited to take part.

3.7.2.2. Participant inclusion criteria

In SCEDs, Horner et al. (2005) emphasised the importance of using specific selection criteria to recruit participants. Participants were required to meet the following criteria:

- To be aged between 11 and 16 (Key Stage 3 and Key Stage 4). This age category was chosen because many MHPs begin in adolescence (Kim-Cohen et al., 2003). Additionally, young people aged 11 and older with AS were found to be more accurate at recognising emotions than younger children (Lickel et al., 2012) and may be of an appropriate age to receive the intervention.
- To have received a diagnosis of AS for at least 1 year to reduce the possibility that pupils were not experiencing anxiety due to adjusting to the diagnosis.
- To be experiencing heightened levels of anxiety. The DSM-IV (APA, 2000) criteria for Generalised Anxiety Disorder were used to support identification of suitable participants.
- To have an attendance above 90% in order to ensure the pupil was likely to be present in school to receive the intervention.
- To not currently be receiving psychological treatment from other sources to reduce possible confounding effects.

Pupils who met the criteria were identified through consultation between the researcher and school staff. In all cases, at least one member of staff present in the consultation was the SENCO. Overall, three males and one female took part in the study (attendance between 93.2% and 97.5%). Details regarding each participant can be viewed in Section 4.3.

Initially, the participant criteria were narrower in order to aid generalisability of the findings. During the recruitment process, the criteria needed to be broadened in order to recruit a sufficient number of participants. For instance, originally the research aimed to recruit participants in Key Stage 3 and pupils who were displaying their anxiety related behaviours at school. One of the participants recruited was in

Key Stage 4 as, through consultation with staff, they identified this young person as someone who would engage with the concept of the Homunculi Approach. Two further participants were displaying their anxiety related behaviours at home rather than at school which resulted in the researcher introducing observation measures at home. Additionally, one participant was on the waiting list for CAMHS although was not receiving any therapeutic support at the time the project began and therefore it was felt appropriate that she was able to take part in the research. The level of flexibility in the criteria was required to support participant recruitment as well as to maintain engagement of the schools in the research.

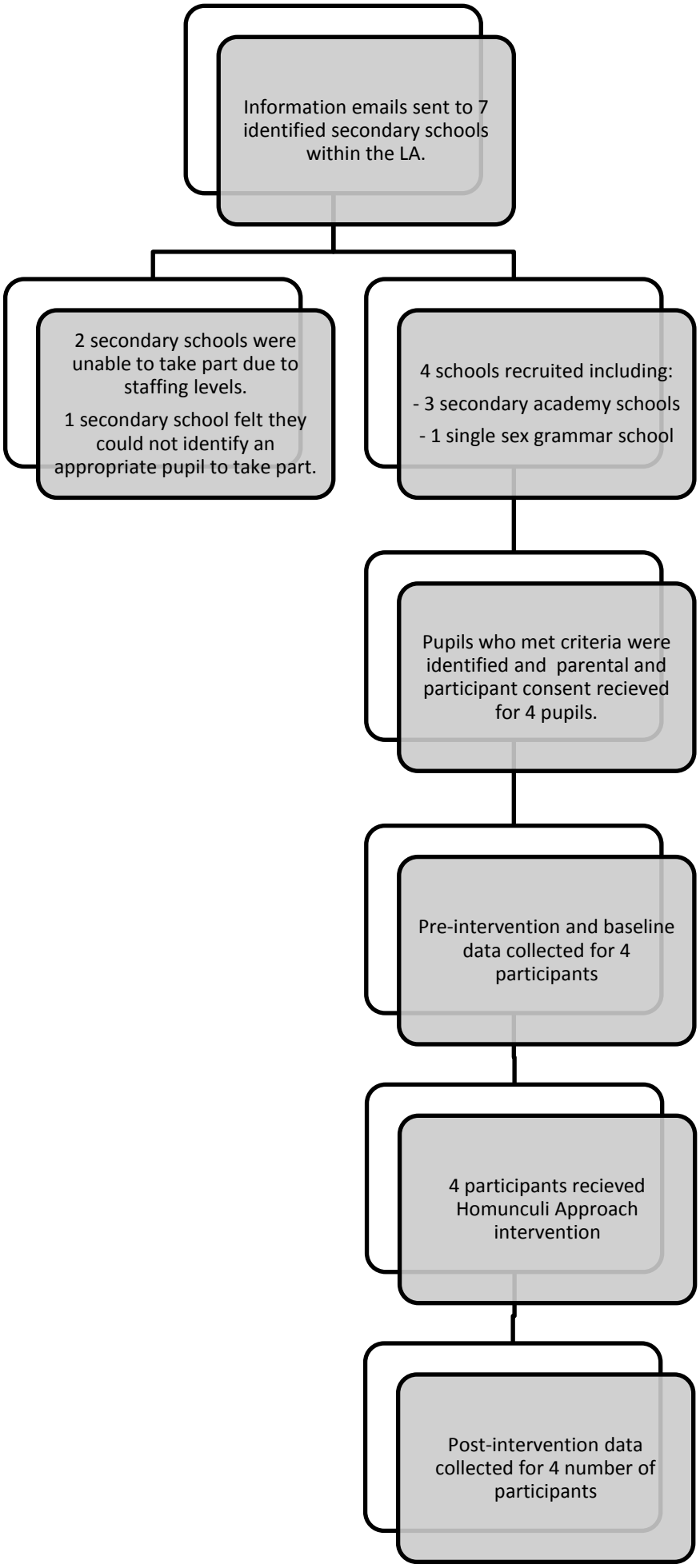


Figure 3.2: Recruitment Process Flow Diagram

3.7.1. Research Measures

The measures used to collect the data are presented before describing the procedure for Phase 1 of the research.

3.7.1.1. Repeated Measures

The repeated measures aimed to measure the DV by exploring whether participants' anxiety levels and anxiety related behaviours changed as a result of the Homunculi Approach.

The Paediatric Index of Emotional Distress (PI-ED) (O'Connor et al., 2010; see Appendix F)

The PI-ED questionnaire was completed by participants on a weekly basis to measure the DV.

The PI-ED was originally designed to provide a child version of the frequently used Hospital Anxiety and Depression Scale (HADS) for adults (Zigmond & Snaith, 1983). The PI-ED is designed for children aged 8 to 16 years old. It measures levels of emotional distress through 14 questions on a 4 point frequency rating scale to assess how the participant has been feeling in the past week. The questionnaire takes approximately 5 to 10 minutes to administer. As the questionnaire assesses levels of emotional distress within the last week and is relatively quick to administer it has been deemed an appropriate tool to use as an index of change during therapeutic interventions (O'Connor et al., 2010).

The PI-ED measures both anxiety and depression, as it views these two conditions as operating under the same unified construct which has been termed cothymia (O'Connor et al., 2010). It is not possible, therefore, to distinguish between levels of anxiety and depression when using this questionnaire. This is a limitation of the PI-ED when used in the current research and highlights the importance of the researcher triangulating data using multiple measures. The PI-ED has been found to have good reliability (above 0.7) cothymia, anxiety and depression, and good internal consistency (test re-test correlation =0.81) (Nunnally, 1978).

Behavioural Observation

Anxiety in young people with AS is often shown through externalising behaviours (White et al., 2010). Furthermore, Burke, Prendeville and Veale (2017) stated behaviours associated with anxiety should be used as a measure to counteract some of the challenges of using self-report measures. A specific observational measure for each participant was devised through consultation with a member of staff or with parents (Adapted from Slack, 2013; See Appendix G). The behavioural observations were either conducted at home or at school depending upon where the participant's anxiety related behaviours were displayed. The target behaviours can be viewed in Table 3.1 and the observational schedules can be viewed in Appendix H. Each participant has been provided with a pseudonym to retain confidentiality.

Table 3.1: Table to show the descriptions of observations for each participant

Participant	Target Anxiety-related Behaviour	Observation Measure	Context of Observation
William	Repetitive behaviours	Event coding to explore the frequency of 5 pre identified repetitive behaviours during the same lesson each week.	1 French lesson each week for one hour. Observation conducted by a consistent TA.
Sophie	Obsessive-compulsive behaviours at home	Event coding on a 3 point scale for 2 different obsessive-compulsive behaviours.	Observation conducted twice a week by the parent.
Alex	Escalation of emotions, leading to anger	Event coding to identify the intensity of his emotions on a scale of 1 to 5.	Observation conducted once a week by the parent between 6pm and 8pm.
Ben	Concerned about health	Event coding to explore the frequency of health anxiety related behaviours.	Observation conducted by 2 members of staff twice a week.

Anxiety App

The researcher had planned for participants to complete a daily anxiety measure using an application on their mobile phone. No data was collected using this measure.

3.7.1.2. Pre and Post Measures

The following measures were used to triangulate the findings from the repeated measures to explore the impact of the Homunculi Approach. Johnson and Turner (2003) emphasised the importance of collecting a range of triangulated measures to strengthen the validity of self-report ratings.

Anxiety

The anxiety measures aimed to explore whether participants' anxiety levels changed pre and post intervention.

Spence Children's Anxiety Scale (SCAS) (Spence, 1998) (Appendix I)

The SCAS assesses the severity of anxiety symptoms in children aged 8 to 15. It consists of 44 items rated on a 4-point scale to assess the frequency of each symptom. The SCAS has been found to have high reliability (.93) and moderately high validity when compared to the Revised Children's Anxiety and Depression Scale (RCADS, Reynolds & Richmond, 1978). There are parent and child versions of the measure (Nauta et al., 2004). Intraclass correlations have revealed good levels of agreement between young people with AS and their parent's responses indicating young people with AS are able to accurately self-report their levels of anxiety using the SCAS (Ozsivadjian et al., 2014). The SCAS has been identified as one of 3 anxiety questionnaires which has robust methodology and can be used with the AS population (Wigham & McConachie, 2014). In the present research, the SCAS was completed by both parents and young people.

School Anxiety Scale- Teacher Form (SAS-TF) (Appendix J)

The SAS-TF is, to the researcher's knowledge, the only teacher measure which solely focuses on anxiety. It is a 16 item questionnaire where items are rated on a 4-point frequency rating scale. Previous research has found the SAS-TF to have high internal consistency and satisfactory test re-test reliability when administered with children aged 5 to 12 (Lyneham, Street, Abbott & Rapee, 2008). Teacher scores on the SAS-TF have positively correlated with parent's and participant's ratings of anxiety (Lyneham et al., 2008). More recently, this questionnaire has been completed by teachers of secondary aged pupils with AS and was found to have good reliability

(α=0.7) (Luxford et al., 2017). This questionnaire was completed by a member of staff who knew the participant well.

Emotional, Social and Behavioural Wellbeing

The emotional, social and behavioural wellbeing measure aimed to further triangulate whether a change occurred pre and post intervention.

Strengths and Difficulties Questionnaire (SDQ) (Goodman, 2001) (Appendix K)

The SDQ is a measure of children's social, emotional and behavioural wellbeing. The measure has been found to have good reliability and construct validity (Goodman, 2001; Stone, Otten, Engels, Vermulst & Janssens, 2010). It is comprised of 25 items which are rated using a 3-point scale to explore the frequency of behaviours. The questionnaire consists of 5 subscales including: emotional symptoms, conduct problems, hyperactivity, peer problems and prosocial behaviours. A total difficulties score is formed by accumulating the scores from the first 4 subscales. The SDQ has been used extensively within the literature both with typical populations as well as more specifically with the AS population (e.g. Norbury et al. 2016; Wijnhoven, Creemers, Engels & Granic, 2015). Versions of the SDQ were completed by parents, teachers and the young person.

3.7.1.3. Homunculi Approach Measures

The Homunculi Approach measures are measures which occur organically within the intervention itself and aimed to measure participants' perceptions of their anxiety.

"Are your Homunculi Working for you?" Measures

As part of the Homunculi Approach participants were required to identify 3 to 5 problem areas. Participants were asked to rate how they felt they were coping with the identified problem areas on a 10 point scale, ranging from not very well to brilliant. These measures were taken at the beginning of the intervention and during the final intervention session.

Homunculi Approach Questionnaire (Appendix U)

As part of the Homunculi Approach participants were asked to complete a brief open ended questionnaire regarding their views of the intervention. This questionnaire was either completed by the participant themselves or through discussion with the intervention facilitator who scribed the participant's responses.

3.7.1.4. Session Outlines (Appendix L)

Staff who delivered the intervention were provided with session outlines to complete following each session to document which aspects of the session they completed, how long the session lasted for and any notes regarding participant engagement. The session outlines were created by the researcher using the Homunculi Approach manual by Greig and MacKay (2013b). The session outlines were also used to measure fidelity to the intervention (see Section 3.7.2.8).

3.7.2. Research Procedure

3.7.2.1. Piloting

Initial piloting was conducted at the start of the research. In order to increase the researcher's familiarity with the intervention, the researcher delivered the Homunculi Approach to a young person. The researcher recognised the challenge of structuring each sessions from the manual alone and consequently formed session outlines to support delivery of the intervention in the present research (Section 3.7.1.4).

Where possible, the behavioural observation measures were piloted before the SCED began. This was to assess the measure's viability and whether they accurately captured the participant's anxiety-related behaviours. Due to time constraints, the trialling of the behavioural observation only occurred for 1 participant and this measure was adapted as the participant's anxiety-related behaviours had changed.

3.7.2.2. Consent

See Table 3.4 for information regarding consent. Consent forms for participants, parents and staff can be viewed in Appendices P, Q and R.

3.7.2.3. Staff Training and Supervision

The researcher trained each member of staff involved in the project in their respective schools. The training sessions were received by one or two members of school staff.

The staff training consisted of one 60 to 90 minute session which aimed to provide an introduction to AS, anxiety and CBT as well as an overview of the Homunculi Approach (see Appendix M). In order to increase applicability to the LA where the researcher was on placement, the training presentation was similar to previously delivered training presentations within the EPS. Consistency across training sessions was maintained by the researcher using a script to support delivery of the training. Information regarding the Homunculi Approach was based upon the manual by Greig and MacKay (2013b). Following the training session, staff received copies of the PowerPoint slides. Furthermore, there was also an opportunity at the end of the training session for members of staff to ask any questions they may have had.

In addition, staff received supervision from the researcher for half an hour every 2 weeks throughout the intervention, implementing Hawkins and Shohet's process model (2012). During this time, the facilitators discussed managerial aspects (i.e. booking in dates for observations), educative aspects (i.e. anxiety resources), and supportive aspects (i.e. engaging the young person).

3.7.2.4. Collection of pre-intervention measures

Pre-intervention measures, consisting of the SCAS, SAS-TF and the SDQ (see Section 3.7.1), were completed by participants, parents and a member of staff who knew the participant well. An adult at school administered the questionnaires with the participant using the recommended guidelines provided. The parent questionnaires were returned to school and the researcher collected all questionnaires by hand.

3.7.2.5. Baseline Phase

During the baseline phase, data was collected using the repeated measures which consisted of the PI-ED questionnaire and behavioural observation. The length of the baseline phase varied depending on the availability of school staff to begin the intervention, school holidays and data collection timescales. Although it was

recognised baseline data should be stable before proceeding (Baer et al., 1968), this was not always possible due to timescales and ethical considerations. At least 4 data points, however, for each participant were collected prior to starting the intervention phase. All observers had the opportunity to resolve any challenges with the behavioural observation measure through consultation if required.

3.7.2.6. Intervention Phase

An introduction to the Homunculi Approach was provided in Section 2.4.3.1. The Homunculi Approach intervention was delivered on a 1 to 1 basis as this format has been found most effective for young people with AS (Kreslins et al., 2015). The intervention is designed to be delivered across 10 weeks; with each session lasting approximately 1 hour. There are 8 steps to the intervention which include:

1. Meeting the Homunculi: Introducing the concept
2. Seeing the Homunculi in action: Look at how the Homunculi can be used in the context of a story
3. Identifying Problems and Missions: Participants identify 3 to 5 problem areas or situations which are difficult to manage
4. Do they work? A pre-programme evaluation: Completion of "Are my Homunculi Working for me?" sheet
5. Creating agents and gadgets: The characters aim to solve the identified problems
6. Deciding how to plan the story/missions: Involves putting the agents and gadgets into a story scenario using writing, cartoon story board or video.
7. Story Development: Develop the story using guidelines provided.
8. Debriefing: Involves completing a questionnaire and "Are my Homunculi Working for me?" sheet (Greig & MacKay, 2013b)

Whilst the authors of the approach specify the intervention should be delivered flexibly, to increase consistency in implementation of the intervention, the researcher formed guidelines to structure each session (see Section 3.7.1.4; Appendix L).

As part of the intervention, the "Are your Homunculi Working for you?" measures were completed by participants during Session 2 or 3 and again at Session 10. During the intervention phase, repeated measures data continued to be collected.

3.7.2.7. Post intervention Phase

The procedures used to collect data post intervention were the same as those used pre intervention. Questionnaires were completed by participants, the participant's parents and a member of staff following completion of the intervention.

3.7.2.8. Integrity checks

Two types of integrity checks were conducted. Firstly, research suggests observers may stray from original behavioural codes when scoring participant behaviour (Kent & Foster, 1977). The researcher conducted integrity checks of 10% of the anxiety-related behaviours using the behavioural observation measures (Appendix H). For two participants, the researcher was unable to conduct integrity checks due to a) the unpredictability of when the behaviours occurred (Ben) and b) the unsociable time of the observation schedule (Alex). In these two cases, either another member of staff or a second parent conducted the integrity checks.

Secondly, Dane and Schneider (1981) found if there were no measures of treatment integrity, the internal validity of the study was compromised. Integrity checks assessed the level of fidelity to the intervention, thus enhancing interpretation of the effects. In line with Barlow et al.'s recommendation (2009) the researcher aimed to observe 20% of the intervention sessions. The researcher conducted the integrity checks using the session outlines (Appendix L). The researcher aimed to conduct one observation during sessions 1 to 5 and one observation during sessions 6 to 9 to ensure the observations were spread out. In practice this was not always possible. At the end of the observed sessions the facilitator and the researcher independently completed the session outline to assess which elements of had been addressed during the session.

3.7.3. Validity and Reliability

The table below details potential threats to validity and reliability in the quantitative phase of the study. Validity is defined as the extent to which the data represents the phenomena being measured, and reliability is defined as the stability of the methods used to obtain the data (Barlow et al., 2009).

3.7.4. Intervention Process

In order to explain how the principles of CBT have been implemented within the Homunculi Approach, the following table presents each step within Sophie's Homunculi Approach intervention in relation to principles of CBT.

Homunculi Approach Stage	Sophie's Experience	Link with CBT
1. Introducing the concept of the Homunculi Approach and understanding how the Homunculi work	The member of staff explained the Homunculi Approach using the poster included within the guide to explain how Sophie's thoughts and feelings screen in the skull influence her behaviours. Sophie then drew out her own version of the skull which she referred to during each session.	Psychoeducation of CBT principles: specifically explaining how thoughts, feelings and behaviours link together.
2. Identifying Problems and Missions	Sophie used a worksheet in the book to identify possible "missions" (trying to relax and feeling able to cope with exam/test anxiety) and explore what she could do to solve these missions and the positive/negative outcome these would have (for example, Sophie said she could talk to someone about her worries and anxieties a good outcome of this would be they give her good advice/calm her and a bad outcome would be that they say "stop being silly".	Data collection phase where Socratic questioning was used to help raise Sophie's self-awareness of her difficulties.
3. Pre-programme evaluation: Completion of "Are my Homunculi Working for me?" sheet	Sophie decided she wanted to focus on a mission of "feeling less anxious in exams/tests". Sophie rated her ability to cope with this mission as 5 out of 10 (1=not very well, 10= brilliant).	Goal setting: encouraging the young person to identify and set themselves a goal of what they would like to work towards.

4.	**Creating agents and gadgets: The characters aim to solve the identified problems**	Sophie identified several characters and gadgets which she could use to support her with her mission. These included agent "Testy Tilly" who was a dog who helped with exams. Testy Tilly's gadget was the light bulb pencil which works by increasing brain power during exams.	Practicing new skills: encouraging Sophie to try out new skills by identifying different gadgets which she could use.
5.	**Deciding how to plan the story and to then to develop the story**	Sophie decided she would like to write her story where Sophie was in class when the teacher announced a test. Sophie explained how she used different agents and their gadgets to help her cope during the test and the outcome of the test is that she receives an average grade in the results.	Behavioural experiments: to role play through the stories in order for Sophie to predict what the outcome of using different gadget/s and agents would be.
6.	**Completing an evaluation questionnaire and "Are my Homunculi Working for me?" sheet**	Sophie completed the scaling questions from the beginning at the end of the intervention and rated her ability to cope with anxiety around exams/tests as an 8 out of 10.	Exploring whether the intervention has restructured cognitions about self and situations by revisiting the scaling question and evaluating the programme.

Table 3.4: Table to show the possible threats to validity and reliability in the quantitative aspect of the research

Type of Validity/Reliability	Definition	Solution to Issue
Threats to external validity (the extent to which the findings from the experiment can be generalised to, for example, other contexts and with other populations (Robson, 2001, p.85)):		
Selection, setting and history	The extent to which the findings are limited to the participants, the setting and the participants' unique experience of the intervention.	Multiple participants were recruited across different schools (Cooper et al., 2007). Descriptions of the participants, the context in which the research was conducted and factors which may have influenced participant's anxiety levels were acknowledged (Horner et al., 2005)
Construct	The constructs studied may be specific to the individuals recruited (Robson, 2001).	Standardised measures, triangulated using several instruments, were used to assess anxiety (Onghena & Edgington, 2005).
Threats to construct validity (the extent to which the intervention affects the construct it is designed to affect (Kazdin, 2003)):		
Attention and contact with the clients	The extent to which the results from the study can be attributed to the increased adult attention received rather than the intervention itself.	This has been a challenge acknowledged in previous research (James et al., 2013) and is a limitation of the current research discussed further in Section 5.6.1.
Demand Characteristics	The participants and staff in the setting may behave differently as they are aware the study is taking place and is related to anxiety.	The collection of baseline data provided an opportunity to assess anxiety levels before the intervention began. Furthermore, the researcher was not present during when collecting the questionnaire responses or during Session 10 when participants were asked for their views on the intervention to reduce demand characteristics.
Threats to internal validity (the extent to which the data accurately represents the phenomena being measured (Cook & Campbell, 1979, pp51-55)):		
History	The extent to which extraneous variables may influence	Repeated measures were frequently collected in order to identify any

	participant's anxiety levels.	changes in anxiety and factors which may have influenced participant's anxiety levels were acknowledged making it easier to hypothesise possible explanations for variations in the data (Barlow et al., 2009).
Testing	Using repeated measures may affect responses due to repeated exposure.	Repeated measures which could be used frequently were chosen. Baseline data was collected before the intervention began to identify any trends when using the repeated measures.
	Using identical pre and post measures may affect responses.	There was least a 10 week gap between administration of pre and post questionnaire measures and the researcher requested school staff to use the same conditions when administering the participant's questionnaires.
Mortality	The extent to which participant's drop out of the study.	The researcher attempted to recruit more than enough participants to accommodate for possible attrition.
Threats to reliability (the stability of the methods used to obtain the data (Robson, 2001)):		
Self- report measures	The extent to which self-report data is a reliable method of participant's anxiety levels (Greig, 2007).	Self-report methods were triangulated through behavioural observations and teacher/parent questionnaires responses.
Treatment integrity	The delivery of the intervention may vary depending on the facilitator's characteristics and experience.	Each facilitator received the same training and was provided with session outlines to increase consistency. The researcher conducted integrity checks to ensure intervention implementation adhered to the session outlines.
Researcher Error	The researcher may not accurately interpret the data.	The data was inter-rated using visual analysis by a researcher knowledgeable in SCEDs to support interpretation of the data.

3.8. Phase 2

Qualitative data using an Activity Theory framework addressed the second research question of: *What are staff perceptions of the factors which may affect the implementation of the Homunculi Approach when delivered by school staff in schools?* The following section outlines the procedure used as well as an introduction to Activity Theory.

3.8.1. Research Procedure

3.8.1.1. Sampling Strategy

The intervention facilitators were asked if they would be willing in taking part in the second phase of the study (see Table 3.4; Appendix R). All 4 facilitators consented to taking part.

3.8.1.1. Description of Facilitators

The authors of the approach emphasised the intervention can be delivered by anyone (Greig & MacKay, 2013b) and therefore no prerequisites were required for staff to deliver the intervention. The experience of the intervention facilitators varied and can be viewed in Table 3.2 below.

3.8.1.1. Interviews

In the present research, the interviews were structured using Activity Theory. An introduction to Activity Theory is provided in Section 3.8.2.1. The semi-structured interviews lasted between 30 and 40 minutes and were conducted in a quiet, private room. The interviewer used prompt questions to help elicit the views of the participants; the interview schedule and prompt questions can be viewed in Appendix S. The Activity System diagram was completed by hand, scribed by the researcher, during the interview. Interviews were recorded using a Dictaphone to ensure the data was recorded accurately within the Activity System diagram. Member checks were conducted immediately following the interview and several weeks after the interview once the researcher had reviewed the Dictaphone recording to ensure the information had been accurately depicted.

Table 3.2: Table to display the job titles and previous experience of the intervention facilitators

Job Title	Experience/training	Young Person who received the Homunculi Approach
Head of Learning Disabilities and Difficulties	No previous experience of the Homunculi Approach, previous training in supporting young people with AS. 5 years' experience working with pupils with AS.	William
Special Educational Needs and Disabilities (SEND)Teaching Assistant (TA) Level 2	No previous experience of the Homunculi Approach, previous training in a therapeutic approach. 1 years' experience working with pupils with AS.	Sophie
SENCO	The researcher had previously delivered the intervention with a pupil at the school increasing the SENCO's awareness of the intervention. 9 years' experience working with pupils with AS.	Alex
Special Educational Needs Lead Teacher	No previous experience of the Homunculi Approach, previous training in supporting young people with AS. 18 months' experience working with pupils with AS.	Ben

3.8.2. Data Collection Process

Activity theory was used deductively during the research to guide the semi-structured interviews. An introduction to activity theory is presented below.

3.8.2.1. Activity Theory

Activity theory was identified as an appropriate tool to use in the current research to address the secondary research question. Activity theory is a practical method, in keeping with the pragmatic paradigm. It is holistic in nature, drawing upon the perspective of the individual whilst also considering the system in which the individual operates.

Activity theory understands the process of human activity within a sociocultural perspective; taking into consideration the influence of history and culture on behaviour (Engeström, Miettinen & Punamäki, 1999). Originating from the work of Vygotsky and Leont'ev, in the 1920's and 1930's (Engeström et al., 1999; Leont'ev, 1978), Vygotksian principles have heavily influenced the development of activity theory.

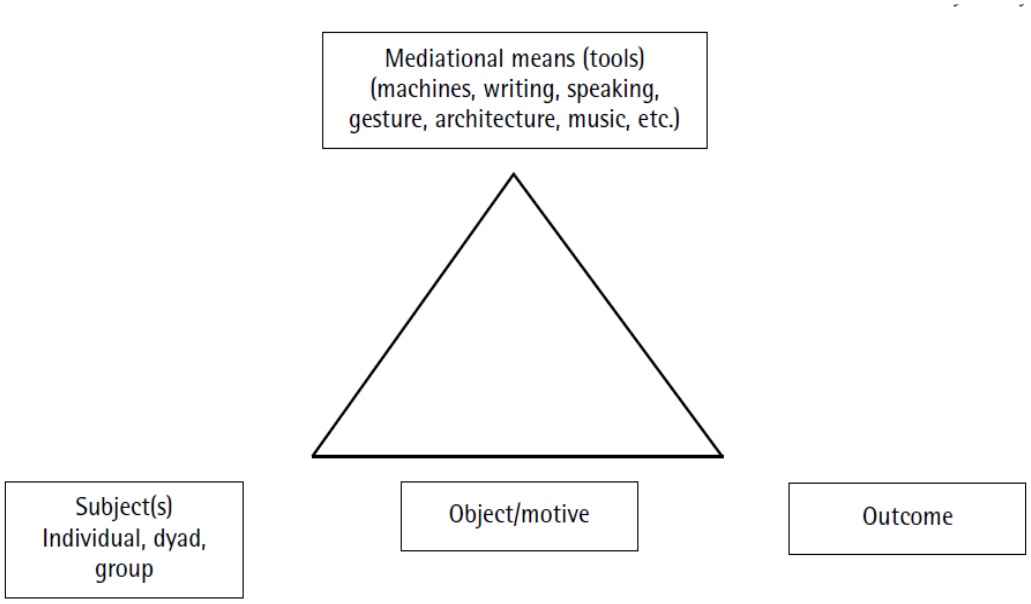


Figure 3.3: First-generation activity theory model (based on Daniels, 2001, p.86)

Engeström developed activity theory through a series of iterations. The first generation activity theory model can be viewed in Figure 3.3. This model depicts the relationship between the subject and the object through mediational means. In the context of the present research, the staff member is the person (*subject*) who delivered the Homunculi Approach (*object*) with the goal of reducing the young person's anxiety (*outcome*). Furthermore, tools used for mediational purposes shape the internal and external behaviour of the agent. Vygotsky described two types of tools:

psychological tools, used by humans to influence people or themselves; and technical tools, used to manipulate physical objects (Vygotsky, 1981).

Engeström developed the second generation activity system model in order to include contextual factors at a 'macro level' (Daniels, Edwards, Engeström, Gallagher & Ludvigsen, 2010). The following components were added: *rules* which govern how the individual acts on the object; *community* which identifies other people who share the individual's goals; and *division of labour* which explores how the action is divided between members of the community (see Figure 3.4).

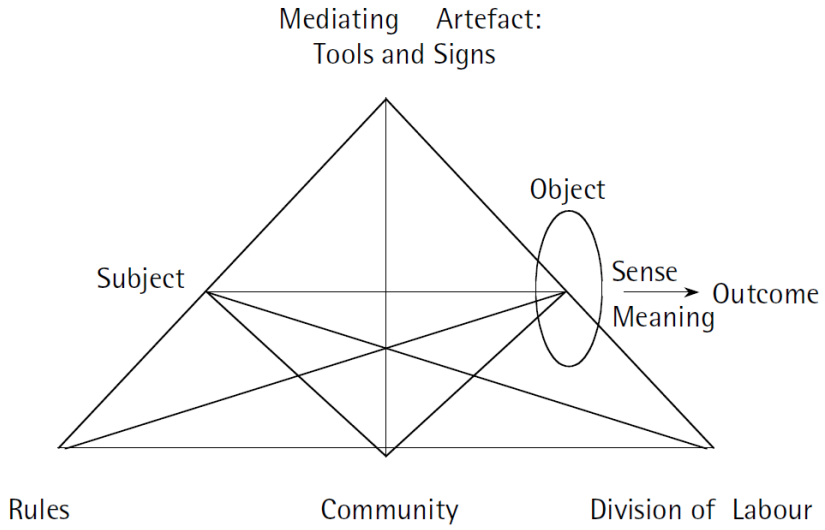


Figure 3.4: Second generation activity theory model (based on Engeström, 1987, p.78)

Through exploration of the different nodes within Activity Theory, contradictions within a system can be identified. It is through acknowledgment of these contradictions, Engeström explained, that change can occur (Engeström et al., 1999). For instance, if the interviewee recognises that the rules governing the activity are such that the outcome cannot be achieved, this can help lead to change (Leadbetter, 2005). The second generation of activity theory was implemented in the present research where possible contradictions were acknowledged in order to elicit factors which may have hindered the implementation of the intervention.

3.8.3. Trustworthiness

Previous researchers have argued the terms validity and reliability are inappropriate when pursuing qualitative research due to the subjective nature of such research (Lincoln & Guba, 1985). In order to accommodate the ontological position of qualitative research, the evaluative criteria provided by Lincoln and Guba (1985) will be used in the present research. Table 3.3 details the trustworthiness of the qualitative phase of the study.

Table 3.3: Table to display the qualitative criteria and steps taken to meet the criteria in the current research (Lincoln & Guba, 1985)

Criteria	Definition	Steps taken by the researcher to meet criteria
Credibility	The confidence in the 'truth' of the findings.	Prolonged engagement in the setting (7 months). Two opportunities for "Member checks" (Lincoln & Guba, 1985) with the facilitators.
Transferability	The extent to which the findings are applicable to other contexts.	Thick description of participants and the context in which the research was conducted. Multiple interviews to support generalisability (Cook & Campbell, 1979).
Dependability	The extent to which the findings are consistent and could be repeated.	The researcher was clear in the methods and procedures used.
Confirmability	The degree to which the findings of the study are shaped by the respondents and not researcher bias, motivation or interest.	The researcher acknowledged possible biases in Section 3.8.4 and this awareness aimed to help reduce the impact of bias on data interpretation. A research log was completed throughout the process to capture methodological decisions made. The data was looked over by a peer who was not directly involved in the research.

3.8.4. Researcher Reflexivity

The researcher's views, beliefs and characteristics can impact upon the research (Robson, 2001).To reduce the possibility that such factors might impact on the research Johnson (1997) expressed the importance of the researcher being self-aware of their potential biases.

The researcher was a middle class, white British female in her mid-twenties. The researcher felt passionate in supporting the mental wellbeing of young people in schools from her experience as a Learning Mentor and as a TEP. This may have influenced the researcher's motivation for the research to be effective in reducing anxiety for the young people involved. Additionally, the researcher developed a close relationship with each of the schools involved in the study. The researcher may have had thoughts regarding what factors had affected implementation of the intervention which may have influenced how the interviews were conducted.

Furthermore, due to the researcher's experience as a TEP, the researcher reflected on not wanting to label or categorise the young people who were experiencing anxiety and this influenced the researcher in selecting a dimensional rather than categorical definition of anxiety in the present research.

3.9. Ethical Issues

Within both Phase 1 and Phase 2 of the research, the DECP (2002), HCPC (2008) and BPS (2002) guidelines were adhered to throughout the research. Ethical clearance was gained from the University of Nottingham Ethics Committee on the 27th of March 2017 (see Appendix T). Actions taken to ensure ethical principles were adhered to in the current research can be viewed in Table 3.4.

3.10. Summary

This chapter has acknowledged how the pragmatic paradigm and research purposes have shaped the methodology used in the present research. A detailed account of Phase 1 and Phase 2 of the research was provided including sampling strategies, instruments used to collect data, challenges to validity and reliability as well as ethical considerations.

Table 3.4: Table to outline the actions taken to ensure ethical principles were adhered to in the current research

Ethical issue	Action(s)
Deception BPS Principle 2.2.12 (2002)	Participants were aware of all aspects of the research. The only exception being what the behavioural observation measured as this may have affected participant's behaviour during the study and may have been detrimental to their wellbeing.
Consent DECP 2.1 (2002)	Phase 1: The parents and intervention facilitators received a letter introducing the project and consent form (See Appendix O and P). Consent was sought from the pupils by the researcher visiting each young person in school and introducing the project to them. Pupils were provided with an opportunity to sign the consent form (See Appendix Q). Phase 2: The intervention facilitators were provided with an information sheet and consent form to complete (see Appendix R) before participating in the second phase of the study.
Confidentiality DECP 2.3.7 (2002) HCPC 7.3 (2008)	Data was stored in a non-personalised form where each participant was provided with a pseudonym to ensure confidentiality. The researcher understood it was important to breach confidentiality and share information if safeguarding concerns arose regarding the young person. The researcher was aware of the LA's safeguarding procedures if this situation occurred.
Withdrawal BPS principle 1.4 (2002)	The participant's right to withdraw was made clear in the consent form and the letters accompanying the questionnaires. The intervention facilitators were reminded to allow the young person to withdraw if they wished.
Advice BPS, 3.3.9, (2002)	The researcher ensured their role was distinct from their role as a TEP. Concerns regarding the young person's wellbeing were discussed with the young person and their parents, for example, referrals to CAMHS. The facilitators could contact the researcher regarding any concerns they had and received supervision every 2 weeks. The researcher accessed advice through peer and academic supervision, being transparent about research at all times. Regular supervision ensured

	the impact of research was fair and contributed positively.
Debrief BPS Principle 3.4 (2002)	Participants were directed to agencies following the intervention, if this was appropriate. Participants from Phase 1 of the study were provided with a debriefing letter following the intervention. In Phase 2, the intervention facilitators were debriefed verbally following the interview to discuss any issues which arose.
DECP 2.2.5 (2002)	All stakeholders received letters and feedback regarding the project once the findings were finalised.

4. Results

4.1. Introduction

The results chapter is structured by presenting the findings from Phase 1 followed by the findings from Phase 2 of the research. In Phase 1, the methods used to analyse the repeated measures and pre and post data is discussed. The results from this phase are presented separately for each participant. In Phase 2, the data from each interview is presented in relation to the four participants. A summary of the findings from this phase is conducted.

4.2. Phase 1 Data Analysis

The methods used to analyse the quantitative data are discussed in relation to the literature before introducing the analysis methods used in the current study.

4.2.1. Analysis of Repeated Measures Data

Within the literature there has been considerable debate regarding whether visual analysis or statistical methods should be used to analyse repeated measures data in SCEDs (Harrington & Velicer, 2015; Todman & Dugard, 2001; Wolery, 2013). The literature regarding both analysis methods is presented.

4.2.1.1. Visual Analysis

Traditionally, visual analysis was the sole analysis tool for SCEDs (Harrington & Velicer, 2015). Visual analysis requires the researcher to examine the data graphically and analyse the behaviours within and between phases to assess the effectiveness of the intervention (Kazdin, 1978; Lane & Gast, 2014). The characteristics consistently identified in the literature to support visual analysis have been summarised by Kratochwill et al. (2010) (see Table 4.1).

Visual analysis has been viewed as a conservative approach as visually it may appear there is no difference between baseline and intervention phases, when statistically there is a difference (Kazdin, 1982). This has resulted in visual analysis being used as a tool to explore whether the change is deemed clinically significant (Todmand & Dugard, 2001). A limitation of visual analysis is the high degree of subjectivity due to the lack of concrete decision rules regarding whether there is a

reliable effect (Wampold & Furlong, 1981). There is often low interrater reliability using visual analysis as researchers frequently disagree on the interpretation of the data (Kahng et al., 2010; Park, Marascuilo, & Gaylord-Ross, 1990).

Visual analysis can be subject to the same limitations as statistical analysis, such as autocorrelation, which may affect validity and reliability of the data. Autocorrelation occurs when there is growing interdependence of data points collected in close succession for a single participant, which may increase the likelihood of a Type 1 error occurring (Todman & Dugard, 2001). Trend lines have been added to aid reliability and validity, although there are concerns researchers may have become over reliant on looking at trend lines (Brossart, Parker, Olson & Mahadevan, 2006; Hojem & Ottenbacker, 1988). In light of such limitations, Brossart et al. (2006) suggested 4 recommendations to improve visual analysis which included judges rating the degree to which the intervention has been effective on a 5 point scale.

In summary, despite such limitations, SCED researchers have shown a preference for visual analysis compared to statistical analysis as researchers are more able to clearly see differences between baseline and intervention phases by examining the continuous data set (Kazdin, 2003).

4.2.1.1. Statistical Analysis

Statistical analysis methods will be briefly presented, however, statistical methods were not conducted in the present research due to reasons presented below. SCED researchers have recognised statistical methods can be useful, particularly on occasions when there is no stable baseline or when extraneous factors need to be controlled for (i.e. Kazdin 1982; Olive & Smith, 2005).

There are several different types of statistical analyses which have been referred to in the literature. Many of the analyses, however, require the SCED data to meet certain assumptions which can be impractical and unrealistic, particularly in real world research. For instance, *t* and *F* tests require the data to be normally distributed, whilst the Interrupted Time Series Analysis requires at least 50 observations and no gaps in the data (Barlow et al., 2009). The data in the present study did not meet such stringent criteria and therefore statistical analyses were deemed inappropriate.

Table 4.1: Table to display the various characteristics of visual analysis identified by Kratochwill et al. (2010)

Visual Analysis Characteristic	Definition
Mean	The mean rate of behaviour. This should reduce between baseline and intervention phase if the intervention has been effective (Kazdin, 2003). The mean shift is the percentage of mean change between baseline and intervention phases. A negative score indicates a decrease in mean (Harbst, Ottenbacher & Harris, 1991).
Level	The level of change when moving from one phase to another. An abrupt shift between the last data point in the baseline phase and first data point in the intervention phase aids data interpretation (Kazdin, 2003; Kratochwill et al., 2010).
Trend	The comparison of best-fitting straight lines for the data within each phase (Harbst et al., 1991). If the direction of the slope changes between phases this indicates the intervention has had an effect (Kazdin, 2003).
Variability	The participant's variability in their response within each phase (Neuman & McCormick, 1995). The less variability in the data within each phase, the more confident the researcher can be as to whether a change has occurred.
Immediacy of the effect	The change in level between the last three data points in one phase and first three data points of the next (Kratochwill et al., 2013). The more rapid the change, the more likely the effect can be attributed to the intervention.
Overlap of data	The proportion of data from one phase that overlaps with data from the previous phase. If there are no overlapping data points between different phases, the researcher can be more confident the intervention has been effective (Kazdin, 2003).
Consistency of data patterns across similar phases	The comparison of data in the same phase (i.e. in an ABA design this would require looking at baseline data before and after the intervention). The greater the consistency, the more likely a causal relationship can be established.

Effect sizes can also be used to statistically analyse changes between phases. The importance of researchers documenting effect sizes has been highlighted by the American Psychological Association (2001) guidance for submitting journal articles. Although researchers have stated effect sizes should be the obvious choice for summarising SCED effects (Busk & Serlin, 1992), the results can vary considerably depending on which method is employed (Brossart et al., 2006). Effect size is a relatively underdeveloped area within SCED research and there is currently no conclusive evidence regarding the preferred method (Kratochwill et al., 2010; Shadish & Rindskopf, 2007). Due to the lack of consensus in the literature regarding the most suitable method to use, the researcher chose not to conduct effect size analyses in the present research.

4.2.2. Analysis of Pre and Post Data

Within group studies, statistical analyses, such as ANOVAs and *t*-tests can be conducted to compare the group's pre and post treatment results (Dancey & Reidy, 2007). In SCEDs, such statistical analyses of pre and post measures are inappropriate due to the small numbers of participants recruited. The Reliable and Clinically Significant Change Index, developed by Jacobson and Truax (1991), provides a method of analysis to explore the effect of the intervention at an individual level. This method explores whether the change was reliable; the change is unlikely to be attributed to external factors other than the intervention and, clinically significant; the outcome for the young person is positive when compared to their clinical group average (Evans, Margison, & Barkham, 1998).

The Reliable Change Index (RCI) has been criticised for not sufficiently controlling for potential sources of error (Wise, 2004), such as regression to the mean. This is the phenomenon that if an extreme score pre intervention is obtained, the post intervention score is statistically likely to be closer to the mean (Todman & Dugard, 2001). To control for such limitations, several authors have developed variations of the RCI (Kelley, 1947; Draycott, Kirkpatrick & Askari, 2012). In theory the alternative methods appeared advantageous, yet in practice they have been deemed to have greater flaws than Jacobson and Truax's (1991) classical approach (Maassen, 2001; Maassen, 2004). Jacobson and Truax's method continues to be the favoured

method and has been used extensively in the literature (e.g. Egan & Hine, 2008; Lane-Brown & Tate, 2010).

RCI is calculated by dividing the difference between the participant's post intervention and pre intervention score by the standard error of difference between the two scores:

$$RCI = \frac{x\ post - x\ pre}{S_{diff}}$$

x = participant's score

S_{diff} = standard error of difference

If the RCI is above 1.96 it is 95% likely that the change between pre and post treatment scores is reliable and unlikely to have occurred through unreliability of the measure (Ferguson, Robinson & Splaine, 2002).

Clinically significant change can be examined using 3 different methods described by Jacobsen and Truax (1991). Clinical Significance has been recognised as a tool to bridge the gap between clinical practice and outcome (Tingey, Lambert, Burlingame & Hansen, 1996). In the current research, it was deemed inappropriate to calculate clinical significance due to the adoption of a dimensional rather than categorical definition of anxiety.

4.2.3. Current study

In the present research, the repeated measures data was analysed visually using the criteria outlined in Kratochwill et al.'s Clearinghouse Guidelines (2010). The methods used to assess the characteristics can be viewed in Table 4.2.

To increase the reliability of the visual analysis, the researcher and a colleague with knowledge of SCEDs independently analysed the graphical data. As recommended by Brossart et al.'s (2006), the judges addressed the following question on a rating scale of 1 (not at all convinced) to 5 (very convinced):

"How certain or convinced are you that the child's responses underwent a practical and significant improvement from the baseline to the intervention phase?"

Table 4.2: Table to display the characteristics of visual analysis and methods used to assess each characteristic in the present research

Visual Analysis Characteristic	Assessment
Mean	The mean was calculated for each phase. The mean shift was calculated by dividing the difference between the baseline and intervention phase by the mean of the baseline phase
Level	The level was calculated by taking the last point in the baseline phase and first point in the intervention phase. The larger number was divided by the smaller number to produce a ratio to indicate the absolute change between the two phases (Harbst et al., 1991).
Trend	The Ordinary Least Squares (OLS) Regression Line, also known as Linear Regression Line, was calculated using Excel©. To calculate the magnitude of slope change, the slope of the baseline phase was subtracted from the slope of intervention phase. The larger the value, the greater the change between the two phases (Harbst et al., 1991).
Variability	The variability was calculated by identifying the spread of scores and standard deviation in each phase. The spread of scores and standard deviations were compared within and between phases.
Immediacy of the Effect	It was deemed inappropriate to use this characteristic as the effects of intervention in the research were likely to be cumulative.
Overlap of Data	This characteristic was computed by calculating the spread of data points in baseline phase and checking whether any data points in the intervention phase fell within this spread. This number was divided by the number of data points altogether in the intervention phase to provide a percentage of overlap (Harbst et al., 1991).
Consistency of Data Patterns	As an A-B design was used in the current research, this characteristic was not applicable as no phases were repeated.

A significant improvement, in the present research, referred to a decrease in anxiety levels and anxiety-related behaviours. The interrater reliability was calculated using Cohen's Kappa (Cohen, 1960).

Pre and post measures were analysed using Jacobsen and Truax's RCI (1991). A RCI score of 1.96 or above indicated a significant difference between pre and post

intervention scores (Jacobson & Truax, 1991). The reliability (Cronbach's Alpha), and standard deviations of the measures were lifted from the literature (see Table 4.3). The questionnaire responses for each measure were scored manually, following the scoring and interpretive procedures outlined in the manuals. The RCI analyses were calculated by hand.

Table 4.3: Table to display the reliability and standard deviations of the pre and post measures used

Measure		Child	Parent	Teacher
SCAS/SAS-TF	**Reliability** (Lyneham et al., 2008; Nauta et al., 2004; Spence, 1998)	0.92	0.89	0.93
	Mean of normative sample (and Standard Deviation) (Lyneham et al., 2008; Nauta et al., 2004)	Boys =11.8 (8.3) Girls= 12.6 (9.1)	24.65 (15.46)	10.8 (8.43)
SDQ	**Reliability** (Goodman, 2001)	0.80	0.82	0.87
	Mean of normative sample (and Standard Deviation) (Meltzer, Gatward, Goodman & Ford, 2000)	10.3 (5.2)	8.2 (5.8)	6.3 (6.1)

In order for a significant reduction in anxiety to have occurred, it should be deemed *very convincing* or *reasonably certain* there was a change between baseline and intervention phases on the PI-ED measure and observational measure, if applicable. Additionally, there should also be a significant reduction on the anxiety pre and post measures by at least one informant. The participant should also show a change in their perceived ability to cope with their identified problem/s.

4.3. Phase 1 Results

The results for each participant were structured in the following way in order to address the primary research question of: *Does the Homunculi Approach reduce anxiety in pupils with AS in secondary schools when delivered by school staff?*

- Background information regarding each participant, including documentation of extraneous variables which may have influenced each participant's anxiety levels,

- A time series graph and visual analysis of the repeated measures data (PI-ED and behavioural observation),
- The RCI scores for the pre and post measures (SCAS, SAS-TF and SDQ) completed by parents, teachers and the young person,
- A bar graph of the "Are your Homunculi Working for you?" measure,
- A written summary of the participant's debriefing questionnaire responses. The raw questionnaire data can be viewed in Appendix W.

4.3.1. Participant 1: William

William is a 13 year old young person in Year 9. William was diagnosed with Asperger's Syndrome in Year 1 and received an SEN statement (now referred to as an Education, Health and Care Plan (EHCP)) in 2011. William attended a large mainstream academy school. The support William receives in school includes weekly sessions with a Learning Mentor, access to TA support in every lesson and extra time in exams. In summer 2017, at the start of the project, William was below target in English, Maths and Science although was excelling in IT and Music.

William was identified as a suitable young person to take part in the research as he was finding social situations difficult to manage, and he appeared on edge in class, as shown through fidgety behaviours. It was hoped the Homunculi Approach would support William's development of social skills and reduce his anxiety levels by developing coping strategies.

During the research period, a member of William's family became ill. School staff reported William had begun using negative language, particularly around death, and his concentration levels had reduced in class. In January 2018, the family received more positive news regarding the illness and school staff noticed this positively impacted on William's behaviour in school. The intervention facilitator explained William had difficulty engaging with the programme and did not feel the intervention had reduced William's anxiety levels or supported his social skills in school.

4.3.1.1. Repeated Measures

The graphs below display William's scores on the PI-ED and the frequency of William displaying anxiety related behaviours in his French class during baseline and intervention phases. The graphs are accompanied by the visual analyses in Table 4.4 and Table 4.5.

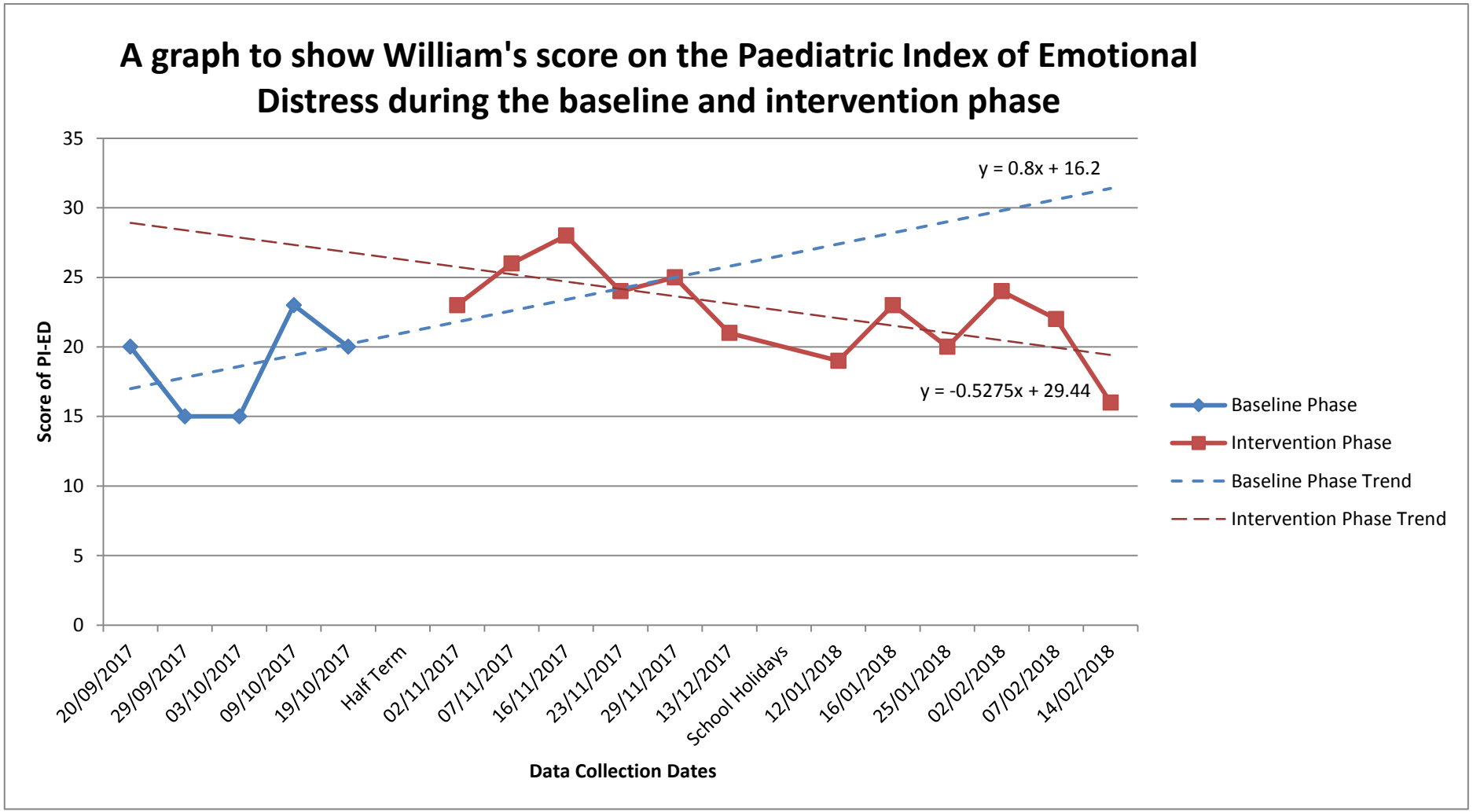


Figure 4.1: A graph to show William's scores on the PI-ED during the baseline and intervention phase

Table 4.4: A table to display the Visual Analysis for William's PI-ED scores

Visual Analysis Characteristic	Descriptive Results	Statistical Results	
Mean	There was an increase in mean between the two phases; the mean was lower during the baseline phase in comparison to the intervention phase.	Mean of baseline phase=	18.6
		Mean of intervention phase=	22.6
		Difference between baseline and intervention phase=	4.0
		Mean shift=	0.2
Level	There was a small increase in level between the end of the baseline and beginning of the intervention phase.	Absolute change in level=	1.2
Trend	The trend for the baseline phase fell on an incline (0.8), whilst there was a gradual decline in the trend for the intervention phase (-0.5).	Magnitude of slope change=	-1.3
Variability	There were a broad range of data points in both the baseline and intervention phase. The variability of data was the same in the baseline and intervention phase.	Range of data (and standard deviation)	
		In baseline phase=	8 (3.1)
		In intervention phase=	12 (3.1)
Overlap of data	Over half of the data points in the intervention phase overlapped with the baseline phase.	Percentage of data points overlapping=	58%

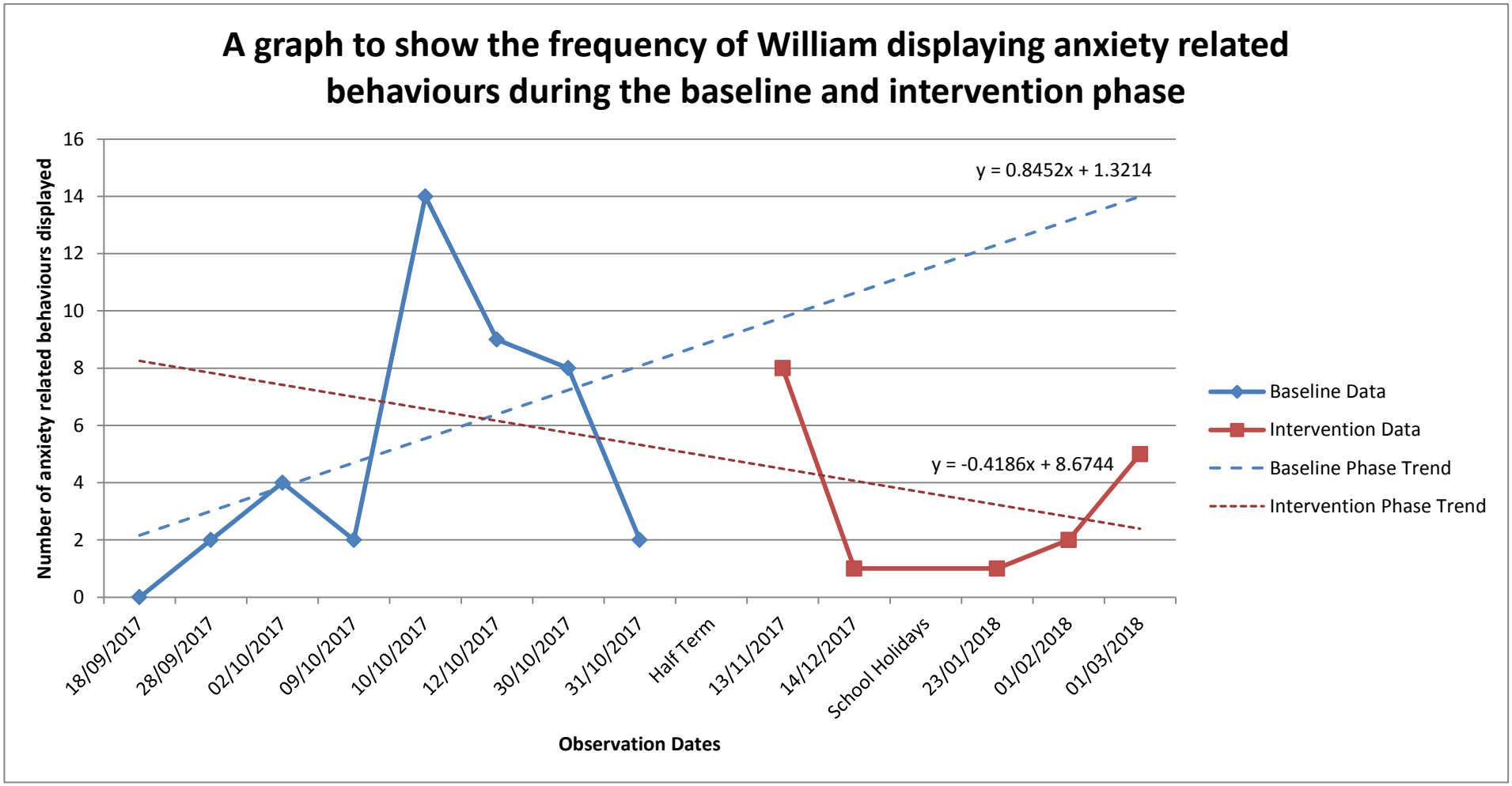


Figure 4.2: A graph to show the frequency of William's anxiety related behaviours during the baseline and intervention phase

Table 4.5: A table to display the Visual Analysis for the frequency of William's anxiety related behaviours

Visual analysis characteristic	Descriptive Results	Statistical Results	
Mean	There was a decrease in mean between the two phases; the mean was higher during the baseline phase in comparison to the intervention phase.	Mean of baseline phase=	5.1
		Mean of intervention phase=	3.4
		Difference between baseline and intervention phase=	1.7
		Mean shift=	-0.3
Level	There was an increase in level between the end of the baseline and beginning of the intervention phase.	Absolute change in level=	4
Trend	The trend for the baseline phase fell on an incline (0.8), whilst there was a gradual decline in the trend for the intervention phase (-0.04).	Magnitude of slope change=	-1.3
Variability	There were a broad range of data points within the baseline and intervention phase. The variability of data was larger in the baseline phase in comparison to the intervention phase.	Range of data (and standard deviation)	
		In baseline phase=	14 (4.5)
		In intervention phase=	8 (2.7)
Overlap of data	All data points in the intervention phase overlapped with data points in the baseline phase.	Percentage of data points overlapping=	100%

PI-ED Questionnaire

The visual analysis suggested there was no change between baseline and intervention phases as shown through an increase in mean scores and a large variation of data points in both phases. Trend line data indicated there may have been a change as the trend moved from an incline to a decline in anxiety between baseline and intervention phases. It appeared not at all convincing that there was a practical or significant improvement between baseline and intervention phases.

Behavioural Observation

The visual analysis revealed little change between baseline and intervention phases as shown through the high level of variability in data across both phases and all data points in the intervention phase overlapped with the baseline phase. Conversely, the mean scores reduced and the trend line moved from an incline to a decline between baseline and intervention phases indicating there may have been a reduction in anxiety. It appeared not at all convincing there was a practical or significant improvement between baseline and intervention phases.

4.3.1.2. Pre and Post Measures

The tables below present the pre and post intervention scores. The RCIs for the child, parent and teacher rated anxiety measures were non-significant, indicating the Homunculi Approach did not significantly impact on William's anxiety levels. The RCIs for the social and emotional wellbeing measure were non-significant across informants indicating the Homunculi Approach did not significantly impact on William's social, emotional and behavioural wellbeing.

Table 4.6: Table to show William's levels of anxiety reported by self, parent and teacher, pre and post intervention

	Child (SCAS)	Parent (SCAS)	Teacher (SAS-TF)
Pre	32	35	14
Post	27	26	18
Difference	-5	-9	+4
Reliable Change Index	-1.51	-1.24	1.26
Significance	Not significant	Not significant	Not Significant

Table 4.7: Table to show William's levels of social, emotional and behavioural wellbeing reported by self, parent and teacher, pre and post intervention

	Child (SDQ)	Parent (SDQ)	Teacher (SDQ)
Pre	20	22	23
Post	19	21	25
Difference	-1	-1	+2
Reliable Change Index	-0.30	-0.29	0.64
Significance	Not significant	Not significant	Not significant

4.3.1.3. Homunculi Approach Measures

"Are your Homunculi working for you?"

William did not complete this measure as his characters and missions changed throughout the intervention.

Homunculi Approach Questionnaire

William stated he found it helpful to explore the problem scenarios. William found making the gadgets, the strategies to support him in solving the problems, less helpful. William identified his most helpful agent as "snake because it helps me not to snitch on anyone and give me a bad reputation". William said the main thing he had learnt from doing the Homunculi Approach was not to get annoyed at school. If he were doing the Homunculi Approach again he would try to be friendlier.

4.3.1.4. Summary

In summary, the repeated measures data did not appear convincing indicating there had not been a reduction in anxiety during the intervention. Many of the behavioural observation data points were missing which may have affected the conclusions drawn. There were no significant findings when analysing the pre and post measures for anxiety or social, emotional and behavioural wellbeing. Although staff had not noticed any changes in William's behaviour in school, William could identify what he had found helpful and what he had learnt from the intervention when completing the Homunculi Approach questionnaire. William's engagement in the intervention and anxiety levels may have been affected by the factors at home.

4.3.2. Participant 2: Sophie

Sophie is a 12 year old young person in Year 8. Sophie enjoys playing with her two dogs at home and recently took part in the school play. Sophie was diagnosed with Autism and Attachment Disorder when she was in Year 2. Sophie attends a relatively small academy school. At school, Sophie is part of a small nurture group, she receives weekly literacy and numeracy interventions and TA support during some lessons. In summer 2017, Sophie's standardised scores for numeracy and reading were within the average range.

The Homunculi Approach was deemed appropriate for Sophie as she was displaying anxiety related behaviours at home, which included several ritualistic behaviours. In addition, Sophie found it difficult to understand other people's facial expressions and show empathy. It was hoped Sophie would develop strategies to reduce her anxiety levels and increase her understanding of social situations by participating in the intervention.

In November 2017, at the start of the intervention, Sophie was prescribed an antidepressant by a psychiatrist due to her deteriorating mental health. The intervention facilitator and Sophie's form tutor felt Sophie had become more relaxed and more confident in school by the end of the intervention. Sophie's mother reported that Sophie's behaviours at home had significantly improved and that Sophie had enjoyed attending the Homunculi Approach sessions.

4.3.2.1. Repeated Measures

The graph and table below displays Sophie's scores and visual analysis of the PI-ED, which was taken weekly during the baseline and intervention phase.

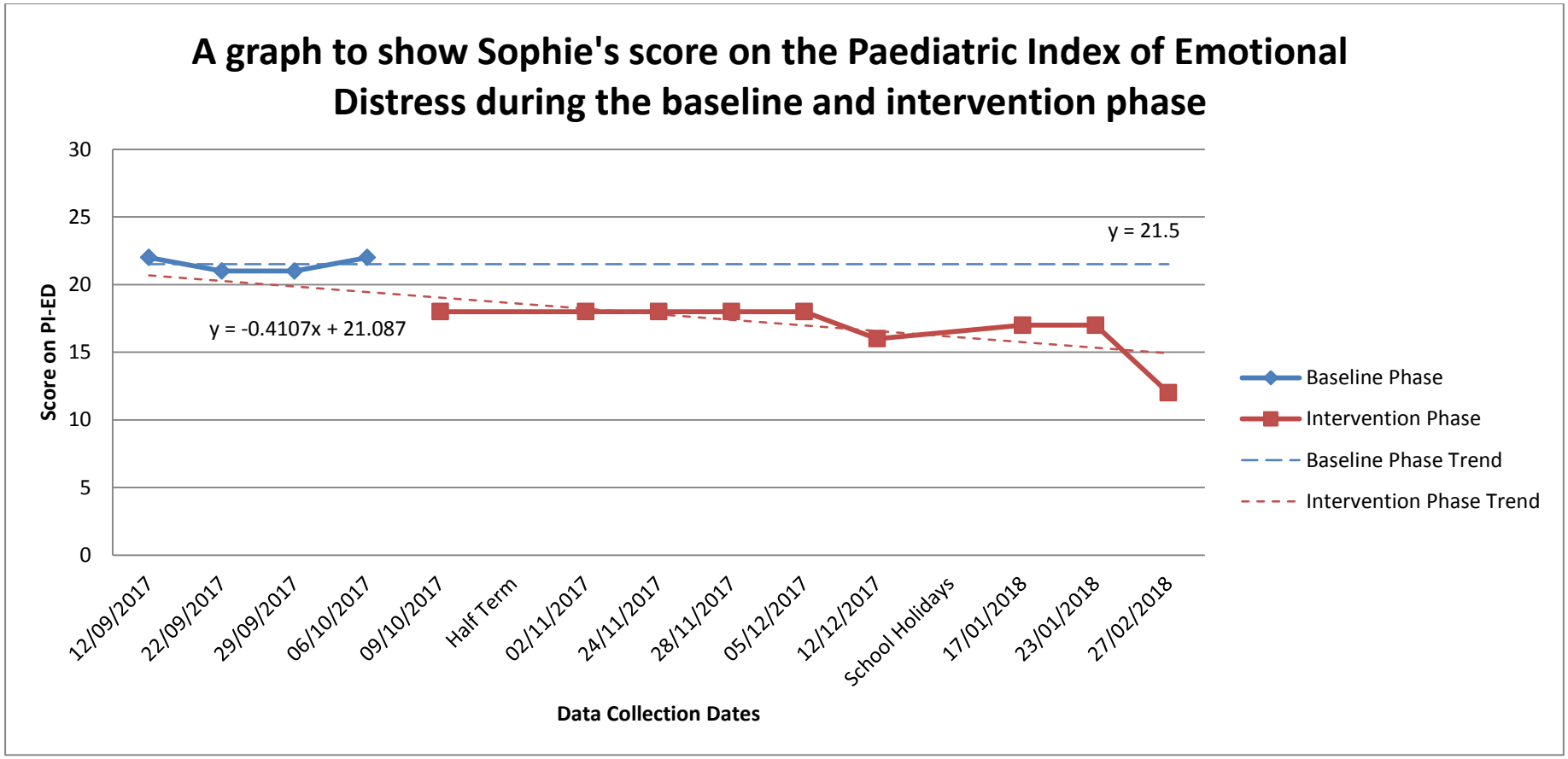


Figure 4.3: A graph to show Sophie's score on the PI-ED during the baseline and intervention phase

Table 4.8: A table to display the Visual Analysis for Sophie's PI-ED scores

Visual Analysis Characteristic	Descriptive Results	Statistical Results	
Mean	There was a decrease in mean between the two phases; the mean was lower during the intervention phase in comparison to the baseline phase.	Mean of baseline phase=	21.5
		Mean of intervention phase=	16.9
		Difference between baseline and intervention phase=	-4.6
		Mean shift=	-0.2
Level	There was a small decrease in level between the end of the baseline and beginning of the intervention phase.	Absolute change in level=	1.2
Trend	There was a level trend in the baseline phase (0), whilst there was a gradual decline in the intervention phase trend line (-0.4)	Magnitude of slope change=	-0.4
Variability	The range and variability of data was greater in the intervention phase compared to the baseline phase.	Range of data (and standard deviation)	
		In baseline phase=	2 (0.5)
		In intervention phase=	6 (1.9)
Overlap of data	There was no overlap between the data points in the baseline and intervention phase.	Percentage of data points overlapping=	0%

PI-ED Questionnaire

The visual analysis indicated there was a difference between baseline and intervention phases as shown through a decrease in mean anxiety levels between phases, no overlap in data points between baseline and intervention phases and low levels of variability in the data. It was deemed very convincing there had been a practical or significant improvement between the baseline and intervention phases.

Behavioural Observation

The behavioural observation at home was ceased due to Sophie's mental wellbeing at the start of the intervention; no data was collected.

4.3.2.2. Pre and Post Measures

The tables below present the pre and post intervention scores. The RCIs for the child and parent rated anxiety measures were non-significant, whilst the RCI for the teacher rated anxiety measure was significant. The RCIs for the social, emotional and behavioural wellbeing measure were non-significant across informants indicating any changes between pre and post intervention may have occurred by chance.

Table 4.9: Table to show Sophie's levels of anxiety reported by self, parent and teacher, pre and post intervention

	Child (SCAS)	Parent (SCAS)	Teacher (SAS-TF)
Pre	62	61	28
Post	54	58	9
Difference	-8	-3	-19
Reliable Change Index	-2.20	-0.41	-6.02
Significance	Significant	Not significant	Significant

Table 4.10: Table to show Sophie's levels of social, emotional and behavioural wellbeing reported by self, parent and teacher, pre and post intervention

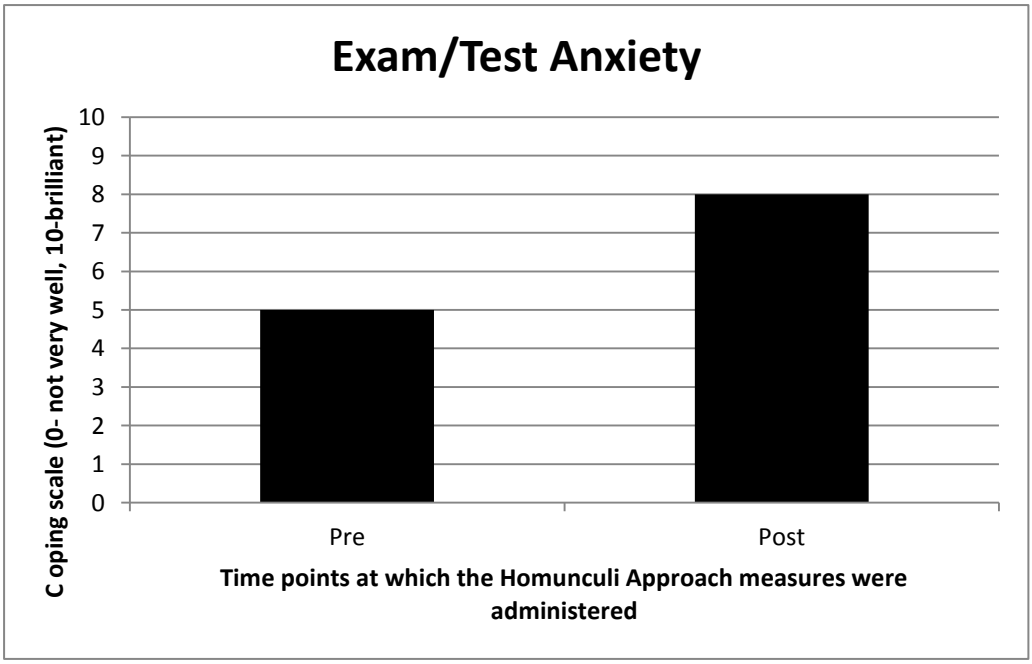
	Child (SDQ)	Parent (SDQ)	Teacher (SDQ)
Pre	14	18	11
Post	9	15	6
Difference	-5	-3	-5
Reliable Change Index	-1.52	-0.86	-1.61
Significance	Not significant	Not significant	Not significant

4.3.2.3. Homunculi Approach Measures

"Are your Homunculi working for you?"

The bar chart below displays how Sophie felt she was coping with her identified mission before and after the intervention. Sophie felt more able to cope with test and exam anxiety following the intervention as shown by her coping score moving from 5 to 8; a 3 point increase.

Figure 4.4: A figure to show Sophie's rating of how well she felt she was coping with exam and test anxiety pre and post intervention



Homunculi Approach Questionnaire

Sophie stated the Homunculi Approach had taught her coping strategies to help her calm down. Sophie stated after school sessions would have been of greater

benefit to her and she did not find playing out the story particularly helpful. Sophie's favourite gadget was the happiness jar where she writes down positive things which have happened and said she thinks of this when she feels self-conscious. The main thing Sophie learnt from the intervention was when a situation is really hard don't 'give up' because there are ways you can make it better.

4.3.2.4. Summary

The repeated measures data indicated there had been a reduction in Sophie's anxiety levels during the intervention. The teacher and Sophie's pre and post rating of anxiety was significant indicating both informants felt there had been a reduction in Sophie's anxiety levels during the intervention. There were no significant findings on the social, emotional and behavioural measure across all informants or the anxiety measure completed by Sophie's mother. The Homunculi Approach measures indicated Sophie felt more able to cope with test and exam anxiety and was able to identify things she had learnt during the intervention. The antidepressant Sophie received may have influenced her anxiety levels and engagement with the Homunculi Approach.

4.3.3. Participant 3: Alex

Alex is 14 years old and in Year 9. Alex has a therapy dog at home to support his emotional wellbeing and enjoys playing computer games. Alex was diagnosed with Asperger's Syndrome when he was in Reception. He attends a boy's grammar school where he receives weekly support from the SENCO and has previously received support from the school counsellor. Academically, Alex is currently achieving the equivalent of A*'s in English and Maths and an A in science.

Alex was identified for the Homunculi Approach intervention as he was becoming anxious at home when playing computer games which often resulted in Alex becoming angry. In school, Alex did not display signs of anxiety although could become distressed at home if he had been given unexpected homework or if he felt his school grades were not good enough. It was hoped that participation in the Homunculi Approach would help Alex to develop strategies to reduce his anxiety levels when playing computer games and completing his school work.

The facilitator felt Alex had learnt a great deal and engaged throughout the intervention. Alex said if he had different problems in the future he would use the Homunculi Approach again to try and help. Alex's parents did not see a noticeable change in Alex's behaviour at home.

4.3.3.1. Repeated Measures

The graph and table below displays Alex's scores and visual analysis of the PI-ED, which was taken weekly during the baseline and intervention phases.

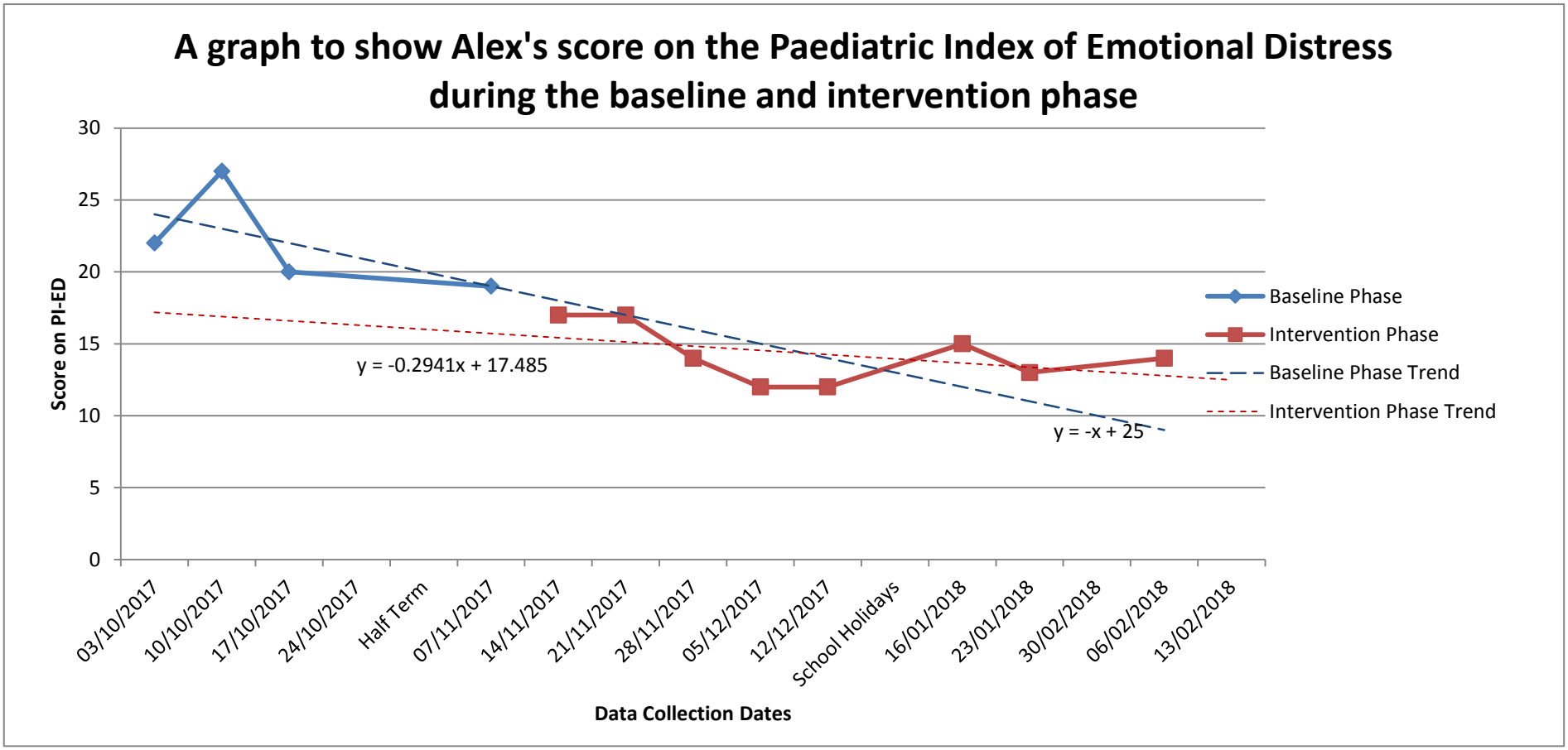


Figure 4.5: A graph to show Alex's score on the PI-ED during the baseline and intervention phase

Table 4.11: A table to display the Visual Analysis for Alex's PI-ED scores

Visual Analysis Characteristic	Descriptive Results	Statistical Results	
Mean	There was a decrease in mean between the two phases; the mean was lower during the intervention phase in comparison to the baseline phase.	Mean of baseline phase=	22
		Mean of intervention phase=	14.3
		Difference between baseline and intervention phase=	7.7
		Mean shift=	0.4
Level	There was a small decrease in level between the end of the baseline and beginning of the intervention phase.	Absolute change in level=	1.1
Trend	The trend for the baseline phase was more steeply declining (-1) than the more gradual decline shown in the trend for the intervention phase (-0.3).	Magnitude of slope change=	-0.7
Variability	The range of data was greater in the baseline phase than the intervention phase. The variability of data decreased from baseline to intervention phase.	Range of data (and standard deviation)	
		In baseline phase=	8 (3.1)
		In intervention phase=	5 (1.8)
Overlap of data	There was no overlap between the data points in the baseline and intervention phase.	Percentage of data points overlapping=	0%

PI-ED Questionnaire

The visual analysis indicated there was a difference between baseline and intervention phases. This change was shown through a reduction in mean between baseline and intervention phases, no overlap in data points between baseline and intervention phases and low levels of variability in the data. Alternatively, the baseline data was unstable and the trend line showed a decline in anxiety. Overall, it appeared reasonably certain there had been a practical or significant improvement between baseline and intervention phases.

Behavioural Observations

The behavioural observation data was not returned to the researcher.

4.3.3.2. Pre and Post Measures

The tables below present the pre and post intervention scores. The RCIs for the parent and teacher rated anxiety measures were non-significant, whilst the RCI for the child rated anxiety measure was significant. The RCIs for the social, emotional and behavioural wellbeing measure were non-significant across informants indicating any changes between pre and post intervention may have occurred by chance.

Table 4.12: Table to show Alex's levels of anxiety reported by self, parent and teacher, pre and post intervention

	Child (SCAS)	Parent (SCAS)	Teacher (SAS-TF)
Pre	50	32	19
Post	42	27	14
Difference	-8	-5	-5
Reliable Change Index	-2.41	-0.70	-1.60
Significance	Significant	Not significant	Not significant

Table 4.13: Table to show Alex's levels of social, emotional and behavioural wellbeing reported by self, parent and teacher, pre and post intervention

	Child (SDQ)	Parent (SDQ)	Teacher (SDQ)
Pre	22	22	9
Post	14	20	6
Difference	-6	-2	-3
Reliable Change Index	-1.82	-0.57	-1.00
Significance	Not significant	Not significant	Not significant

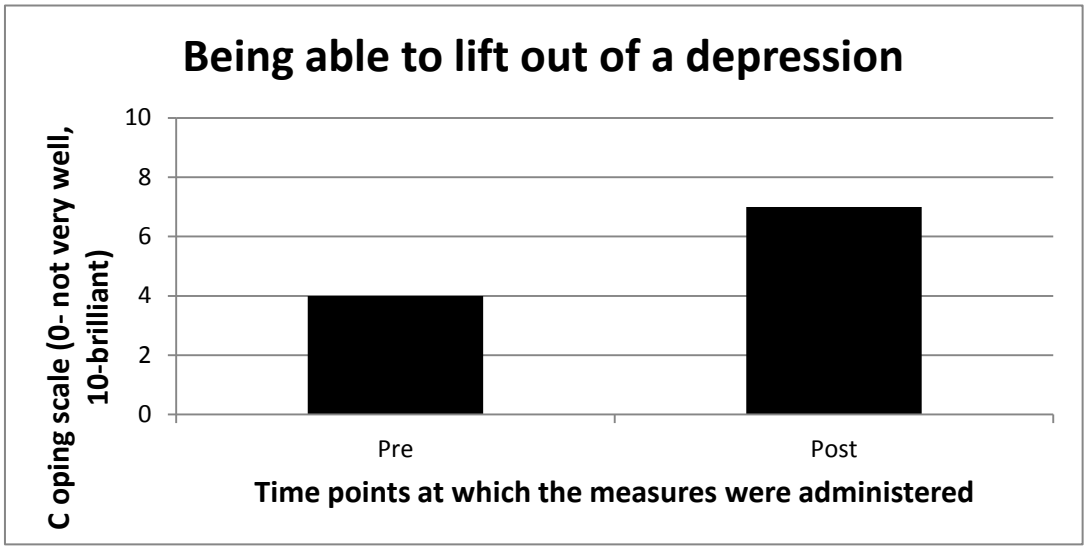
4.3.3.3. Homunculi Approach Measures

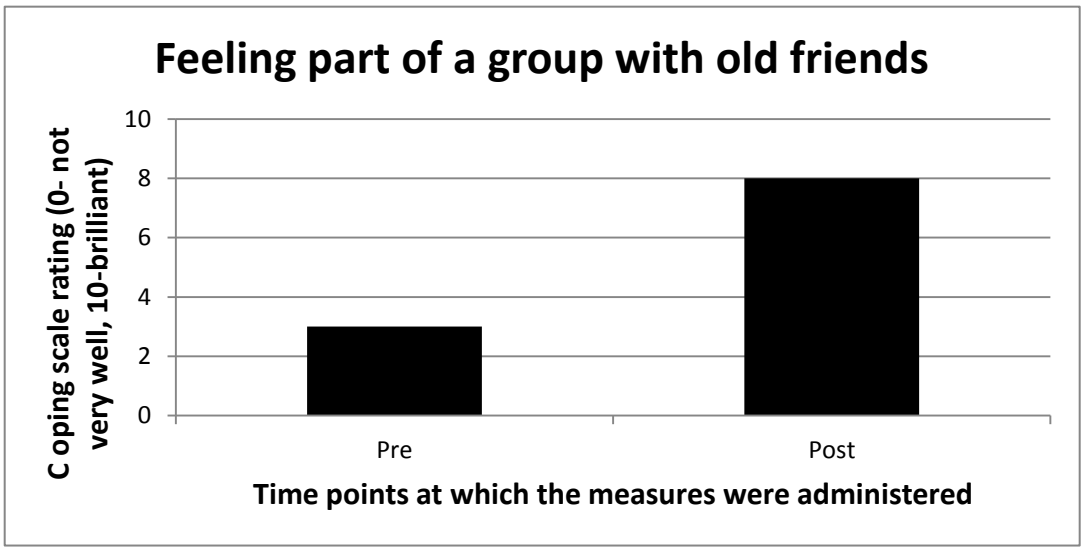
"Are your Homunculi working for you?"

The bar charts shown in Figure 4.6 display how Alex felt he was coping with his identified missions before and after the intervention. Alex felt more able to cope with the problem of being able to lift out of a depression (increase of 3 points), feeling part of a group with old friends (increase of 5 points) , and believing in his ability to work well (increase of 1 point).

Homunculi Approach questionnaire

Alex explained the best part of the intervention was making the characters and gadgets because he felt he could do what he wanted to do. Alex found making the interior of the skull was helpful as he reflected on what should be going on inside his head. He did not find the videos helpful. Alex said he found it difficult to form the story and needed some assistance with this. He said his favourite agent was Dr Watson as he admires his quest to gain knowledge and find truths. His favourite gadget was the magic dust as it isn't aggressive and can about always get its job done. Next time, Alex would like to refer back to the apprentice character more and have a go at making videos. The main thing Alex learnt from the intervention is he can always change his thoughts on a situation and approach it differently. By thinking about the Homunculi Alex said the situation generally turns out more positively.





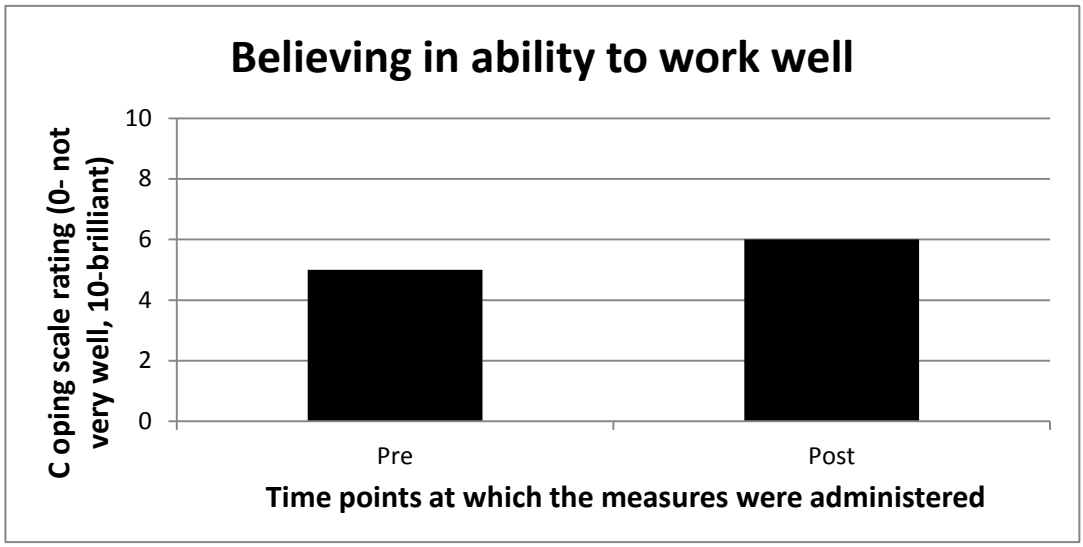


Figure 4.6: Bar graphs to show how Alex's ability to cope with the identified problems of being able to lift out of a depression, feeling part of a group with old friends, and believing in ability to work well pre and post intervention

4.3.3.1. Summary

The repeated measures data indicated there had been a reduction in Alex's anxiety levels during the intervention. Alex's pre and post rating of anxiety was significant indicating Alex felt there had been a reduction in his anxiety levels during the intervention. There were no significant findings from the social emotional measures or the anxiety measure completed by Alex's teacher and his parents. The Homunculi Approach measures indicated Alex felt more able to cope with his identified problem areas and he was able to articulate his learning points from the intervention, particularly that he feels able to change his thoughts and approach situations differently. Alex's parents did not see a change in Alex's anxiety levels as a result of the intervention.

4.3.4. Participant 4: Ben

Ben is a 15 year old young person in Year 10. Ben enjoys playing games on his Xbox and has recently started guitar lessons. Ben was diagnosed with AS when he was in Year 4. Ben received an EHCP in 2015 and is currently taught in a provision attached to a mainstream school designed for pupils with AS experiencing anxiety. Ben is taught alongside 6 other pupils with similar needs where he receives increased levels of adult support and access to a flexible learning timetable. Ben is currently aiming to achieve a Level 4 for Maths and Level 3 for English GCSE.

Ben was identified for the Homunculi Approach intervention as he was displaying anxiety related to his health and the future. It was hoped the Homunculi Approach would provide Ben with tools to reduce his anxiety and support him in social situations.

During the research period, two new young people started attending the provision. The intervention facilitator felt the new students reduced the frequency of Ben's anxiety-related behaviours and increased his confidence in social situations. Following the intervention, the facilitator explained Ben was able to articulate his concerns and feelings to important adults in his life, which he had not previously felt able to do. The facilitator attributed this change to the intervention.

4.3.4.1. Repeated Measures

The graphs below display Ben's scores on the PI-ED and the frequency of Ben displaying anxiety related behaviours in school during the baseline and intervention phase. The graphs are accompanied by the visual analyses in Table 4.14 and Table 4.15.

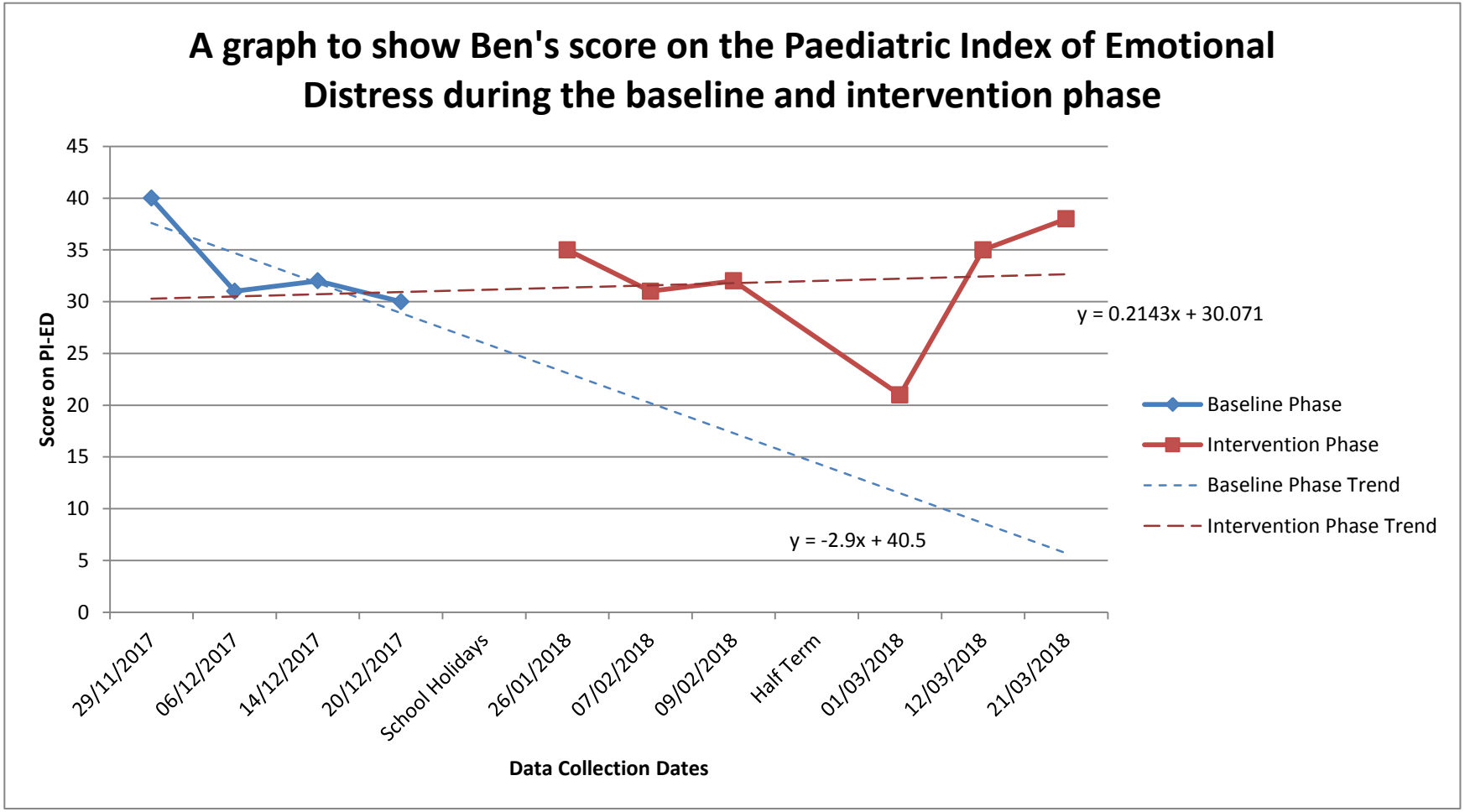


Figure 4.7: A graph to show Ben's score on the PI-ED during the baseline and intervention phase

Table 4.14: A table to display the Visual Analysis for Ben's PI-ED scores

Visual Analysis Characteristic	Descriptive Results	Statistical Results	
Mean	There was a small decrease in mean between the two phases; the mean was lower during the intervention phase in comparison to the baseline phase.	Mean of baseline phase=	33.3
		Mean of intervention phase=	32
		Difference between baseline and intervention phase=	-1.3
		Mean shift=	-0.04
Level	There was an increase in level between the end of the baseline and beginning of the intervention phase.	Absolute change in level=	1.17
Trend	The trend for the baseline phase steeply declined (-2.9) whereas there was a gradual incline in the trend for the intervention phase (0.2).	Magnitude of slope change=	3.1
Variability	The range and variability of data was greater in the intervention phase than the baseline phase.	Range of data (and standard deviation)	
		In baseline phase=	10 (4.0)
		In intervention phase=	17 (5.4)
Overlap of data	There was a large degree of overlap between the data points in the baseline and intervention phase.	Percentage of data points overlapping=	83%

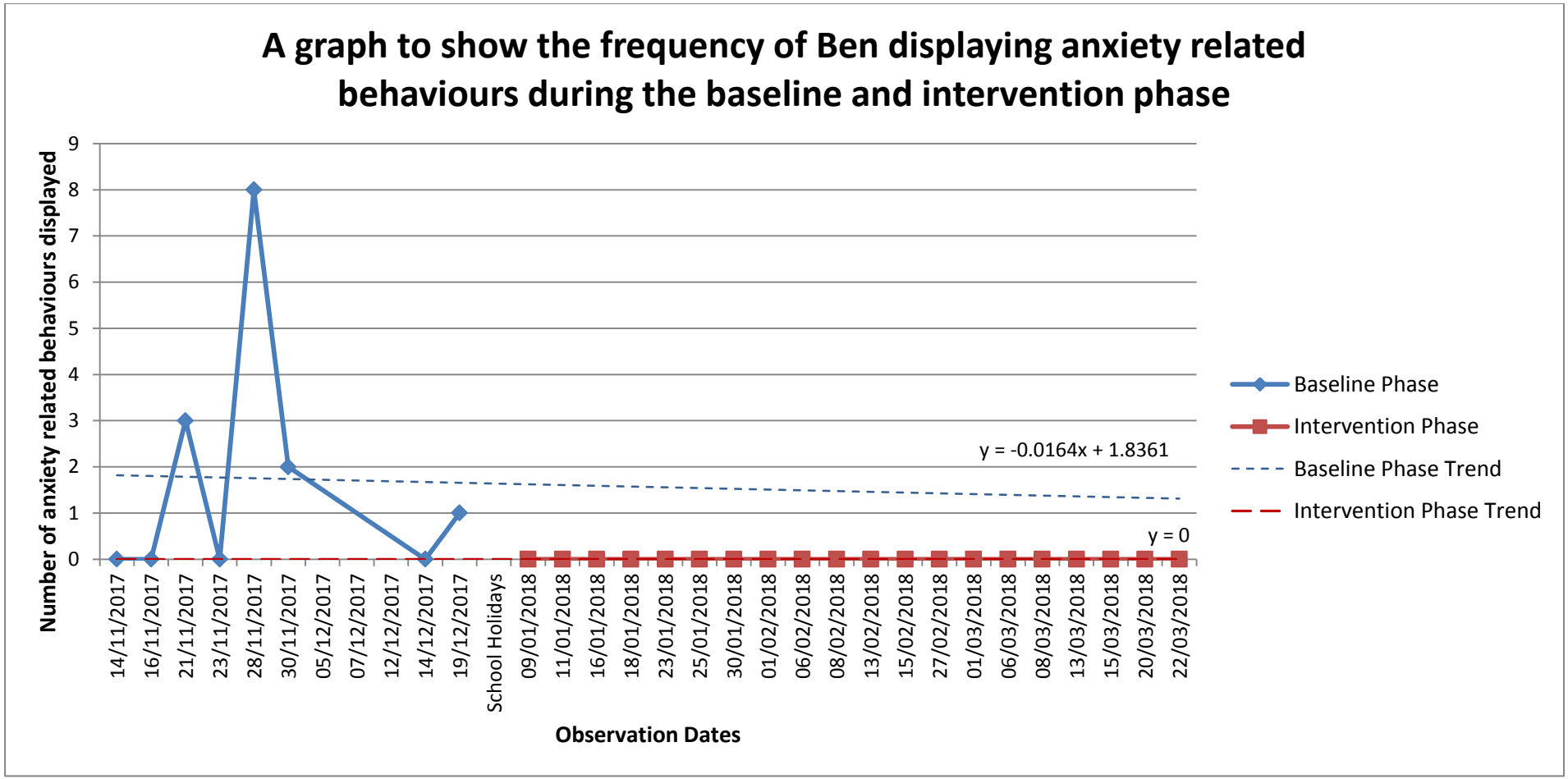


Figure 4.8: A graph to show the frequency of Ben's anxiety related behaviours during the baseline and intervention phase

Table 4.15: A table to display the Visual Analysis for the behavioural observation data

Visual Analysis Characteristic	Descriptive Results	Statistical Results	
Mean	There was a decrease in mean between the two phases; the mean was lower during the intervention phase in comparison to the baseline phase.	Mean of baseline phase=	1.8
		Mean of intervention phase=	0
		Difference between baseline and intervention phase=	-1.8
		Mean shift=	0
Level	There was a small decrease in level between the end of the baseline and beginning of the intervention phase.	Absolute change in level=	N/A
Trend	The trend for the baseline phase gradually increased (0.002) whereas the trend in the intervention phase was level (0.0).	Magnitude of slope change=	0.02
Variability	There was larger range and variability of data in the baseline phase compared to the intervention phase.	Range of data (and standard deviation)	
		In baseline phase=	8 (2.6)
		In intervention phase=	0 (0)
Overlap of data	All the data points in the intervention phase overlapped with the baseline phase.	Percentage of data points overlapping=	100%

PI-ED Questionnaire

The visual analysis suggested there was no change between baseline and intervention phases as shown through: an increase in level between phases; declining trends in both phases and; a large variability and high degree of overlap in the data. There was a small decrease in mean scores between baseline and intervention phases. It was deemed not at all convincing there was a practical or significant improvement between baseline and intervention phases.

Behavioural Observation

The visual analysis suggested a change between baseline and intervention phases as shown through a small reduction in mean, a change in trend and low levels of data variability in the intervention phase. It was deemed reasonably certain there was a practical or significant improvement between baseline and intervention phases.

4.3.4.2. Pre and Post Measures

The tables below present the pre and post intervention scores. The RCIs for the child, parent and teacher rated anxiety measures were non-significant, indicating the Homunculi Approach did not significantly impact on Ben's anxiety levels. The RCIs for the social, emotional and behavioural wellbeing measure were non-significant across informants indicating the Homunculi Approach did not significantly impact on Ben's social emotional wellbeing.

Table 4.16: Table to show Ben's levels of anxiety reported by self, parent and teacher, pre and post intervention

	Child (SCAS)	Parent (SCAS)	Teacher (SAS-TF)
Pre	94	48	33
Post	95	34	21
Difference	+1	-14	-12
Reliable Change Index	0.30	-1.93	-3.86
Significance	Not significant	Not significant	Significant

Table 4.17: Table to show Ben's levels of social, emotional and behavioural wellbeing reported by self, parent and teacher, pre and post intervention

	Child (SDQ)	Parent (SDQ)	Teacher (SDQ)
Pre	26	25	20
Post	28	22	16
Difference	+2	-3	-4
Reliable Change Index	0.6	-0.9	-1.3
Significance	Not significant	Not significant	Not significant

4.3.4.3. Homunculi Approach Measures

"Are your Homunculi working for you?"

The bar chart shown in Figure 4.9 displays how Ben felt he was coping with his identified mission before and after the intervention. Ben felt more able to cope with the problem of feeling things are unfair as shown by his coping scale score moving from 1 to 5; a 4 point increase.

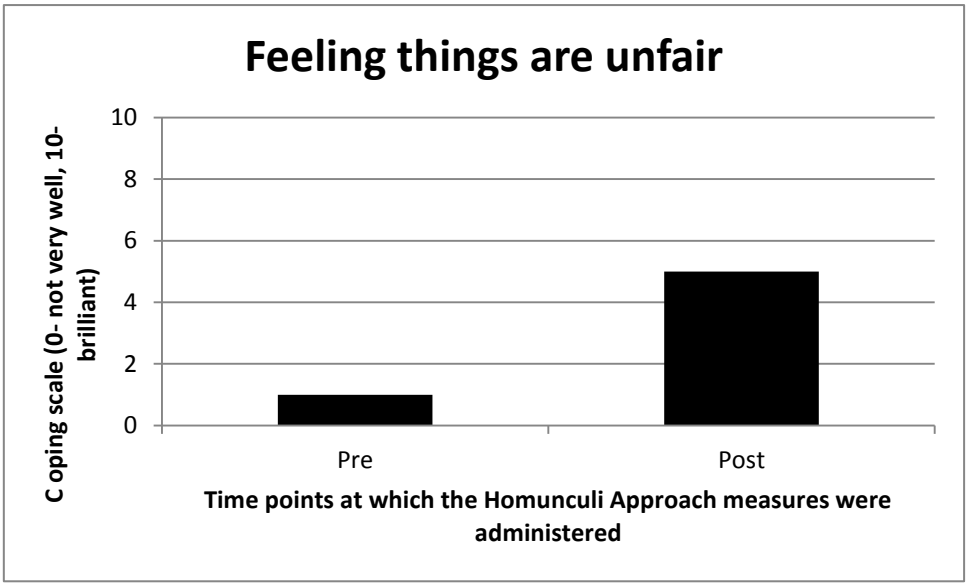


Figure 4.9: Bar graph to show Ben's ability to cope with feeling that things are unfair pre and post intervention

Homunculi Approach questionnaire

Ben identified the most helpful aspect of the intervention was being able to talk through his difficulties. Ben could not identify anything which was least helpful to him or which he found too hard. Ben said his favourite agent was Thorun as he is strong and part of Ben's favourite story. His favourite gadget is the phone lighting up as he enjoys using technology. Next time, Ben would possibly choose different problems to work on. The main thing Ben has learnt from the Homunculi Approach is that he's developed more confidence and begun to address his problems.

4.3.4.1. Summary

The repeated measures data indicated there was a reduction in Ben's anxiety using the observation tool, however, no reduction in anxiety using the PI-ED questionnaire. Ben's pre and post rating of anxiety was significant indicating Ben felt there had been a reduction in his anxiety levels during the intervention. There were no significant findings from the social emotional measures or the anxiety measure completed by Ben's teacher and his parents. The Homunculi Approach measures indicated Ben felt more able to cope with his identified problem of feeling things are unfair. Ben was able to identify what he learnt from the intervention. Extraneous factors were identified as reasons for Ben's anxiety related behaviours reducing.

4.3.5. Interrater Reliability

The interrater scores can be viewed in Appendix V and the interrater reliability was calculated using SPSS. The interrater reliability, using Cohen's Kappa (Cohen, 1960), was 0.74 (p = 0.007). In relation to the score interpretations provided by McHugh (2012; see Table 4.18), the interrater reliability was deemed moderate. This level of interrater agreement is similar to findings from previous research (Slack, 2013; Green, 2013) and aids the reliability of the findings.

Table 4.18: Table to show Cohen's Kappa Score Interpretation (McHugh, 2012)

Kappa	Interpretation
0-0.20	None
0.21-0.39	Minimal
0.40-0.59	Weak
0.60-0.79	Moderate
0.80-0.90	Strong
Above 0.90	Almost Perfect

4.3.6. Integrity Checks

4.3.6.1. Behavioural Observations

William: The researcher conducted integrity checks for William's observation measure on 15% of occasions. The interrater agreement between the TA and the researcher was 100%.

Ben: A second member of school staff conducted the integrity checks for Ben's observation measure on 7% of occasions. The interrater agreement between staff was 50%.

4.3.6.2. Intervention

The researcher observed 2 intervention sessions for each participant, with the exception of Sophie where the researcher was only able to observe 1 session due to timetabling difficulties. The degree of agreement between the observer and intervention facilitator was calculated by dividing the number of times the observers agreed by the number of possible opportunities there were to agree (Cohen, Manion & Morrison, 2011). The agreement between observer and facilitator was 100%.

The intervention integrity varied from 92% to 100%. This high percentage may not be a true reflection of intervention integrity as, due to the flexibility of the approach, some of the session activities were repeated in several session outlines. This provided the facilitators with several opportunities to complete certain activities. Although the session outlines consisted of 10 sessions, the length of time required to complete the intervention varied from 9 sessions (3 participants) to 14 sessions (1 participant).

4.4. Summary

The PI-ED data, analysed using visual analysis, indicated there was a significant reduction in anxiety for two participants as it was deemed *very convincing* or *reasonably certain* there had been a change between baseline and intervention phases. For one of these participants in particular, it is likely extraneous variables impacted on the reduction in anxiety.

The PI-ED data for the remaining two participants indicated there had been no change in anxiety between baseline and intervention phases. The observational data for these two participants were disparate, with one participant's data indicating there was no change in anxiety related behaviours whilst the other participant's data being deemed reasonably certain there had been a reduction in anxiety related behaviours.

The SCAS and SAS-TF results, analysed using the RCI, suggested a significant reduction in anxiety for three participants through self- report and/or teacher report. The remaining results showed no significant improvements. The SDQ results, analysed using the RCI, showed no significant improvements for any participants.

The Homunculi Approach measures indicated three participants had shown an increase in their ability to cope with their identified problems and all four participants were able to identify what they had learnt from the intervention.

4.5. Phase 2 Data analysis

Activity theory was used to structure the semi-structured interviews with the facilitators of the intervention. The researcher recognised the facilitators had interpreted the nodes differently, indicating that reality is created by the individual. To increase the comparability of findings, the researcher redistributed some of the data to the most appropriate node. In order to ensure the process was co-constructed the researcher conducted member checks to ensure data accuracy at two different time points.

4.6. Phase 2 Results

The qualitative data is displayed for each participant, structured using the 2nd generation activity theory model. The contradictions elicited and a summary of the findings are subsequently presented. In order to explore the similarities and

differences amongst facilitators, and highlight the contradictions, a collated account of the findings is displayed at the end of the section.

4.6.1. Participant 1: William

The activity system can be viewed in Figure 4.10. The contradictions are presented below.

Tools and/or artefacts:

Homunculi Approach resources:

- The teacher used the manual to understand the theory behind the intervention and the session outlines to structure the intervention.
- Videos were used.

Other resources:

- Playing games were used at the start of the sessions to create a relaxed and fun atmosphere.
- A computer was used to create agents and gadgets; could build on ideas week by week.

Previous experience:

- The teacher had received Autism training and 5 years working with pupils with AS.

Personal resources:

- The teacher used a flexible and patient approach to ensure the intervention was pupil led.

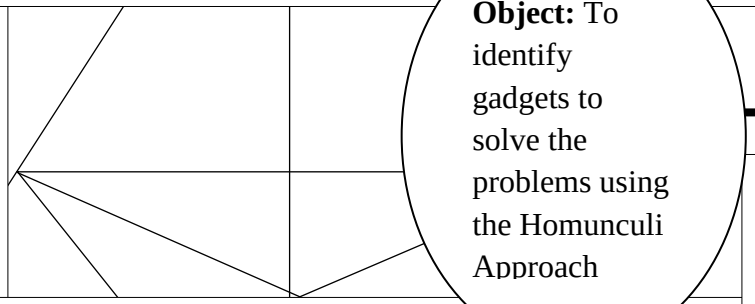
Outcome aims:

- To create a toolkit which the young person can access to help them understand social situations.
- For the member of staff to know how to help students form ideas and strategies.

Subject:

The intervention facilitator was currently joint head of SEND as well as a Form Tutor and Learning Mentor.

Previous to this role the teacher had taught English abroad and taught English as an additional language in the UK.



Division of Labour:

The teacher felt she had sole responsibility of the intervention which included: planning each session and completing the session outlines.

The teacher had several roles in school, including being a form tutor and Learning Mentor.

Delivering the intervention felt manageable in terms of the teacher's other commitments.

Rules:

- The time of the day the intervention was delivered varied to ensure William did not repeatedly miss the same lessons.
- The teacher's timetable was flexible regarding when the intervention was delivered.

Community:

- William: Attended the sessions. His engagement was variable depending on the time of the day and his level of tiredness. If William was not engaged during a session, the teacher found another time slot in the same week to deliver the session.
- The teacher liaised with the TA conducting the classroom observations to discuss William's presentation in school.
- The SENCO and the Deputy Head were aware of the intervention.
- William's home environment may have impacted on his engagement with the intervention and behaviour in school.

Figure 4.10: A 2nd generation Activity System depicting the implementation of the Homunculi Approach in William's school

4.6.1.1. Contradictions

Between Tools/Artefacts and Subject: The teacher found the session outlines, provided by the researcher, beneficial in guiding the intervention. The teacher acknowledged, however, she found the structure of the sessions challenging, due to the necessity of spending time identifying missions at the beginning without being able to identify gadgets to solve the missions until later on in the programme. She felt it was an uphill struggle to move past the point of discussing missions which resulted in her initially forming a negative perception of the intervention.

Between Tools/Artefacts and Object: The teacher found the manual interesting in terms of the theory behind the intervention but found it lacked guidance regarding how to implement the intervention in practice, particularly in terms of engaging the young person with the concept of the skull and identifying missions. Additionally, when using the videos, the teacher felt the videos were more suited to younger children.

Between Subject and Tools/Artefacts: The teacher had previously received training in Autism but explained this did not support implementation of the intervention due to the structured nature of the approach. The training did, however, provide her with the confidence to adapt the intervention for young person. For instance, one of the sessions was repeated over a course of a few weeks to ensure William had completed that aspect of the intervention.

Between Division of Labour and Community: The teacher stated that as well as Head of SEND she was also William's Form Tutor and Learning Mentor. The teacher acknowledged William found it difficult to engage at times and wondered whether he was confused about what the teacher's role was.

Between Community and Rules: The teacher recognised William was more engaged when the intervention was delivered in the morning compared to just before lunch or the afternoon. Although the teacher had a flexible timetable she was unable to deliver the intervention at the same time each week as William would miss the same lesson. This may have indicated the school curriculum was prioritised over the delivery of emotional wellbeing interventions.

Between Community and Division of Labour: The teacher recognised the Deputy Head and SENCO were aware of the intervention, however, the division of labour suggests the teacher did not feel the impact of this. This may indicate the challenge of staff communicating with each other in secondary school environments.

4.6.1.2. Summary

Figure 4.10 displays the activity system for William's intervention as perceived by the facilitator. As shown in the Figure, the object was to identify gadgets to solve problems using the Homunculi Approach. It was hoped this would provide William with a toolkit that he could access during social situations. The facilitator identified difficulties using several of the Homunculi Approach resources, for instance, it was hard to work out how to structure the sessions from the manual. The facilitator was flexible in her approach by using computers and allowing the young person extra time to complete the session requirements. In terms of rules, the teacher's timetable was flexible which ensured William did not miss the same lessons each week. During the sessions, William found it challenging to engage in the intervention at times which may have been due to the time of day the intervention was delivered or possibly due to home factors. Whilst other members of staff in the school were aware of the research project, the teacher recognised she held responsibility for the delivery of the intervention. The teacher felt the time required to plan and deliver the intervention was manageable in terms of her other commitments.

4.6.1. Participant 2: Sophie

The activity system can be viewed in Figure 4.11. The contradictions are presented below.

Tools and/or artefacts:

Homunculi Approach resources

- The TA used the worksheets flexibly and used the session outlines to plan and guide each session. The TA was unable to access the videos.

Personal skills

- The TA made it a friendly place to come to help build a rapport.
- The TA gained confidence as she become more familiar with the intervention and developed a rapport.

Previous experience:

- The TA had previously received training in counselling skills, delivered a therapeutic intervention and worked as a 1 to 1 TA for a pupil with AS.
- The TA implemented learning from previous training and from the researcher's guidance by using questions, such as, "I wonder how that made you feel?" to ensure the intervention was pupil led.

Subject:

The subject was a SEND TA who had previously worked as a TA in primary schools for 10 years.

Object: Deliver the Homunculi Approach to reduce anxiety

Outcome aims:

To provide strategies for Sophie to help reduce her anxiety in different situations, particularly exams

Rules:

- Other commitments were prioritised over the intervention, such as school play rehearsals. The TA recognised the importance of Sophie attending the rehearsals to support her social skills and general mental wellbeing.
- Timetables: Sophie's was not removed from core lessons or lessons which she really enjoyed. The TA also had a busy timetable which limited the opportunities to deliver the intervention.
- There was access to private rooms to deliver the intervention. The rooms were based in a quiet area of the school designed for pastoral support work.

Community:

- Sophie was always engaged and motivated during the sessions. Mental health affected her attendance at the beginning.
- SENCO provided TA with time to deliver the intervention.
- Sophie's teachers and form tutor allowed Sophie time out of class to receive the intervention.
- Sophie's mother supported the intervention and positively viewed the relationship between the TA and Sophie.
- Researcher was a point of contact and support as and when challenges occurred.

Division of Labour:

The TA was responsible for the intervention delivery. She found suitable times to deliver the intervention, communicated to staff which lessons Sophie would be missing and booked a room each week.

The TA communicated with the SENCO regarding any challenges which had occurred.

Sophie's mother completed observation measures at home.

Figure 4.11: A 2nd generation Activity System depicting the implementation of the Homunculi Approach in Sophie's school

4.6.1.1. Contradictions

Between the Community and Rules: The TA explained the SENCO provided the TA with time to deliver the intervention. The TA nevertheless found it challenging to identify times when the intervention could be delivered. Furthermore, Sophie and school staff were wary of Sophie missing any core lessons; particularly as this may have further exacerbated Sophie's anxiety levels. These contradictions may reflect challenges at a higher systemic level within the school as academic progress may be prioritised over receiving therapeutic interventions and Sophie may have felt the pressure of recognising the importance of academic studies.

Between Community and Rules: Sophie's school attendance was negatively affected at the beginning of the intervention due to her mental wellbeing. As there was a lack of flexibility in the TA's timetable this meant the sessions missed could not be rearranged in the same week, which postponed the delivery of the intervention.

Between Community and Division of Labour: Although the TA recognised many people were involved in the activity, the TA felt she had been predominantly responsible for the intervention running. Additionally, the TA expressed she did not want to let anyone down indicating the pressure she felt. This may reflect the systemic complexities of secondary schools where, due to the number of staff and large school environment, staff may be less likely to come into contact with members of the senior leadership team.

4.6.1.2. Summary

Figure 4.11 displays the activity system for Sophie's intervention as perceived by the facilitator. As shown in the Figure, the object was to deliver the Homunculi Approach with the aim of providing Sophie with strategies to reduce her anxiety. The TA focused on building a rapport with Sophie and found the resources were helpful to guide the sessions. The TA used her previous training and experience of delivering therapeutic interventions to support her implementation of the Homunculi Approach. Despite the SENCOs support, the TA was limited in the time available to deliver the intervention due to her timetable being so busy and not wanting Sophie to miss certain subjects. On several occasions, Sophie was unable to attend the sessions due to other factors. When Sophie did attend the intervention she was engaged and motivated; her

mother was very supportive of the intervention. In terms of division of labour, the TA felt responsible for the delivery of the intervention.

4.6.1. Participant 3: Alex

The activity system can be viewed in Figure 4.12. The contradictions are presented below.

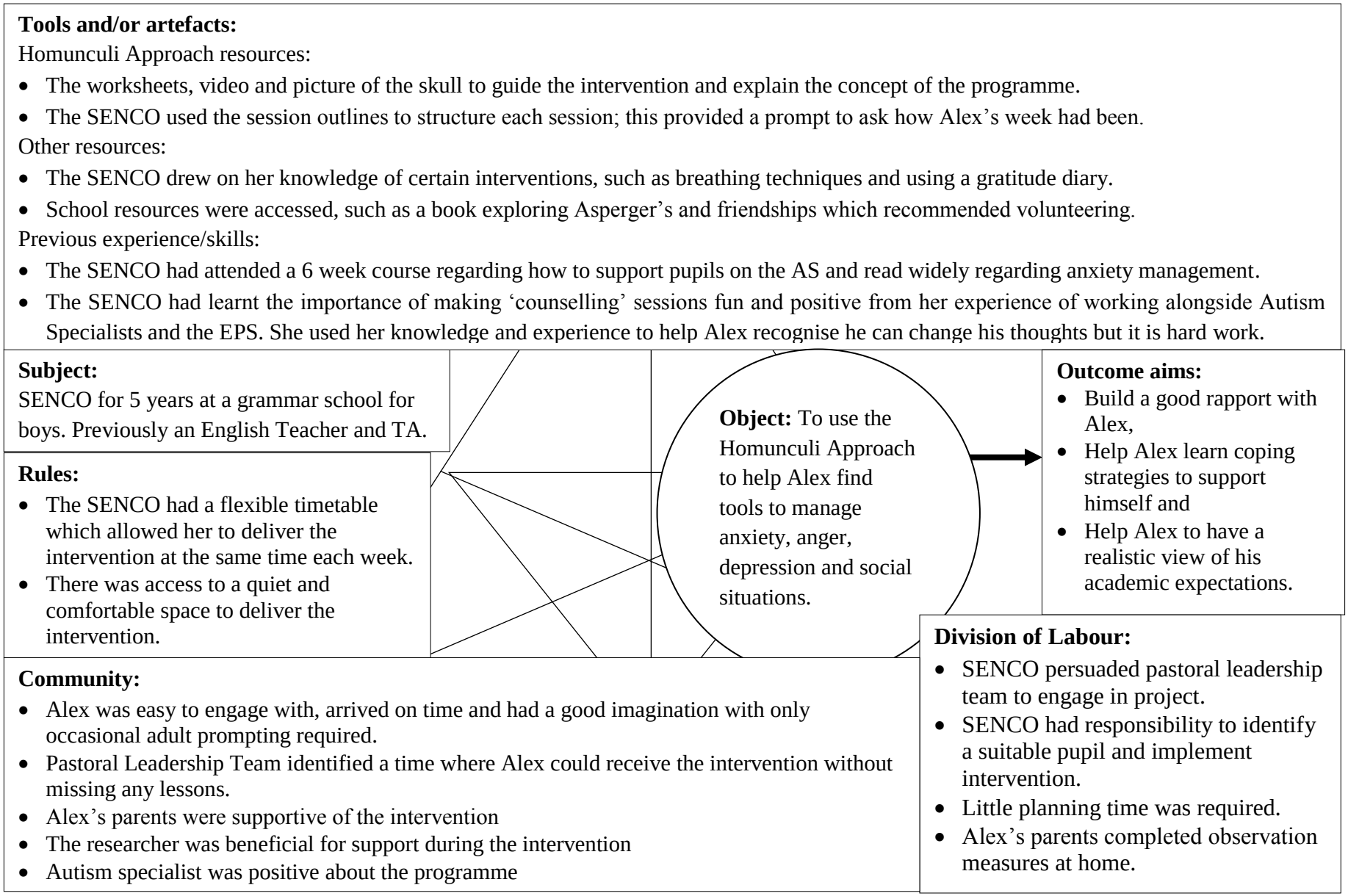


Figure 4.12: A 2nd generation Activity System depicting the implementation of the Homunculi Approach in Alex's school

4.6.1.1. Contradictions

Between Object and Tools/Artefacts: The object was to implement the Homunculi Approach, however, the SENCO felt Alex could not relate to the pupils in the video as they presented differently to him.

Between the Rules and Division of Labour node: The SENCO recognised that although she had a flexible timetable, it was challenging to dedicate an hour each week due to other demands. On the other hand, the SENCO recognised, that the time spent one to one with Alex had been invaluable. This may reflect that school systems are not set up to accommodate therapeutic interventions which may be because school staff have not traditionally been seen as individuals who deliver such programmes.

Between Rules and Community: Although the SENCO had a flexible timetable, the Pastoral Leadership Team was conscious of Alex not missing any lessons to receive the intervention. Additionally, Alex did not want to miss any lessons which may reflect the pressure and anxiety he felt around academic achievement in school.

Between Object and Community: The object was implementation of the Homunculi Approach, however, external factors outside of Alex's control were identified as an aspect which affected implementation. This may reflect the importance of involving significant adults in the young person's life in the intervention to assist the change process.

4.6.1.2. Summary

Figure 4.12 displays the activity system for Alex's intervention as perceived by the facilitator. As shown in the Figure, the object was to use the Homunculi Approach to help Alex find tools to manage anxiety, anger, depression and social situations. It was hoped the outcomes would include building a rapport with Alex, helping Alex identify coping strategies and help him have a more realistic view of his academic expectations. The SENCO found the Homunculi Approach resources helpful to structure the session. She additionally used gratitude diaries and books as well as drawing on her own experiences when delivering the intervention. The rules which governed the activity included, having a flexible timetable and access to a quiet room to deliver the intervention. Alex was engaged in the intervention and both Alex's

parents and the pastoral leadership team were supportive. In terms of division of labour, the SENCO was responsible for the planning and delivery of the intervention and felt the time required was manageable in terms of other commitments. The SENCO explained she looked forward to the sessions.

4.6.2. Participant 4: Ben

The activity system can be viewed in Figure 4.13. The contradictions are presented below.

Tools and/or artefacts:

Homunculi Approach resources:

- The teacher explained the main tool used throughout the intervention was talking and discussion. The teacher used the manual and worksheets alongside the session outlines.

Other resources:

- A computer was used to design the agents.

Previous experience:

- The teacher had attended training courses in Autism and social, emotional and mental wellbeing.
- The teacher was in the process of completing a Master's degree in Autism. The teacher felt this degree had greatly supported his knowledge and understanding of pupils with AS.

Personal characteristics

- The teacher used his professional knowledge to recognise whether Ben would be a suitable candidate for the intervention.
- The intervention was pupil led to help him to open up and identify strategies.

Subject:

The subject was a teacher in a specialist provision for pupils with AS experiencing anxiety.

Object: Therapeutic approach using CBT principles to support Ben's thoughts and behaviour

Outcome aims:

- To give Ben the confidence to engage in conversations with others and be able to express his feelings.
- To understand other people's perspectives
- To reduce his anxiety around such situations.

Rules:

- There was a lack of time available to deliver the intervention. The teacher explained staff shortages had reduced flexibility in implementing the intervention.
- Pupils in the provision found change difficult to cope with. The teacher needed to deliver the intervention at the same time each week to increase predictability for the pupils in the provision.
- There was access to a quiet space which was familiar to Ben to deliver the intervention.

Community:

- Ben who was always happy to engage in the intervention although he was hesitant to write or draw and therefore the teacher scribed for Ben.
- Ben's mother and another member of staff in the provision completed questionnaires.
- SENCO agreed for school to take part and had identified more pupils' to receive the Homunculi Approach.

Division of Labour:

- Pre-intervention planning and written work was the teacher's responsibility.
- During the intervention, the discussion was shared between the teacher and Ben.
- Teacher also taught Ben at school.

Figure 4.13: A 2nd generation Activity System depicting the implementation of the Homunculi Approach in Ben's school

4.6.2.1. Contradictions

Within Tools/Artefacts: The teacher had a great deal of experience working with pupils with AS and anxiety, however, the teacher acknowledged the challenge of integrating CBT principles within the intervention. The teacher felt it would have been helpful to have had an opportunity to observe CBT being conducted to aid his confidence in running the intervention. This may indicate school staff require additional levels of training, particularly regarding therapeutic skills, in order to feel confident delivering the Homunculi Approach.

Between Object and Tools/Artefacts: The teacher identified the object as being the therapeutic approach (Homunculi Approach) but expressed the manual provided too much information and the Homunculi Head resource was too big which made the programme less accessible, thus affecting implementation of the intervention.

Between Object and Rules: The object was to deliver the Homunculi Approach, however, staff shortages and a lack of flexibility regarding when the intervention could be delivered affected the teacher's ability to implement the intervention.

Between Object and Community: The object was implementation of the Homunculi Approach, however, external factors outside of Ben's control were identified as a factor which affected implementation. This challenge may reflect the importance of involving other important adults in the young person's life in the intervention to help support change occurring.

4.6.2.2. Summary

Figure 4.13 displays the activity system for Ben's intervention as perceived by the facilitator. As shown in the figure, the object was to deliver a therapeutic approach using CBT principles with the aim that this would help Ben adapt his thoughts and behaviours providing him with the confidence to engage in conversations with others and express his feelings. The teacher used discussion as the main tool which was supplemented by the worksheets. Whilst the teacher was experienced working with young people with AS, he felt further training in CBT principles would have been beneficial. In terms of rules, the teacher was limited in the time he had available to deliver the intervention. During the sessions, Ben was reluctant to write or draw and therefore the facilitator scribed for Ben. The teacher felt the division of labour was

shared between him and Ben as both partook in the discussion. Additionally, the teacher taught Ben many of his academic lessons in school.

4.6.3. Summary

The data was analysed initially as four separate activity systems. A collated account of the findings is displayed in the Activity Diagram below. The contradictions are presented subsequently.

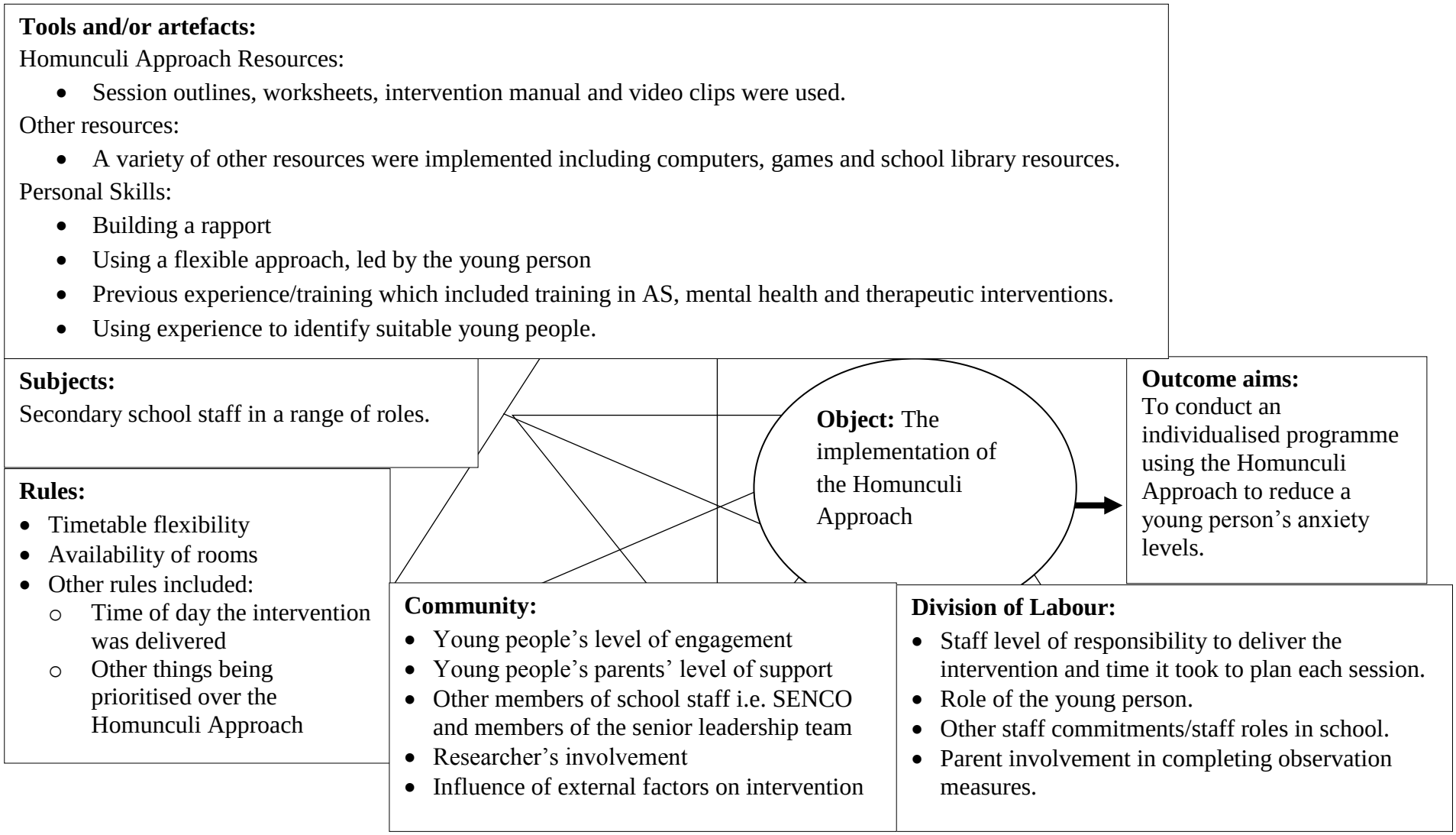


Figure 4.14: A 2nd generation Activity System summarising the findings across the four schools.

4.6.3.1. Contradictions

Within Tools/Artefacts:

Homunculi Approach resources: Two facilitators said the manual was interesting although found it difficult to know how to structure sessions. Whilst the session outlines were considered helpful, one facilitator felt the emphasis on identifying problems at the start of the intervention created a negative experience. Furthermore, three facilitators were unable to access the videos or felt the videos were not relevant to the young person they were working with.

Previous Experience: Two facilitators explained their previous experience supported the delivery of the intervention; whilst two facilitators felt their experience did not aid intervention delivery with one facilitator identifying further training in CBT would have been beneficial.

Within Rules:

Flexibility in timetable: Two facilitators identified their lack of flexibility hindered implementation, whilst two facilitators identified flexibility in their timetables supported implementation of the intervention.

Within Community:

Young people: Two young people were less engaged either due to interpreting concept of the skull literally or not wishing to write/create stories; whilst two young people were more engaged in the sessions. This may reflect that young people require certain pre-requisite skills in order to engage in CBT interventions.

External Factors: All facilitators identified factors outside of the young person's control and this resulted in the facilitator needing to adapt how the young people approached the identified missions or the young person's engagement was negatively affected. For instance, one young person's mission was a problem related to home which he could not solve and therefore the facilitator supported the young person in adapting his mission to something within the young person's control.

School: All facilitators acknowledged senior leadership/SENCO had an awareness of the intervention. There was a lack of consensus regarding the impact of their

involvement. This may reflect the wider systemic challenges within secondary schools regarding communication between staff.

Within Division of Labour:

Responsibility: Three facilitators felt they took sole responsibility for the intervention, whilst one facilitator felt the implementation of the intervention was shared between the young person and the adult.

Roles of staff: Two facilitators had a therapeutic role in the young person's life, whilst two facilitators held an additional role at school where they were in a position of authority in the young person's life (either form tutor or teacher).

Parental involvement: Due to individual circumstances, two of the young people's parents completed behavioural observations at home whilst two families did not.

4.7. Summary

In summary, Phase 2 of the research explored facilitators' experiences of implementing the intervention in school settings. The main findings indicated each facilitator had a different experience of delivering the Homunculi Approach. Factors which may have affected the implementation of the intervention were identified at each node within the activity system. The findings are discussed in more depth in the discussion.

5. Discussion

5.1. Introduction

This chapter discusses the research findings presented in Chapter 4. The chapter is structured by first restating the research aims and then presenting the findings in respect to each research question. When addressing the primary research question consideration was given to whether either the null or experimental hypothesis can be rejected, consistent with the positivist ontological standpoint that there is one objective truth (Robson, 2011). The secondary research question was explored by presenting the researcher's interpretation of the qualitative data, in keeping with the constructionist ontological perspective, where meaning is created by the researcher (Creswell, 2014). The findings from both phases of the research are explored in relation to the literature.

In the second half of the chapter, validity and reliability of the findings are discussed and reference is made to the limitations of the research which might affect the interpretation of the findings. Finally, the implications of the research are discussed with identification of areas for future research.

5.2. Summary of Aims

The primary research aim was to provide an objective evaluation of the Homunculi Approach as an intervention for secondary school aged pupils with AS experiencing anxiety. As a CBT based intervention, the Homunculi Approach was designed specifically for pupils with AS. It appeared to be a viable intervention which could be delivered in schools as it is inexpensive to fund, can be used flexibly to meet the individual needs of the young person and its implementation does not require delivery by trained professionals (Greig & MacKay, 2013b). The evidence base for this intervention, however, is currently limited.

The conducted research explored the effectiveness of the Homunculi Approach when delivered by school staff. By contributing to the evidence base, it was hoped the research would provide staff working in schools with the knowledge of an intervention which can support pupils with AS experiencing anxiety.

As schools have been identified as being well positioned to support young people experiencing MHPs (i.e DoH & DfE, 2017), the secondary aim of the research was to explore what factors affected implementation of the intervention by interviewing the members of school staff who delivered the Homunculi Approach.

5.3. Research Question 1

The primary research question was: Does the Homunculi Approach reduce anxiety in pupils with AS in secondary schools when delivered by school staff?

The experimental hypothesis was:

The Homunculi Approach does reduce anxiety in pupils with AS in secondary schools when delivered by school staff.

The null hypothesis was:

The Homunculi Approach does not change the levels of anxiety in pupils with AS in secondary schools when delivered by school staff.

This research question encompassed three sub-questions; the findings are presented in relation to these three sub-questions.

5.3.1. a) Does the Homunculi Approach reduce participants' anxiety as measured through questionnaires completed by young people and behavioural observations?

All four participants completed the weekly anxiety questionnaire (PI-ED). For two of these participants (Sophie and Alex), visual analysis data suggested it was *very convincing* or *reasonably certain* that there had been a practical and significant reduction in anxiety. For the other two participants (William and Ben), the data was deemed *not at all convincing* that there had been a measurable change in anxiety levels. Observational data was only collected for William and Ben. William's observational data appeared *not at all convincing* that there had been a reduction in anxiety whilst Ben's data indicated it was *reasonably certain* a reduction in anxiety had occurred.

5.3.2. b) Does the Homunculi Approach reduce participants' anxiety measured by pre and post measures when completed by parents, teachers and the young person?

This question was addressed by analysing the SCAS, SAS-TF and SDQ data using the RCI (Jacobson & Truax, 1991) to explore whether the before and after intervention difference was significant. For one participant (Sophie), the teacher-rated and self-report measure indicated anxiety levels significantly reduced between pre and post measures. In the case of a second participant (Alex), the self-report measure indicated anxiety levels significantly reduced between pre and post measures. For a third participant (Ben), the teacher rated report measure indicated anxiety levels significantly reduced between pre and post measures. Whilst there were some reductions in anxiety across the remaining findings from the SCAS and SAS-TF, these were non-significant indicating these changes were likely to have occurred by chance. The findings from the SDQ were non-significant across all participants indicating there were no significant reductions in social, emotional and behavioural wellbeing pre and post intervention.

5.3.3. c) Do participants perceive their anxiety to decrease as a result of the intervention as measured by the Homunculi Approach programme?

The third question was addressed by analysing the data collected organically as part of the Homunculi Approach intervention. Firstly, participants were asked to rate on a 10 point scale how they felt they were coping with their identified problem both at the beginning and at the end of the intervention. The three participants who completed this measure all reported making improvements in coping with their identified problems, ranging from an increase of 1 point to an increase of 5 points on the scale.

Secondly, the evaluation questions at the end of the intervention were completed by all four participants. Every participant identified aspects of the intervention they had found helpful. They were able to identify both their favourite character and gadget as well as what they had learnt. They were also able to identify things they would change about the intervention, such as the time the intervention was delivered. In the context of the research question, perhaps the most pertinent evaluation question

was “what did you learn from the Homunculi Approach?” Participants’ responses to this question included: “To not get annoyed at school”, “When a situation is really hard don’t give up because there are ways you can make it better”, “I’m always able to change my thoughts on a situation or approach it differently with an open mind and by thinking about the Homunculi the situation generally turns out more positively” and “I’ve developed more confidence and begun to address my problems”.

Although a crude measure, the participants’ comments may be the most important measure as they highlight the young people’s own perceptions of the effectiveness of the Homunculi Approach. Overall, the Homunculi Approach measures indicated all participants perceived the intervention had positively impacted on their wellbeing in terms of providing them with the skills to cope with problems.

5.3.4. Summary of Findings

In summary, the findings from the repeated measures and pre and post measures suggest the intervention was *clearly* effective in reducing anxiety for two participants and was not *clearly* effective in reducing anxiety for the other two participants. The Homunculi Approach measures indicated all four participants perceived they had learnt new skills from the intervention, with three of the participants showing an improvement in their ability to cope with their identified problems.

5.3.5. Conclusion

In conclusion, when examining each participant’s data, it appeared the intervention may have been effective in reducing anxiety for two of the participants (Sophie and Alex), indicating the null hypothesis can be rejected for these participants. The intervention did not appear effective in reducing anxiety levels for the other two participants (William and Ben); suggesting the experimental hypothesis can be rejected for these participants. These findings, however, should be considered with caution due to the small sample size and the possible influence of external factors which may limit the reliability and validity of the findings. Such limitations and possible alternative explanations for the findings are discussed in more detail in Sections 5.5, 5.6 and 5.7.

5.4. Research Question 2

The secondary research question in the present study was: *What are staff perceptions of the factors which may affect the implementation of the Homunculi Approach when delivered by school staff in schools?* This research question was explored by conducting semi-structured interviews implementing activity theory with the school staff who delivered the Homunculi Approach. The results identified several common factors which supported implementation of the intervention as well as several contradictions between staff experiences. A summary of the findings is presented in reference to the two participants for whom the intervention appeared effective in reducing anxiety (Sophie and Alex), and the two participants for whom the intervention did not appear effective (William and Ben).

In terms of the subjects who delivered the intervention, Ben and William's intervention facilitators commented that their previous training and experience did not support them in delivering the intervention. In particular, Ben's facilitator identified further training in therapeutic tools would have been beneficial. Sophie and Alex's facilitators had previously had experience of or had worked closely with professionals who had delivered therapeutic interventions. This difference may suggest the skill level of the staff delivering the programme varied.

The tools used by the facilitator may have influenced the implementation of the intervention. Several facilitators commented that activities included in the session outlines provided to support intervention planning were not considered appropriate for every participant. For example, three facilitators were unable to access the videos or felt they were not appropriate for the young people they were working with. All facilitators used the resources flexibly, incorporating computers, games and books to help support the young people they were working with. This may be indicative of the importance of using the resources flexibly when delivering the Homunculi Approach.

Rules were identified which did not appear to impact on the effectiveness of the intervention. For instance, the flexibility of the facilitator's and participant's timetables did not appear to influence intervention effectiveness for Alex and Sophie. This may have impacted, however, on the effectiveness of William's intervention as his engagement varied considerably depending on the time of day the intervention was delivered. Changes in the time of delivery were not possible due to concerns

about William repeatedly missing the same lessons. This may indicate that constraints at a systemic level may impact on the effectiveness of the intervention, depending upon the effect of such challenges on the individual participant.

At the community level, the engagement of the participants may have impacted on the effectiveness of the intervention. For William and Ben, the facilitators recognised the young people found it challenging to engage in elements of the intervention, such as understanding the concept of the skull. For Sophie and Alex, the facilitators reported that the young people were engaged and motivated during the sessions. This may reflect that certain prerequisite skills are required for young people to engage in CBT interventions.

Furthermore, the level of parental involvement was variable which may have influenced the effectiveness of the intervention. In the case of Sophie and Alex, their families were involved in completing observational measures as the young people were displaying anxiety-related behaviours at home. This may have incidentally increased parental engagement in the intervention. The researcher did not meet with William and Ben's families, who were displaying anxiety-related behaviours in school. An alternative explanation to differing levels of parental involvement may be that when the Homunculi Approach is delivered in schools it is more effective for young people whose anxiety is displayed at home, rather than at school.

Additionally, all facilitators identified external factors in the young person's life which may have affected implementation of the intervention. For instance, several of the young people identified challenging situations at home which they could not change. For Sophie, the identified external factor was her taking anti-depressant medication, which may have had a positive impact on her engagement with the intervention. This reflects the complexity of delivering therapeutic interventions and the importance of viewing the young person in the context of their environment. These challenges indicate there are often external factors which may affect implementation of the intervention; the extent to which such factors impact on the effectiveness is variable.

The involvement of school staff, other than the facilitators, may have influenced implementation of the intervention. Whilst all the facilitators reported the school leadership team were aware of the intervention being implemented, the facilitators

were unsure what impact this had. Within division of labour, three facilitators commented they felt solely responsible for the delivery of the intervention. This may suggest a challenge in communicating within secondary schools.

Regarding the division of labour, William and Ben's facilitators were in a position of authority in the young person's life (i.e. teaching the young person), as well as having a therapeutic role. In contrast, Sophie and Alex's facilitators did not have this possible conflict of roles as they were seen solely as a therapeutic individual by the young person. The possible conflict of roles may have impacted on the way in which the facilitator delivered the intervention and/or affected the young person's willingness to engage with the facilitator.

5.4.1. Summary

In summary, whilst each facilitator's experience of delivering the Homunculi Approach differed, there appeared to be several commonalities amongst the experiences of the facilitators for whom the intervention appeared effective in reducing anxiety and the experiences of the facilitators where the intervention appeared ineffective in reducing anxiety. Implementation factors which may have influenced the effectiveness of the intervention included: staff roles in school and their perception of their ability to deliver the intervention; the level of parent involvement; and, the level of participant engagement. Further identified factors which were acknowledged by all facilitators included: the necessity to use the resources flexibly to meet the needs of the young person; the flexibility of timetables to support the engagement of the young person; the influence of external factors on the young person's feeling of autonomy of their situation; and, the challenge of communication between the facilitators and senior leadership staff within secondary schools. The conclusions drawn from the interviews should be considered in light of the limitations discussed in Section 5.7, in particular the small sample size recruited.

5.5. Previous Literature

5.5.1. Introduction

The researcher now considers the findings from Phase 1 and Phase 2 of the research in relation to the previous literature presented in Section 2. Firstly,

explanations for the variability in the findings are posed and secondly, the Homunculi Approach intervention is explored in greater depth.

5.5.2. Corroboration of Informants

There was often a lack of corroboration between the anxiety ratings provided by parents, teachers and the young person. For two participants statistically significant results were found for one informant (teacher or young person) and for one participant statistically significant results were found for two informants (teacher and young person). This finding is consistent with the literature, where only one study included in the systematic literature review (Section 2.5) found statistically significant results across all three informants (Luxford et al., 2017). It has been hypothesised that limited concordance between informants may be due to the challenges of reporting internalising symptoms (Cole, Truglio & Peeke, 1997; Hodges, Gordon, & Lennon, 1990).

The lack of consistency in findings across informants may also reflect the overlap between symptoms of anxiety and features of AS (White et al., 2013). Anxiety is known to exacerbate the features of AS and, reciprocally, the core features of AS can also increase anxiety levels (Bellini, 2004; Scattone & Mong, 2013). It may be that not all measures employed in this study were sensitive enough to discriminate between the overlapping features of AS and symptoms of anxiety, thus resulting in a lack of significant findings across all informants. Despite this, however, the SCAS has been deemed an appropriate measure to use with young people with AS (Wigham & McConachie, 2014).

A further possible explanation for the lack of corroboration amongst informants might be due to the participants experiencing difficulties generalising their learning outside of the intervention resulting in teachers and parents seeing little change in the young person's anxiety levels. This explanation is explored in more depth in Section 5.5.5.

5.5.3. Participants

As highlighted in Section 5.3, the effectiveness of the intervention varied between participants. A possible explanation for this difference may be due to the

individual characteristics of the participants recruited. Two participants had EHCPs which may indicate these pupils had more complex needs than the other participants. Staff reported these participants found it challenging to access the intervention and this was attributed to a lack of flexibility in thought and behaviour- one of the characteristics of Autism (Wing & Gould, 1979). The two pupils whose anxiety appeared to reduce as a result of the intervention did not have EHCPs perhaps indicating the intervention may be more effective for high functioning pupils with AS without complex needs. Within the literature, the majority of the research has been conducted with high functioning individuals with AS without complex needs (White et al., 2009). This may highlight a gap in the research.

A further explanation for the variable findings may have been that not all participants recruited had the prerequisite skills required to engage in a CBT intervention. One participant, for example, found it difficult to identify missions (problems) he wanted to solve. Graham (2005) stated young people should have identified they need to change and be ready to change in order for CBT interventions to be effective. Consideration of the young person's motivation levels has been used to identify their suitability before delivering CBT interventions in neuro-typical populations; not, however, for AS populations (Schmidt, 2004). Regarding the AS population, previous research has suggested that CBT interventions may not be suitable for all young people with AS, due to the characteristics and symptoms associated with the condition (Scattone & Mong, 2013). It may have been possible that, due to motivation levels or other features of AS, such as rigidity in thinking, that some participants did not have the pre-requisite skills required to access the CBT intervention.

The participants' anxiety levels pre-intervention varied considerably. Anxiety levels pre-intervention did not appear to influence engagement with the intervention as the participant with the second highest levels of anxiety pre-intervention was one of the participants for whom the intervention was deemed effective. Within the literature, CBT interventions have been highlighted as less effective for participants with AS experiencing severe levels of anxiety (McConachie et al., 2014). As a dimensional rather than a categorical definition of anxiety was used in the present research, it was not explored whether participants recruited had mild, moderate or severe levels of anxiety. Despite this, the findings indicate that the Homunculi

Approach may be an effective intervention for some young people with considerable heightened levels of anxiety.

5.5.4. Facilitators

The intervention facilitators had a range of different previous experiences. Several facilitators identified they lacked confidence at the beginning of the intervention or felt they would have benefitted from more support regarding implementing CBT interventions. The staff levels of confidence may have influenced the effectiveness of the intervention as research has found CBT interventions are typically less effective when delivered by less highly trained individuals (Kerfoot, et al., 2004). Within the literature, however, positive findings have been found when CBT interventions for young people with AS have been delivered by school staff (Drmic et al., 2017; Skipper 2011). A possible difference between previous research and the present study is that the training session received by staff was considerably shorter (i.e. Drmic et al., 2017). This may imply longer training sessions are required to aid implementation of such interventions. This raises the pragmatic challenge of finding time for staff to attend longer training courses (Finney, 2006).

During the interviews with school staff, one of the findings was the importance of developing a rapport with the young person. It can take longer for young people with AS to develop relationships (VanBergeijk et al., 2008) and consequently if the young person is familiar with the member of staff beforehand, this may aid the young person's engagement with the intervention. According to the literature, the relationship between the young person and the adult delivering the intervention may be as important as the CBT element itself (James et al., 2015). The rapport between the adult delivering the intervention and the young person may have been a factor which impacted on the effectiveness of the intervention.

5.5.5. Systemic Factors

It was anticipated that conducting the research in a school setting may have supported generalisation of strategies due to the intervention taking place in a familiar environment (Clarke et al., 2016; Luxford et al., 2017). Several participants, however, displayed challenges when generalising their learning in school and at home as shown through qualitative reports from the facilitators and the insignificance reported from

parent-rated measures. This finding is consistent with the literature (i.e. Burke et al., 2017) and has been associated with the rigidity of thought found in individuals with AS (Anderson & Morris, 2006).

In this study, whilst two of the participants parents were engaged in conducting behavioural observation measures, none of the participants' parents were actively engaged in the intervention. Research suggests parent involvement can support the effectiveness of CBT interventions for young people with AS (Sofronoff et al., 2005; Storch et al., 2015). It may be that working with the system around the young person as well as working with the young person individually may further support the effectiveness of therapeutic interventions.

Within secondary school environments, staff having the capacity to deliver the intervention and pupils being allowed out of lessons to receive the intervention was a challenge identified when interviewing staff. Within the literature, the importance of the system having the resources and policies in place to support implementation of the intervention has been identified as a factor which can impact on its effectiveness (Kelly & Perkins, 2012). It may be that within schools, the policies in place support academic learning, however, the findings raise the question of whether school systems are set up to appropriately support the social, emotional and mental wellbeing of their pupils.

5.5.6. The Homunculi Approach

Grieg and MacKay highlighted the Homunculi Approach is a flexible intervention (2013b). In line with such intentions, the intervention integrity checks and interviews with school staff indicated a pupil led and flexible approach was used when delivering the intervention. The literature highlights the importance of adapting CBT interventions to ensure they meet the individual needs of young people with AS (Burke et al., 2017). In this regard, the Homunculi Approach allows for individual differences by providing a variety of resources to support delivery of the intervention. For instance, one facilitator scribed for the participant. This was an adaptation used for young people with AS in Attwood and Scarpa's research (2003). Although previous research has suggested adaptations in intervention delivery can be associated with staff not understanding the intervention (Rohrbach et al., 2012), in the present research this did not appear to be the position.

A challenge of the flexible approach, however, was ensuring the CBT principles, such as distinguishing between thoughts, feelings and behaviours, were made explicit by staff delivering the intervention. The interview data indicated that one facilitator found their lack of experience delivering CBT interventions affected implementation of the Homunculi Approach. The literature, conversely, suggests CBT interventions may be no more effective than other therapeutic interventions (Murphy et al., 2017; Sung et al., 2011). If staff felt less confident in the principles of CBT when delivering the intervention, therefore, this may not necessarily have impacted adversely on the results.

Although the present research focused on anxiety, the Homunculi Approach has been designed to address a range of difficulties including anxiety, depression and social challenges. Interestingly, the majority of the missions (problems) identified by the young people were linked to social difficulties, such as friendships or being able to communicate with adults when they felt they had been treated unfairly. This finding is consistent with previous research suggesting that social and communication difficulties experienced by young people with AS can lead to heightened levels of anxiety (Scattone & Mong, 2013). One participant in particular identified 3 missions, one of which was "feeling able to lift out of a depression". The identification of this mission may support the concept that anxiety and depression operate under the same unified construct (O'Connor et al., 2010). Although the range of missions identified by the young people may be linked to anxiety, they may also indicate the participants were experiencing difficulties other than anxiety. The researcher's focus on anxiety may therefore have been too specific, given the broad implications of the Homunculi Approach (see Section 5.7).

In relation to previous research evaluating the effectiveness of the Homunculi Approach, the present study recruited participants of a similar age to the participant recruited in Grieg and MacKay's research (2005). Whilst different measures were administered, the findings from the present research expanded on the findings from Greig and MacKay's research (2005) by recruiting a larger sample of participants. The findings in the present research, however, were more variable. The disparity in findings may be attributed to: the different measures employed; the differing statistical procedures implemented and the intervention being delivered by school staff rather than EPs. Research evaluating the Homunculi Approach was furthered by

Downing's doctoral research (2015) which explored the impact of the intervention on emotional wellbeing for primary aged pupils. The researcher found mixed results on emotional wellbeing indicating that the intervention was effective for some participants and not others. Such findings are comparable to the findings in the present study where anxiety appeared to reduce for two participants and did not appear to reduce for the other two participants. Taken together, the findings from Downing's research (2015) combined with the present study indicate the Homunculi Approach may be a viable intervention for participants spanning a wide range of ages. In addition, the variability in findings within these two studies may indicate the Homunculi Approach may not be a suitable intervention for all young people with AS.

5.5.7. Summary

In summary, there are numerous explanations to address the variabilities in the findings including: the overlap between symptoms of AS and anxiety; the challenge of measuring internalising problems; participant characteristics and their prerequisite skills; facilitator characteristics and their rapport with the young person; and support within the system around the young person. The Homunculi Approach as a flexible CBT intervention for young people with AS was discussed in relation to findings within the present research.

5.6. Reliability and Validity

The reliability and validity of the findings is discussed below. The quantitative phase is discussed separately to the qualitative phase due to the differing ontological perspectives.

5.6.1. Phase 1

5.6.1.1. Validity

The study recruited multiple young people across different settings, which resulted in increased generalisability of the findings (Horner et al., 2005). Although a small sample size was recruited, four participants fell within the identified range of four to six participants which are required for a SCED (Horner et al., 2005). The researcher intended for the anxiety construct to be measured using multiple

instruments. In practice, observational data was only collected for 2 participants. Data was collected, however, from several standardised measures (PI-ED, SAS-TF, SCAS and SDQ) to support the external validity of the study. The level of external validity of the research appeared to be a particular strength due to its real world nature.

The challenge of conducting research in the real world may have affected the internal validity of the findings. Extraneous variables may have influenced participants' anxiety levels. For instance, one participant began taking anti-depressants simultaneously with starting the intervention. For this participant it was difficult to distinguish between whether it was the medication or the intervention, or a combination of the two, which reduced the participant's anxiety levels. A second participant's family member was ill during the research project, which may have negatively impacted on both the participant's anxiety levels and his engagement with the intervention. Previous research has found factors at the level of the child and family have been identified as likely to affect intervention outcomes (Greenberg, Domitrovich & Bumbarger, 2001). One of the advantages of SCEDs, however, is that such factors can be documented and taken into account when interpreting the results (Barlow et al., 2009).

A threat to construct validity was that the measures which organically occurred within the Homunculi Approach did not appear to assess anxiety levels. The researcher anticipated these measures could be used to elicit the participant's view of whether their anxiety decreased as a result of the intervention. Not all participants' identified missions appeared anxiety-related and, furthermore, the questionnaire responses provided an evaluation of the Homunculi Approach overall rather than exploring specifically the effects on anxiety. Although the data collected using such measures may not have addressed anxiety as a construct, the responses appeared valid to capture participants' views in more detail and therefore were included in the present research.

A further threat to construct validity was demand characteristics. In order to reduce this threat the researcher ensured she was not present when the questionnaires were administered nor during Session 10 when the participants completed the debriefing questionnaire. The setting, however, may have been influenced by demand characteristics as the researcher felt the intervention may have held a higher priority

in schools as it was part of a research project. The researcher wondered whether this was a true reflection of what happens in school settings outside the realm of research.

The study's internal validity may have been affected by the limited amount of time between collecting pre and post measures. There was often a reduction in anxiety levels as rated by the young person, parents and teacher, however, this change tended not to be large enough to be deemed statistically significant. Approximately 10 weeks may not have been long enough to capture a significant change in anxiety and/or social, emotional and behavioural wellbeing. If time had allowed, the researcher would have conducted follow up measures. Previous research which did not find significant results immediately post intervention did, however, find significant findings at the follow up stage (i.e. Sofronoff et al., 2005; Wood et al., 2015). This may indicate it takes longer for young people with AS to solidify their learning and implement strategies learnt.

A further threat to internal validity was the challenge of deciphering whether it was the intervention itself or the consistent time with the adult delivering the intervention which was effective. Within the literature, studies which have compared CBT interventions to an active control group have not found a significant difference between the two groups, indicating it may be the consistent time with an adult which is important, rather than the content of the intervention (Murphy et al., 2017; Sung et al., 2011).

5.6.1.2. Reliability

The extent to which the methods used to gather the data were reliable was also considered. The reliability of the research may have been compromised when the repeated measures were not administered in a standardised format. One participant was reluctant to complete the PI-ED questionnaire each week resulting in the intervention facilitator using creative ways in which to engage the young person in completing the questionnaire. To the researcher's knowledge, however, the remaining measures were administered in line with the instructions provided by the researcher.

A further threat to reliability was fidelity to the intervention. The researcher recognised the intervention had been designed by Greig and MacKay (2013b) as a flexible approach which could be tailored to the individual. One of the challenges this

flexibility posed, however, was how to measure intervention integrity to ensure the approach was being conducted in a consistent and reliable manner. The staff delivering the intervention lacked time and experience in delivering therapeutic interventions. As such, the researcher chose to provide staff with brief session outlines to support staff and provide a method of assessing intervention integrity. The researcher was aware that whilst the session outlines increased the reliability of the findings, they may have affected the validity of the research as they reduced the flexibility of its delivery.

The delivery of the intervention varied significantly in a number of different ways, such as: staff experience; their relationship with the young person; and the resources utilised during the intervention. Additionally, the intervention length varied from 9 to 14 weeks depending upon the individual needs of the participant. Increasing the intervention length of intervention is an adaptation which supports therapeutic interventions for pupils with AS (McNally Keehn et al., 2013). Such differences in implementation of the intervention do, however, cause challenges when evaluating the intervention due to a lack of reliability regarding intervention fidelity.

A further factor which may have affected the reliability of the findings was the interpretation of the data analysed using visual analysis. As highlighted within the literature, the lack of concrete decision rules in visual analysis increases the subjectivity of the approach (Wampold & Furlong, 1981). Whilst the researcher used a structured approach to visual analysis, Harrington and Velicer (2015) identified in practice, such visual analysis criteria rarely impact the researcher's conclusions regarding the data. The use of an interrater in the current research aided reliability as a moderate level of agreement was found. The researcher and interrater found it more challenging to analyse the findings when there was high variability in the data and inconsistent patterns of behaviour over time. This is consistent with findings within the research (DeProspero & Cohen, 1979; Ottenbacher, 1990). Despite the challenges encountered when using visual analysis, the researcher maintains the view that visual analysis was the most appropriate method to use due to a lack of agreement regarding statistical methods.

5.6.2. Phase 2

The researcher visited each school regularly over a prolonged period of time. One of the advantages of activity theory is that the experience is co-constructed between the facilitator and the researcher and therefore the researcher's involvement increases the credibility of the findings. On the other hand, the data gathered may have been influenced by the researcher's subjective view of the school which may have reduced the credibility of the findings. The researcher aimed to reduce this possible influence by carrying out member checks at two different time points to check for accuracy of the data.

The transferability of the findings was enhanced by providing thick descriptions of the participants and the context in which the research was conducted. Furthermore, transferability was also increased by interviewing numerous facilitators across 4 different secondary school settings. The researcher was aware, however, that only one facilitator in each school was interviewed and this limited the findings. The transferability could have been increased by interviewing other people involved within the activity.

The dependability of the findings was enhanced by the researcher being transparent in the methods used to gather and analyse the data. When gathering data, the researcher found it challenging to ensure every facilitator had the same interpretation of each node in the activity system. This was important in order to summarise findings across participants. The researcher, therefore, was required to adjust the layout of the data and used member checks to ensure the participants felt the data had been portrayed accurately.

The confirmability of the findings was enhanced by the researcher acknowledging her possible biases (Section 3.8.4) and completing a research log throughout the process to capture methodological decisions. The researcher found it challenging, however, to examine the data between participants as she felt too immersed in the data from each individual case due to having built relationships with each school over time. To support data interpretation the findings were examined by a peer who was not directly involved in the research. When summarising the findings in Section 5.4.1 the researcher was aware, in line with the social constructionist ontology, that another researcher may have had a different interpretation of the data.

5.6.3. Summary

In summary, issues which may have affected the reliability, validity and trustworthiness of the findings during Phase 1 and Phase 2 of the research were acknowledged. Such issues should be taken into consideration when interpreting the findings from the present research.

5.7. Limitations

The following section highlights the limitations of the current research with a particular focus on the methodological designs employed and the challenges the researcher experienced.

5.7.1. Research Design

An A-B SCED was implemented in the quantitative phase of the research. Despite aiming for a rigorous SCED, due to constraints within the school setting and the skill based nature of the intervention, the researcher was limited to using an A-B design.

Within the SCED, baseline data was not stable across all participants before the intervention began due to constraints within the school calendar and ethical considerations of not wanting to withhold treatment for a prolonged period of time. Whilst some researchers have stated it is essential for baseline data to be stable before moving to the intervention phase (Shaughnessy & Zechmeister, 1994), other researchers have acknowledged it is not always possible to establish a stable baseline due to participant variability (Todman & Dugard, 2001). The interpretation of the findings may have been affected in cases where baseline data was not stable before the intervention began.

Behavioural observations were conducted for only two participants due to the challenge of collecting data at home for the remaining two participants. Regarding the participants for whom anxiety was presented at home, the researcher was presented with the dilemma of ensuring behavioural data was collected to increase validity of the findings whilst also being aware of not placing too much pressure on parents in case they disengaged with the research. As a result, no data for these two participants was collected and this illustrates the challenge of conducting observation measures at home rather than school.

For participants who displayed anxiety at school the behavioural observation schedules may not have accurately captured participants' anxiety related behaviours. For instance, one participant's behaviours ceased when a new pupil joined the provision, perhaps indicating the behaviours were associated with gaining attention from others rather than being associated with anxiety. In order to control for this limitation, the observation measures could have been piloted alongside an anxiety rating scale. Due to time constraints this was not possible in the present research. An additional challenge of conducting observation measures in school was ensuring the observations were conducted consistently over time when other staff responsibilities may have taken priority. Despite the limitations of using behavioural observations, anxiety was studied through triangulation of various measures to increase the validity of the findings.

The researcher focused on measuring anxiety levels as anxiety is considered the most common MHP experienced by young people with AS (Skokauskas & Gallagher, 2012). Due to the broad range of implications the Homunculi Approach can have, however, the focus on anxiety may have been too specific. This may have resulted in the research not measuring all possible effects of the intervention. On the other hand, the researcher did use the SDQ as a general measure to examine any additional impact of the intervention. Furthermore, the researcher felt it was important to have a specific area of focus to ensure the research was purposeful and meaningful.

In relation to the qualitative research, the researcher acknowledges that the research was limited by conducting the interviews with solely the facilitators in each school. This member of staff was often not in a position within the school system where they could make change occur as a result of identification of the contradictions. It may have been beneficial to have conducted additional interviews with a member of school staff in the school leadership team to explore how school systems could be adapted for effective implementation of therapeutic interventions. To support change in the settings, the researcher aims to disseminate the findings to members of staff with a senior leadership position within the school.

5.7.2. Role of the Researcher

The researcher encountered several dilemmas when conducting the research. When conducting the intervention integrity checks the researcher was unsure of the

remit of her role. For instance, when conducting fidelity checks the researcher was unsure whether she should interject during the sessions as part of the supervisory element, or refrain from making any comments during the sessions, due to the observational element of her role. The researcher decided if she was approached by the facilitator during the session she could provide support as part of the supervisory role.

The researcher held regular supervision sessions with the staff delivering the Homunculi Approach. During the supervision sessions, the researcher became aware of her bias in wanting the intervention to be delivered effectively and therefore wanting to pass on resources and advice. The researcher was mindful, however, that the supervisory element was to support the staff by answering their queries and concerns rather than providing them with help where it was not asked for.

On one occasion in particular, the researcher's role appeared to conflict with her role as a TEP when a facilitator expressed a concern regarding a participant's home situation. When the researcher became aware of the role conflict, the researcher signposted to relevant agencies and encouraged the school to contact their school EP to provide additional support, as appropriate.

A final challenge, which may also be a limitation of the current research, was that due to the mixed methods design, the researcher was required to have sufficient knowledge of both quantitative and qualitative methods. The researcher acknowledged she feels less confident and competent when using qualitative methodology and this has been a limitation acknowledged within the literature regarding mixed method designs (McKim, 2017). Despite this challenge, using mixed methods has allowed the researcher to conduct the research at two different levels to provide a greater insight.

5.8. Implications of the Findings

The following section explores the implications of the research at various levels. This includes: implications for schools, EPs and wider levels, such as the LA. Additionally, the implications for future research will also be explored by identifying gaps within the literature regarding the Homunculi Approach, specifically, and CBT interventions, in general.

5.8.1. Implications for Schools

Since completing the research there have been several implications for the schools recruited in the project, including: two schools have identified young people who they plan to deliver the Homunculi Approach with in the near future; one facilitator aims to continue mentoring the young person they were working with due to the rapport they had built during the intervention, and; one facilitator has met with the young person and their parents to relay the strategies the young person learnt to support generalisation of the strategies. This provides a summary of some of the outcomes of the research which have already occurred as a result of the current research project.

A further implication for schools is identifying the factors which may aid the effectiveness of the Homunculi Approach when delivered in school settings. Considerations which arose from the research included when selecting young people to receive the intervention schools should consider the young person's level of rigidity in thinking and whether the young person wants to change. When selecting a member of staff to deliver the intervention, schools should identify a person who has already developed/has the opportunity to develop a rapport with the young person and who can be solely viewed as a therapeutic person in the young person's life (i.e. does not also teach them in class). If the member of staff has not previously delivered therapeutic interventions, the training the member of staff receives should include a focus on therapeutic skills as well an introduction to the Homunculi Approach. Within the school setting, there should be an awareness within the senior leadership team that the intervention is taking place, where the member of staff delivering the intervention should have access to supervision either internally or through external agencies, such as the EPS. When delivering the intervention, the resources should be used flexibly in line with the young person's areas of interest and capabilities. Furthermore, parents should be aware their young person is receiving the intervention and should be involved in supporting their young person to generalise their learning, for example, by being aware of their young person's agents and gadgets.

5.8.2. Implications for EPs

Within the LA where the researcher was on placement, the researcher disseminated the findings to the Educational Psychology Service. The implications for

EPs as scientist-practitioners is that the research increases their awareness of the circumstances in which the intervention appeared effective in reducing anxiety when supporting young people with AS in their schools. The research highlights there are a range of factors which may impact on the effectiveness of the intervention, such as the readiness and needs of the young person, the characteristics and experience of the staff member delivering the approach and the context in which the intervention is being delivered. EPs should consider carefully such factors when working with schools.

EPs have been identified as being in a unique position to train school staff in understanding the principles behind interventions (Rait et al., 2010). The research findings may affect the way in which training is delivered as some staff felt they could have benefitted from further training in therapeutic skills, for example, appropriate questioning skills when delivering CBT based interventions. It may be longer training sessions are required to ensure school staff feel confident in delivering therapeutic interventions.

At a more systemic level, implementation research identifies the importance of considering the wider factors which might affect implementation of the intervention (Kelly & Perkins, 2012). As EPs can work at various different levels within the school system, they may be well placed to identify and resolve constraints within the system which may impact positively on the implementation of the intervention, for instance, by ensuring staff have the time and resources to deliver the intervention and exploring ways in which strategies from the intervention can be generalised. Additionally, EPs often visit the school at least once a term and therefore may be well placed to offer ongoing support and supervision to staff who are engaged in delivering therapeutic work.

5.8.3. Implications at a Wider Level

At a wider level, professionals working in schools could explore how schools can implement preventative rather than reactive approaches to supporting pupils with and without AS regarding their mental wellbeing. For instance, Burke et al. (2017) identified the importance of teaching young people with AS principles of CBT at a younger age and revisiting the principles over time to help young people acquire this skill. This would link in with Haring and Eaton's learning hierarchy (Haring, Lovitt,

Eaton & Hanson, 1978) which suggests in order for individuals to be able to generalise their learning they first need to be fluent in using the skill (i.e. being able to carry out the skill accurately and relatively quickly). At a policy level, this may have implications for government legislation regarding education of socio-emotional skills in schools in order to allow the curriculum to include learning about the principles of CBT. It will be of particular importance for populations who are vulnerable to experiencing MHPs, such as those with AS, that such content is delivered in an accessible manner.

Government guidelines and previous researchers position schools as being well placed to support young people with MHPs (DoH & DfE, 2017; Drmic et al., 2017). Unless mental health can be prioritised, however, over other pressures, such as academic attainment, it may be challenging for staff to implement therapeutic interventions effectively (Finney, 2006). Top down changes within schools may need to be implemented to ensure social, emotional and mental wellbeing is prioritised in schools, particularly for more vulnerable populations, such as those with AS.

5.8.4. Implications for Research

5.8.4.1. Homunculi Approach

As an emerging intervention with relatively underexplored therapeutic potential, several unanswered questions remain regarding the effectiveness of the Homunculi approach for supporting young children with AS experiencing anxiety. For example, future research could assess the efficacy of Homunculi approach over an extended time frame and thus explore the long-term impact of the Homunculi Approach on reducing anxiety in children with AS. In the present study, due to time constraints the researcher was unable to explore the longer term impact of the intervention. Conducting follow up measures, however, could be particularly beneficial when working with AS children, given that it may take longer for young people with AS to implement their learning (Sofronoff et al., 2005; Wood et al., 2015).

Furthermore, the inclusion of parental involvement and the support of school staff to aid generalisation of the strategies could be explored. Previous research suggests parental involvement supports the effectiveness of therapeutic interventions for young people with AS (Sofronoff et al., 2005; Storch et al., 2015). Involving the

systems around the child may therefore lead to the young person's environment being adapted to meet their needs as well as the young person adapting to their own environment as a result of the intervention.

The founders of the intervention have posited that the Homunculi Approach can be delivered on a one-to-one basis or as a group intervention. An area of future research might be to explore the effectiveness of the Homunculi Approach when delivered as a group or whole class intervention to support, for example, transition from primary to secondary school. Transition can be challenging for all young people, but particularly for those young people with AS who find change to routine especially difficult (Mandy et al., 2016). An advantage of conducting research as a group or as a class is that a larger sample size can be recruited and consequently more robust research methods, such as RCT designs, can be used (Ramey & Grubb, 2009). On the other hand, the Homunculi Approach appears to be an intervention which can be adapted to meet the needs of the individual, and this raises the question of whether it could be applied to a large group setting.

Whilst the current research explored factors which supported or hindered delivery of the intervention, the small sample size recruited means that the conclusions drawn are limited and are to be interpreted tentatively. To address this limitation, future research could involve interviewing a larger number of facilitators as well as other individuals involved in implementing the intervention, such as the young people, senior leadership staff and parents. In line with Lake's recommendations (2014), this would help explore in more detail the factors which are necessary for the Homunculi Approach to be effective when delivered by school staff.

5.8.4.2. CBT Interventions

In relation to CBT interventions more generally, there appeared to be a lack of research exploring the prerequisite skills young people with AS require in order for therapeutic interventions to be effective. For instance, how might the motivation levels of a young person with AS be explored, given that rigidity in thinking is a characteristic feature of AS; and, what level of language is required to be able to access such interventions?

There has been a lack of research exploring the effectiveness of CBT interventions for young people with AS who have more complex needs or are low cognitively functioning (White et al., 2009). Future research could explore ways in which the Homunculi Approach and other CBT interventions could be adapted for this population and the effectiveness of such adaptations. It is likely adaptations will include increased use of visuals and a consistent approach in school and home to support generalisation of the strategies.

Furthermore, the research findings reported in this study raised several questions regarding which aspects of CBT interventions are most important in order for these interventions to be effective for young people with AS. For instance, do CBT principles need to be explicitly taught in order for the intervention to be effective or is it more important that the young person enjoys time developing a trusting relationship with the adult? Whilst research has explored this in greater depth for neuro-typical young people (i.e. James et al., 2015), the evidence base for young people with AS appears less well defined.

In terms of measurements used to capture change during the intervention, the use of technology could be explored further. The researcher had planned to use a mobile phone app to triangulate the anxiety measure. This was not feasible in practice, however, due to the lack of regular contact the researcher had with the young people to implement the measure. This could, nevertheless, be an area to explore in the future, particularly with SCEDs, where repeated measures need to be taken frequently.

5.9. Unique Contribution

The challenges young people with AS encounter are well documented in the literature and include a higher risk of experiencing stressful life events, such as bullying and forming long term friendships, and a lack of appropriate coping mechanisms to manage such challenges (Groden et al., 2001; Hofvander et al., 2009). In this study, the researcher hoped to evaluate an intervention designed specifically for young people with AS to support the development of appropriate coping strategies to reduce their anxiety levels. The researcher's unique contribution has been to firstly contribute towards the limited evidence base evaluating the Homunculi Approach as an intervention for young people with AS. By conducting the research across multiple

schools, the researcher has conducted a study with high external validity. It is hoped that this will support educators in being able to identify the circumstances under which the Homunculi Approach is most effective. Secondly, the authors of the intervention highlight the Homunculi Approach can be delivered by anyone, irrespective of their level of training. The present study has provided the first piece of research to explore the effectiveness of the intervention when delivered by school staff. Through doing so, the researcher has trained school staff and equipped them with the knowledge required to deliver the intervention repeatedly in the future, if they wish to do so. Thirdly, by identifying factors which affected implementation of the intervention, the researcher has recognised some of the challenges and supportive factors school staff can encounter when delivering therapeutic work in schools.

5.10. Summary of Findings

In summary, this evaluation of the Homunculi Approach has indicated that it can be an effective intervention in reducing anxiety for secondary pupils with AS when delivered by school staff. The findings indicated the effectiveness of the intervention, however, appears to be influenced by a number of different factors including the participant's willingness to change and the complexity of their needs; the skill level of the adult delivering the intervention and their role in school; and the school context in which the intervention is delivered. Despite the variable results between participants, all participants were able to identify both what they had learnt and what they had enjoyed during the intervention. Participants did, however, experience difficulties generalising what they had learnt at home and in school. The findings from the research should be considered in light of the limitations, in particular the possible influence of external factors on anxiety levels.

5.11. Conclusion

In conclusion, this study aimed to address the gap in the literature regarding interventions to support young people with AS experiencing anxiety when delivered by school staff. The Homunculi Approach was an intervention designed specifically for young people with AS; however, previous research evaluating the Homunculi Approach has been limited to studies conducted by the founders of the approach or research conducted with primary-aged pupils where the intervention was delivered by EPs or TEPs (Greig & MacKay, 2005; Downing, 2013). This research recruited four young people in KS3 and KS4 (aged 11 to 16) across four different secondary schools

to assess the effectiveness of the Homunculi Approach for children within this age range. Overall, the research findings were mixed and indicated the Homunculi Approach reduced anxiety for two participants and did not reduce anxiety for two further participants. By exploring possible factors which affected implementation of the intervention, the researcher was able to explore under what circumstances the intervention was effective. Factors which may have influenced the effectiveness of the intervention included: characteristics of the young person; the skill level of the adult delivering the intervention and their role in school; and the level of parent involvement. The flexibility of the Homunculi Approach was found to be an attractive quality of the intervention as resources could be adapted to meet the needs of the young person. The limitations of the research, such as the small sample size and possible influence of external factors, have also been acknowledged. Future areas of research have been discussed.

6. References

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7. Appendices

7.1. Appendix A: Table outlining the search criteria used in each database and the number of results retrieved.

Database	Search Criteria	Number of results
Web of Science	All terms searched by *topic*: A. child* OR adolescen* OR pupil* OR "young person" OR "young people" OR teenager* OR youth* B. "cognitive behavio*" OR “cognitive-behavio*” OR CBT C. Autis* OR Asperger* D. Anxious OR anxiety E. Combine A, B, C & D	226
PsycINFO	All terms searched by *keyword*: A. child* OR adolescen* OR pupil* OR "young person" OR "young people" OR "teenager" B. Cognitive behaviour therapy term exploded C. Autis* OR Asperger* D. Anxious OR anxiety E. Combine A, B, C & D	133
ERIC	A. child* OR adolescen* OR pupil* OR "young person" OR "young people" OR "teenager" OR youth B. "cognitive-behavio*" OR CBT OR “cognitive behavio*” C. Autis* OR Asperger* D. Anxious OR anxiety	34

	E. Combine A, B, C & D	
ProQuest Dissertation and Theses UK and Ireland	All terms searched by *abstract*: A. child OR pupil OR teenager OR youth OR "young person" OR "young people" OR adolescen* B. "cognitive-behavio*" OR CBT OR “cognitive behavio*” C. Autis* OR Asperger* D. Anxious OR anxiety E. Combine A, B, C & D	19

7.2. Appendix B: Details of Interventions of the Studies within the Systematic Review

Attwood's Exploring Feelings (Attwood, 2004)

Tony Attwood introduced the Exploring Feelings programme for which there were two interventions: one which focused on anger, the other on anxiety. The CBT programme was designed to be highly structured, interesting and successful in encouraging the cognitive control of emotions. Every child participating in the program has a workbook for the six two-hour sessions that includes activities and information to explore the specific feelings of being happy, relaxed, anxious or angry. There are sections in the workbook to record individual comments and responses to questions. At the end of each session, a project is explained to the child, which is to be completed before the next session. At the start of the next session the project is discussed with the person implementing the program or the group of participants using the program.

The original program was designed for small groups of two to five children between the ages of 9 and 12 years, with two adults conducting the program. However, the Exploring Feelings program can easily be modified so that it can be used with just one child. The activities can also be modified to be age appropriate for an adolescent or adult.

The program was designed as a treatment for an anxiety disorder or anger management problem in children with Asperger's syndrome but the program can be equally applied to children with High Functioning Autism and Pervasive Developmental Disorder, Not Otherwise Specified (PDDNOS). The author also designed the program so that it does not have to be implemented by a qualified psychologist. A teacher, speech pathologist, occupational therapist or parent could implement the program without having training in Cognitive Behaviour Therapy.

Behavioral Interventions for Anxiety in Children with Autism (BIACA) (Taken from Ehrenreich-May, 2014)

BIACA is based upon the Building Confidence manual (Wood, McLeod, Hiruma, & Phan, 2008). The BIACA protocol follows a modular approach, meaning that all young people receive the same core CBT components (e.g., psychoeducation, cognitive restructuring, in vivo exposure), but that the sequencing of sessions may vary among participants, depending upon individual client needs. Modularized approaches to CBT have demonstrated superiority and improved responsiveness to clinical heterogeneity versus standard CBT protocols. Within this modular framework, the intervention consists of 16 weekly sessions lasting approximately 60 to 90 min each. Approximately 30 min of each session are spent with the adolescent, followed by 30 min with the parent. There are 14 child modules and 12 parent modules.

The modules available for the BIACA protocol are presented in the table below. The selection of modules is determined by a treatment algorithm. The algorithm specifies for all young people to learn a few basic coping strategies (e.g., relaxation, positive self-talk, self-reward), followed by primary focus on conducting graduated exposures derived from a fear hierarchy constructed in a collaborative fashion among the adolescent, parent(s), and therapist.

In addition, a youth-friendly acronym, the K.I.C.K. Plan, is utilized to introduce common CBT principles for anxiety (e.g., psychoeducation, cognitive restructuring, relapse prevention) in a manner to help youth with high-functioning autism (HFA) remember a sequence of steps to cope with anxious situations. These include Knowing I'm Nervous, Icky Thoughts, Calm Thoughts, and Keep Practicing. In addition to these child-directed techniques, parent modules focus upon standard behavioral techniques, including encouraging independence, negotiating and planning for exposures, planned ignoring, reducing avoidance behaviors, and developing a reward list for completing exposures. Given the demanding nature of exposures, parents are instructed to develop a reward system with input from the adolescent (e.g., point system, earning privileges) to positively reinforce approach-oriented behaviors and maintain motivation throughout treatment.

Although BIACA utilizes standard child-directed and parent-directed CBT skills for youth anxiety, an important differentiation is the enhanced focus upon social skill development. This is accomplished through embedding social skills training (e.g., social coaching, facilitating get-togethers, working with school personnel to develop a "peer buddy" system) within in vivo social exposures. In addition, there is an included module targeting parent advocacy with regard to their child's individual education plan (IEP) and obtaining academic accommodations. Finally, parent-training is addressed through parent-only sessions and in specific modules.

Coping Cat (taken from McNally Keehn, 2013)

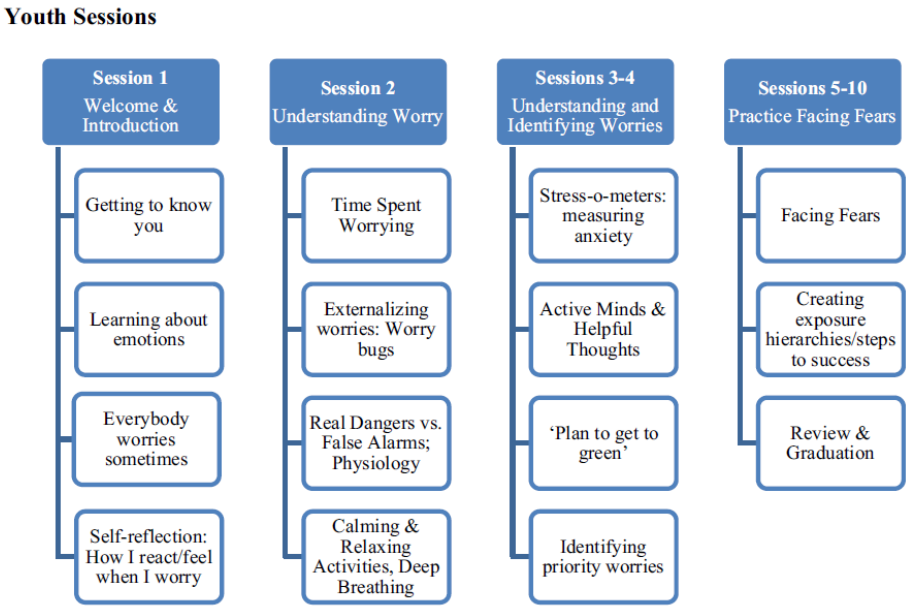
Coping Cat program was founded by Kendall and Hedtke (2006). The Coping Cat program is designed for children and young adolescents with Separation Anxiety disorder, Social Phobia, and generalised anxiety disorder (Kendall and Hedtke, 2006). The primary goal of the treatment program is to teach children to recognize signs of anxious arousal and to let these signs serve as a cue to implement anxiety management techniques. The 16 sessions are divided into two content-based parts; sessions one through eight are focused on skills training (e.g., affective education, awareness of somatic sensations associated with anxiety, cognitive restructuring, developing a coping plan, and evaluating performance and administering self-reinforcement) and sessions nine through 16 are focused on exposure tasks in a hierarchical sequence of anxiety-provoking situations. Two parent-only sessions (i.e., at sessions 4 and 9) are included to provide psychoeducation on the child's treatment goals, collaborate regarding the parent's input, impressions, and ideas, and encourage

parental cooperation with treatment. Homework tasks from the Coping Cat workbook are assigned weekly to reinforce and generalize skills.

Facing your fears: group therapy school based version (Reaven et al.,, 2011)

The FYF-SB version maintains the core components of CBT for the treatment of anxiety disorders in youth, including psychoeducation, development of coping skills such as somatic management (e.g., deep breathing, relaxation), emotion regulation strategies, problem-solving, cognitive self-control (e.g., automatic thoughts), and graded exposure. The Singapore psychologists were very familiar with the principles of CBT and indicated that this approach would be consistent and appropriate for the culture.

Outline of the key concepts and activities in the intervention:



Multimodal Anxiety and Social Skills Intervention (MASSI) (from White et al., 2010 & White et al., 2013)

MASSI is a CBT program that targets concurrent anxiety and social disability in adolescents with ASD via individual therapy, group social skills training, and parent coaching.

It was developed specifically for adolescents with high functioning autism spectrum disorders (HFASD) accompanied by moderate or greater anxiety problems. With a focus on the present, CBT is action oriented and tends to be a relatively time-limited intervention (i.e., typically 12–16 sessions). The intervention is didactic in nature; the therapist and adolescent work collaboratively to explore how cognitions contribute to anxious feelings and avoidance behaviours and, in turn, how these feelings and behaviours contribute to faulty cognitions.

The programme consists of a mixture of individual therapy (up to 13 sessions), group therapy (up to 6 sessions) and parent education/coaching for the last 15 minutes of each session. The 'dual focus' in treatment is based on the notion that unaddressed anxiety problems can undermine the benefits that might otherwise be realized with a 'pure' social skills intervention (White et al., 2010). Adolescents with high levels of anxiety may be less able to make use of the social skills training, avoid opportunities to practice newly learned social skills, or both. Likewise, if the social disability is due to a skill deficit, addressing only anxiety may not lead to improved social competence.

ASC@KS3 (Adapted from Skipper, 2011)

The ASC@KS3 group programme was compiled by the senior specialist (ASC) educational psychologist (Upchurch, 2009) for a large local authority in England. The programme draws on current research in the field of group programmes for adolescents with ASC and combines social-skills training, peer-mediation and cognitive behavioural techniques to reduce anxiety, improve social competence and promote the social inclusion of this group in mainstream secondary settings. The programme delivery team in each of the four schools consisted of a group leader (SENCo) and one other member of staff with a working knowledge of ASC.

The ASC@KS3 programme consists of 27 possible sessions divided into the following five topics: Why are we here?; Coping with stress; Emotional understanding; Communication and conversation skills; Relationships, friendships and safety in social situations. Schools selected the 10 sessions most appropriate to meet the young people's needs. Each session lasted for 1 hour.

The intervention was delivered in groups of 6; 3 participants had autism and 3 participants were neurotypical and it was their role to support the participants with autism both during in and outside of the sessions.

7.3. Appendix C: Two tables summarising the different outcome measures used in the studies, separated into: self-report, parent, clinician and teacher ratings.

	Clinician Rating						Teacher Rating					Peer Rating
	ADIS (Silverman & Albano, 1996)	Clinical Global Impression–Improvement (CGI-I) (Guy, 1976; Hedges et al., 2009).	Clinical Global Impression–Severity (Guy, 1976)	Developmental Disabled Children's Global Assessment Scale (DD-CGAS; Wagner et al. 2007)	Paediatric Anxiety Rating Scale (PARS) (RUPP, 2002)	Asian Children Anxiety Scale (Koh et al., 2002)	Developmental Behavioural Checklist-Teacher (Einfeld & Tonge 2002)	Index of Teaching Stress (Greene, Abidin, & Kmetz, 1997)	School anxiety scale (Lyneham et al., 2008)	SRS (Constantino & Gruber, 2005)	Social Worries Questionnaire (Spence, 1995)	Social Inclusion Survey (Frederickson & Graham, 1999)
1. Clarke et al. (2016)												
2. Drmic et al. (2017)							X					
3. Ehrenreich-May et al. (2014)	X	X	X		X							
4. Luxford et al. (2017)									X	X	X	
5. McConachie et al. (2014)	X	X										
6. McNally Keehn et al. (2013)												
7. Murphy et al. (2017)	X											
8. Ooi et al. (2008)						X		X				
9. Skipper (2011)												X
10. Storch et al. (2015)	X	X	X		X							
11. Sung et al. (2011)			X									
12. White et al. (2013)		X		X	X							
13. Wood et al. (2015)	X	X										

	Self-report rating						Parent rating							
	Coping Scale for Children and Youth (Brodzinsky et al. 1992)	James and the maths test (Attwood, 2004)	Multidimensional Adolescent Satisfaction Scale (MASS; Garland, Saltzman, & Aarons, 2000)	Revised Child Anxiety and Depression Scale (RCADS) (Chorpita, Yim, Moffit, Umemoto, & Francis, 2000)	Screen for Child Related Anxiety Disorders (SCARED, (Birmaher et al. 1999)	Spence Children's Anxiety Scale (SCAS, Spence 1997)	Columbia Impairment Scale—Parent (Bird et al., 1996)	Child and Adolescent Symptom Inventory-4 ASD Anxiety Scale (CASI-Anx; Sukhodolsky et al. 2008)	Child Behavioral Checklist (CBCL). (Achenbach & Rescorla, 2001)	Multidimensional Anxiety Scale for Children—Parent (MASC-P) (March, 1998)	Parenting Stress Index (PSI) (Abidin, 1990)	SCARED (Birmaher et al.,1999)	SCAS (Spence 1997)	Social Responsiveness Scale (SRS) (Constantino, 2002)
1. Clarke et al. (2016)	X					X							X	
2. Drmic et al. (2017)					X							X		
3. Ehrenreich-May et al. (2014)				X					X					
4. Luxford et al. (2017)						X							X	X
5. McConachie et al. (2014)						X							X	
6. McNally Keehn et al. (2013)						X							X	
7. Murphy et al. (2017)								X						X
8. Ooi et al. (2008)						X					X		X	
9. Skipper (2011)		X				X							X	
10. Storch et al. (2015)				X			X		X	X				
11. Sung et al. (2011)						X								
12. White et al. (2013)								X						X
13. Wood et al. (2015)			X	X						X				X

7.4. Appendix D: Table to justify the WoE Ratings for category A, B, C and D.

Study	A: Trustworthiness	B: Appropriateness	C: Topic Relevance	D: Overall
1. Clarke et al. (2016)	High *Positives* • *Paper published as a result of a thesis and therefore has been reviewed by multiple academics.* • *Clearly written and reasons for measures being included were justified.* *Negatives* • *Low numbers of participants meant each school either had an intervention or a control group.*	Medium • *Quasi experimental design with groups randomly assigned to intervention or control group*	High *Positives* • *School based study* • *All participants secondary school age* *Negatives* • *Intervention delivered in groups*	High *A=3*[1] *B=2* *C=3* *Total=8* *Mean=2.6, therefore medium*
2. Drmic et al. (2017)	Medium *Positives* • *Used intervention specifically for pupils with AS* • *Used qualitative and quantitative measures to triangulate findings.* *Negatives* • *Limited information about sample size, i.e. mean age.*	Low • *Quasi experimental design, single group pre-post test*	Medium *Positives* • *School based study* • *All participants secondary school age* • *Trained staff to deliver the intervention* *Negatives* • *Intervention delivered in groups* • *Conducted in Eastern culture*	Medium *A=2* *B=1* *C=2* *Total=5* *Mean=1.6, therefore medium*
3. Ehrenreich-May et al.	High *Positives*	Low *Quasi experimental*	Medium *Positives*	Medium *A=3*

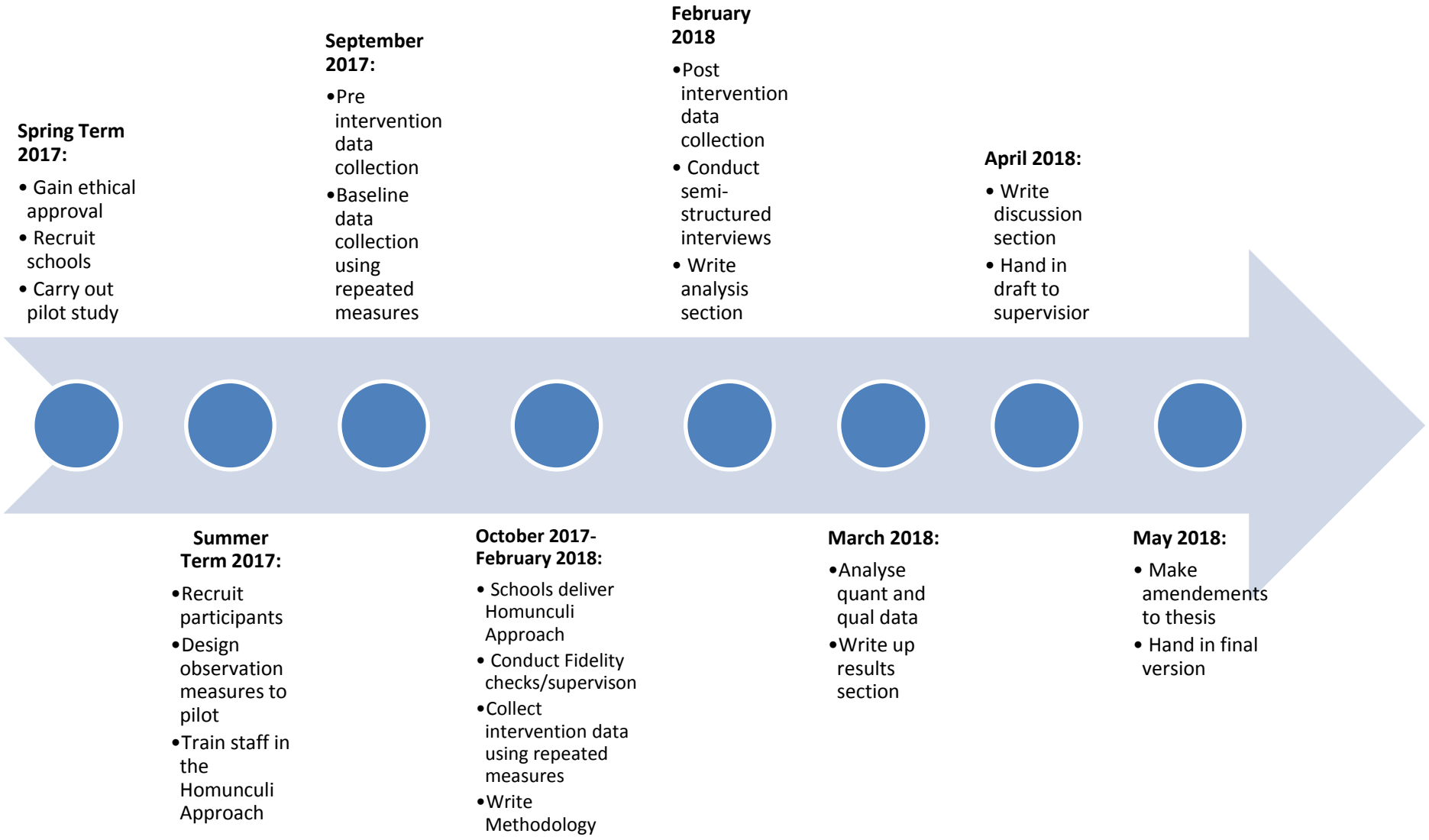
[1] Each rating (low, medium, high) has been assigned a numerical rating of 1, 2 or 3. In order to form category D a mean rating from categories A, B and C is used. If category D is not a whole number (i.e. 2.6) the researcher used their own judgement as to whether the higher or lower rating should be applied.

(2014)	• *Intervention well explained* • *Clearly written* • *Used several different measures to triangulate findings*	*design, single group pre-post test*	• *All participants secondary school age* *Negatives* • *Parents heavily involved in study* • *Clinic based study*	*B=1* *C=2* *Total= 6* *Mean=2, therefore medium*
4. Luxford et al. (2017)	High *Positives* • *Measures triangulated by using 3 different informants* • *Stringent methodology and analysis used* • *Clearly written*	High *RCT design*	High Positives • *All participants secondary school age* • *Study took place in school settings* • *No parent involvement* Negatives • *Group delivery of the intervention*	High *A=3* *B=3* *C=3* *Total =9* *Mean=3, therefore high*
5. McConachie et al. (2014)	High *Positives* • *Stringent methodology used* • *High levels of adherence to the intervention and intervention designed specifically for young people with AS* • *Triangulated findings using qualitative data as well as quantitative*	High *RCT design*	Low *Negatives* • *Participants not all secondary school age* • *Some parental involvement* • *Group delivery of the intervention* • *Clinic based study*	Medium *A=3* *B=3* *C=1* *Total=7* *Mean=2.3, therefore medium*
6. McNally Keehn et al. (2013)	High *Positives* • *Stringent methodology used* • *Clearly written* • *Intervention adaptations clearly described*	High *RCT design*	Low *Negatives* • *Participants not all secondary school age* • *Some parental involvement in the study* • *Group delivery of the intervention* • *Study took place in a university*	Medium *A=3* *B=3* *C=1* *Total=7* *Mean=2.3, therefore medium*
7. Murphy et al. (2017)	High *Positives*	High *RCT design with active*	Medium *Positives*	High

	• *Active control group used as a comparison* • *Measures triangulated by using 3 different informants*	*control group*	• *Intervention delivered individually* *Negatives* • *Clinic based study* • *Parental involvement* • *Participants not all secondary school age*	*A=3* *B=3* *C=2* *Total= 8* *Mean=2.6,* *Therefore* *High*
8. Ooi et al. (2008)	Low *Negatives* • *Pilot study (less rigorous methodology used)* • *Small sample size* • *Few measures used to measure anxiety levels*	Low *Quasi-experimental: Single group pre-post design*	Medium *Positives* • *School based* • *No parental involvement* *Negatives* • *Delivered in groups* • *Participants not all secondary school age* • *Conducted in Eastern Culture*	Low *A=1* *B=1* *C=2* *Total= 4* *Mean=1.3,* *Therefore* *Low*
9. Skipper (2011)	Medium *Positives* • *Triangulated findings using multiple methods* • *Programme designed specifically for pupils with AS* *Negatives* • *Unpublished research* • *Relatively small sample size*	Low *Quasi-experimental: Single group pre-post design*	High *Positives* • *School based intervention* • *Intervention delivered by member of school staff* • *Participants all secondary school aged* *Negatives* • *Delivered in groups with some parental involvement*	Medium *A=2* *B=1* *C=3* *Total=6* *Mean=2, therefore medium*
10. Storch et al. (2015)	Medium *Positives* • *Measures triangulated by using 3 different*	High *RCT Design*	Medium *Positives* • *Participants all secondary school age*	Medium *A=2* *B=3* *C=2*

	informants • *Robust methodology used* *Negatives* • *Limited information regarding methods used*		• *Intervention delivered individually* *Negatives* • *Parental involvement* • *Clinic based*	*Total=7* *Mean=2.3, therefore medium*
11. Sung et al. (2011)	Medium *Positives* • *Active control group used as a comparison* • *Large sample size* *Negatives* • *Few measures used to assess anxiety*	High *RCT Design*	Low *Negatives* • *Participants not all secondary school age* • *Group intervention* • *Clinic Based* • *Conducted in Eastern culture*	Medium *A=2* *B=3* *C=1* *Total=6* *Mean=2, therefore medium*
12. White et al. (2013)	High *Positives* • *Rigorous methodology* • *High levels of adherence to the intervention* • *Programme designed specifically for pupils with AS*	High *RCT Design*	Medium *Positives* • *Some of the intervention delivered individually* *Negatives* • *Participants not all secondary school age* • *Some of the intervention delivered as a group* • *Clinic Based*	High *A=3* *B=3* *C=2* *Total=8* *Mean=2.7, therefore medium*
13. Wood et al. (2015)	High *Positives* • *Rigorous methodology* • *Triangulated data collection methods* • *Clearly written*	High *RCT Design*	Medium *Positives* • *Participants all secondary school age* *Negatives* • *Parental involvement* • *Clinic Based* • *Intervention delivered as a group*	High *A=3* *B=3* *C=2* *Total=8* *Mean=2.7, therefore medium*

7.5. Appendix E: Timeline



7.6. Appendix F: Sample Questions from PI-ED (O'Connor et al., 2010)



PI-ED

GL assessment
the measure of potential

Name: [redacted] Age: _____

Date: _____ Please tick: Male ☐ Female ☐

Remember to tick (☑) the box that describes you best over the last week (including today).

1 I feel shaky or 'wound up':
- ☐ Always
- ☐ A lot of the time
- ☐ Sometimes
- ☐ Not at all

2 I get a sort of frightened feeling as if something bad is about to happen:
- ☐ Always
- ☐ A lot of the time
- ☐ Sometimes
- ☐ Not at all

[redacted]

7 I get a sort of frightened feeling like 'butterflies' in my tummy:
- ☐ Always
- ☐ A lot of the time
- ☐ Sometimes
- ☐ Not at all

8 I feel restless / fidgety as if I have to be on the move:
- ☐ Always
- ☐ A lot of the time
- ☐ Sometimes
- ☐ Not at all

9 [redacted]

10 [redacted]

11 [redacted]

12 I feel good about myself:
- ☐ Always
- ☐ A lot of the time
- ☐ Sometimes
- ☐ Not at all

13 I get panicky:
- ☐ Always
- ☐ A lot of the time
- ☐ Sometimes
- ☐ Not at all

14 I am lonely:
- ☐ Always
- ☐ A lot of the time
- ☐ Sometimes
- ☐ Not at all

Total

PI-ED

GL assessment
the measure of potential

Feelings are really important.

Your answers to the sentences over the page will help us understand how you feel.

Please read each of the sentences and put a tick (☑) beside the answer that describes you best.

Think about how you have been feeling over the last week (including today) when you read each sentence.

There are no right or wrong answers but it is important for you to let us know how you feel.

The sentence below is an example. Please put a tick in the box beside the answer that best describes you.

I like to play sports:

- ☐ Always
- ☐ A lot of the time
- ☐ Sometimes
- ☐ Not at all

Now turn over the page.

7.7. Appendix G: Consultation Schedules for Identifying Anxiety-related Behaviours (adapted from Slack 2013)

I am planning to measure the effectiveness of the intervention using a weekly questionnaire measure and observation measure. It would be great if the measures could be taken by a member of school staff for efficiency and consistency although can put in place alternative arrangements if this is not possible. The measures aim to be short and straight forward to undertake and I will be in school every other week where possible if you wish to ask any questions or require help. Who would it be best for me to speak to regarding the pupil's anxiety related behaviours in class?

Need to arrange another date and time when this would be possible after consent has been gained.

The purpose of this interview is to gather information about child, specifically around their anxiety related behaviour, in order for me to create an individual observation schedule for each child around a specific target behaviour. I plan to triangulate the information you give, with my own observations and information gathered from school documentation and held by the Educational Psychology Service. As child's TA I would really value your contribution not only in taking the observation measures, but also because I am aware you know child.....really well, working with them every day and will have valuable insight into their educational needs. For guidance, here is some information about the definition of anxiety and anxiety related behaviours:

DSM-IV: Generalised Anxiety Disorder

A. Excessive anxiety and worry (apprehensive expectation), occurring more days than not for at least 6 months, about a number of events or activities (such as work or school performance).

B. The individual finds it difficult to control the worry.

C. The anxiety and worry are associated with three (or more) of the following six symptoms (with at least some symptoms having been present for more days than not for the past 6 months):

Note: Only one item is required in children.

- Restlessness or feeling keyed up or on edge.
- Being easily fatigued.
- Difficulty concentrating or mind going blank.
- Irritability.
- Muscle tension.

- Sleep disturbance (difficulty falling or staying asleep, or restless, unsatisfying sleep).

D. The anxiety, worry, or physical symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.

E. The disturbance is not attributable to the physiological effects of a substance (e.g., a drug of abuse, a medication) or another medical condition (e.g., hyperthyroidism).

F. The disturbance is not better explained by another mental disorder (e.g., anxiety or worry about having panic attacks in panic disorder, negative evaluation in social anxiety disorder social phobia, contamination or other obsessions in obsessive-compulsive disorder, separation from attachment figures in separation anxiety disorder, reminders of traumatic events in posttraumatic stress disorder, gaining weight in anorexia nervosa, physical complaints in somatic symptom disorder, perceived appearance flaws in body dysmorphic disorder, having a serious illness in illness anxiety disorder, or the content of delusional beliefs in schizophrenia or delusional disorder).[1] No major changes to GAD have occurred since publication of the Diagnostic and Statistical Manual of Mental Disorders (2004); minor changes include wording of diagnostic criteria.[23]

Interview Questions

1) How would you know child.....was anxious? What anxiety related behaviours does he/she display? Can you describe the behaviour in detail?

.....

2) When do these anxiety related behaviours most often occur in at school?

.....

3) What is the typical frequency of the behaviour?

.....

4) How would you know if there was a reduction in anxiety?

.....

5) What strategies do the school currently use?

.....

Do you have anything further to add that you think may be relevant? Do you have any other questions? *Interviewer to feedback a summary of the information that has been provided and check with the interviewee that they have understood what they have said correctly*.

7.8. Appendix H: Observation Schedules for Anxiety-related Behaviours

Participant 1: William

Description of behaviour being observed: The number of times Harry displays repetitive behaviours. When conducting this observation harry should receive a tally mark every time he displays a period of one of the behaviours listed below. For example, if he hits his chest 5 times continuously, this would receive a tally of 1. If Harry hits his chest 5 times continuously, then stops hitting his chest to write down an answer in his book and then hits his chest again this would receive a tally of 2.

Name of TA carrying out observation:

Lesson observing:

Time of observation:

Day of week:

Date:

Behaviour	**Number of occasions displayed**
Head banging	
Hitting chest	
Clapping hands	
Hitting/slapping face	
Making noises i.e. “eeek”	

Participant 2: Sophie

Instructions:

1. Pick 2 days of the week to carry out the observation (ideally the same 2 days each week)
2. The measure looks at 2 behaviours: firstly Sophie putting her shoes away, secondly, Sophie being able to take something out of the cupboard.

Behaviour 1: Putting shoes away

Put a tick by the behaviour which most clearly describes how Sophie put her shoes away when coming back from taking the dogs for a walk.

Days of the week the observation is being carried out: …… and …….

		Low anxiety: Sophie puts her shoes in the basket	Medium anxiety: Sophie puts her shoes on the floor next to the basket	High anxiety: Sophie needs mum to put the shoes in the basket for her and holds them out for her to take
Week 1:	Day of the week……..			
	Day of the week……..			
Week 2:	Day of the week……..			
	Day of the week……..			
Week 3:	Day of the week……..			
	Day of the week……			

Behaviour 2: Being able to take out an object out of the cupboard

Put a tick by the behaviour which most clearly describes how Sophie took an object out of the cupboard. It will be important for you to select a time of day at which this behaviour typically would occur (i.e. getting ready for school) rather than looking at whether the behaviour is displayed at any time in the day.

Time of day observed:……. Days observing on: …….

		Low anxiety: Sophie takes something out of the cupboard/fridge without needing to ask mum or sister for reassurance	Medium anxiety: Sophie asks which object she should take out of the cupboard/fridge without needing the objects to be numbered	High anxiety: Sophie needs the objects in the cupboard to be numbered by mum before she can take the object out of the cupboard/fridge
Week 1:	Day of the week……..			
	Day of the week……..			
Week 2:	Day of the week……..			
	Day of the week……..			
Week 3:	Day of the week……..			
	Day of the week……..			

Participant 3: Alex

Description of behaviour being observed: To explore the frequency and intensity of Alex having a 'meltdown' when playing games on his console at home.

Who: Alex's mother when Alex is perceived to have a 'meltdown'

When: Each time a 'meltdown' occurs, the intensity of which is categorised on a 5 point scale:

5=	*Completed alongside parents*
4=	
3=	
2=	
1=	

Date	Duration of meltdown (mins)	Intensity of meltdown on scale of 1 to 5 (1st informant)	Intensity of meltdown on scale of 1 to 5 (2nd informant)

Notes:

Participant 4: Ben

Description of behaviour being observed: The number of times Ben displays behaviours or talks about health anxiety related ailments. This observation should be conducted for 2 days a week (ideally the same 2 days each week). When conducting this observation Ben should receive a tally mark every time he displays one of the behaviours listed below.

Date	**Day of week (should remain consistent when possible)**	**Name of adult carrying out observation**	**Number of occasions physical behaviour is displayed (i.e. lying on the floor**	**Number of occasions language used (i.e. complaining of a headache/blurred vision)**	**Relevant notes?**

7.9. Appendix I: SCAS Questionnaire (Spence, 1998)

Your Name: Date:

Please place a tick mark in the box under the word that best describes how often these things happen to you. There are not right or wrong answers.

	Never	Sometimes	Often	Always
1. I worry about things				
2. I am scared of the dark				
3. When I have a problem, I get a funny feeling in my stomach				
4. I feel afraid				
5. I would feel afraid of being on my own at home				
6. I feel scared when I have to take a test				
7. I feel afraid if I have to use public toilets or bathrooms				
8. I worry about being away from my parents				
9. I feel afraid that I will make a fool of myself in front of people				
10. I worry that I will do badly at my school work				
11. I am popular amongst other kids my own age				
12. I worry that something awful will happen to someone in my family				
13. I suddenly feel as if I can't breathe when there is no reason for this is off, or the door is locked)				
14. I have to keep checking that I have done things right (like the switch is off, or the door is locked)				
15. I feel scared if I have to sleep on my own				
16. I have trouble going to school in the mornings because I feel nervous or afraid				
17. I am good at sports				
18. I am scared of dogs				
19. I can't seem to get bad or silly thoughts out of my head				
20. When I have a problem, my heart beats really fast				
21. I suddenly start to tremble or shake when there is no reason for this				
22. I worry that something bad will happen to me				
23. I am scared of going to the doctors or dentists				
24. When I have a problem, I feel shaky				
25. I am scared of being in high places or lifts (elevators)				
26. I am a good person				
27. I have to think of special thoughts to stop bad				

things from happening (like numbers or words)				
28 I feel scared if I have to travel in the car, or on a Bus or a train				
29. I worry what other people think of me				
30. I am afraid of being in crowded places (like shopping centres, the movies, buses, busy playgrounds)				
31. I feel happy				
32. All of a sudden I feel really scared for no reason at all				
33. I am scared of insects or spiders				
34. I suddenly become dizzy or faint when there is no reason for this				
35. I feel afraid if I have to talk in front of my class				
36. My heart suddenly starts to beat too quickly for no reason				
37. I worry that I will suddenly get a scared feeling when there is nothing to be afraid on				
38. I like myself				
39. I am afraid of being in small closed places, like tunnels or small rooms.				
40. I have to do some things over and over again (like washing my hands, cleaning or putting things in a certain order)				
41. I get bothered by bad or silly thoughts or pictures in my mind				
42. I have to do some things in just the right way to stop bad things happening				
43. I am proud of my school work				
44. I would feel scared if I had to stay away from home overnight				

Is there something else that you are really afraid of? YES NO

Please write down what it is…

How often are you afraid of this thing?

Never Sometimes Often Always

7.10. Appendix J: SAS-TF Questionnaire (Lyneham, 2008)

For each item please place a tick mark in the box under the word that that best describes how this child has been over the last three months or this school year. Please answer all of the items.

	Never	Sometimes	Often	Always
1. This child is afraid of asking questions in class				
2. This child speaks only when someone asks a question of them				
3. This child worries what other people think of him/her				
4. This child does not volunteer answers or comments during class				
5. This child is afraid of making mistakes				
6. This child hates being the centre of attention				
7. This child hesitates in starting tasks or asks whether they understood the task before starting				
8. This child worries about things				
9. This child worries that (s)he will do badly at school				
10. This child worries that something bad will happen to him/her				
11. This child seems very shy				
12. This child complains of headaches, stomach aches or feeling sick				
13. This child feels afraid when (s)he has to talk in front of the class				
14. This child hesitates to speak when in group situations				
15. When this child has a problem, (s)he feels shaky				
16. This child appears nervous when approached by other children or adults				

7.11. Appendix K: SDQ (Goodman, 2001)

For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain or the item seems daft! Please give your answers on the basis of the child's behaviour over the last six months.

Child's Name .....Male/Female Date of Birth.....

	Not true	Somewhat true	Certainly true
Considerate of other people's feelings			
Restless, overactive, cannot stay still for long			
Often complains of headaches, stomach-aches or sickness			
Shares readily with other children (treats, toys, pencils etc.)			
Often has temper tantrums or hot tempers			
Rather solitary, tends to play alone			
Generally obedient, usually does what adults request			
Many worries, often seems worried			
Helpful if someone is hurt, upset or feeling ill			
Constantly fidgeting or squirming			
Has at least one good friend			
Often fights with other children or bullies them			
Often unhappy, down-hearted or tearful			
Generally liked by other children			
Easily distracted, concentration wanders			
Nervous or clingy in new situations, easily loses confidence			
Kind to younger children			
Often lies or cheats			
Picked on or bullied by other children			
Often volunteers to help others (parents, teachers, other children)			
Thinks things out before acting			
Steals from home, school or elsewhere			
Gets on better with adults than with other children			
Many fears, easily scared			
Sees tasks through to the end, good attention span			

Do you have any other comments or concerns?

For the following questions, please put a circle around your response.

Overall, do you think that your child has difficulties in one or more of the following areas: emotions, concentration, behaviour or being able to get on with other people?

No Yes- minor difficulties Yes- definite difficulties Yes-severe difficulties

If you have answered "Yes", please answer the following questions about these difficulties:

a) How long have these difficulties been present?

Less than a month 1-5 months 6-12 months Over a year

b) Do the difficulties upset or distress your child?

Not at all Only a little Quite a lot A great deal

c) Do the difficulties interfere with your child's everyday life in the following areas?

Home life

Friendships

Classroom Learning

Leisure Activities

d) Do the difficulties put a burden on you or the family as a whole?

Not at all Only a little Quite a lot A great deal

Signature ..... Date .....

Mother/Father/Other (please specify:)

Thank you very much for your help

7.12. Appendix L: Session Outlines

The Homunculi Approach

Session outlines

The session outlines are attached for each week. Please:

1. Look at the checklist before each session to help plan what to include in each session.
2. Review checklist at the end of each session and tick which areas you covered and cross which areas you were unable to cover. Ideally all areas should be ticked in each session.
3. Write any notes regarding the session, for example, any difficulties faced or certain aspects which worked really well can be noted.
4. Please keep this booklet safely so I can collect it at the end of the project.

If you have any questions regarding the project please contact me on:

xxxx or call xxxxx

Thank you very much for all your support in the project.

Harriet Maydew

Trainee Educational Psychologist

Session 1 **Date:_____** **Time:**

Aims

- Introduce the concept of the homunculi
- Meeting the homunculi

Session structure	**Please note:** **a) Completed? (✓/x)** **b) Time taken**	**Notes (for example, what went well, what did not go so well?)**
1. Ask about the young person's week		
2. Introduce the concept of the Homunculi Approach		
3. Talk through sample cartoon		
4. Show video clip 1: discuss characters, their mission and how they are involved in thoughts, feelings and actions		
5. Show skull and make a skull picture together using large piece of paper. Ensure the skull picture includes: thoughts and feelings screen and traffic light alarm system.		
6. Begin to start thinking with the young person about their story or likely problems		

Resources required:

- Giant poster of skull (in Homunculi Approach book)
- Sample cartoon worksheet – colouring crayons if wish to colour in
- Video clip 1 – and other clips as necessary to show examples of missions (link in book)
- Story script

Session 2 **Date:_____** **Time:**

Aims

- Identifying problems and missions

Session structure	**Please note:** **a) Completed? (✓/x)** **b) Time taken**	**Notes (for example, what went well, what did not go so well?)**
1. Ask about the young person's week		
2. Recap session 1, in particular the main concepts of the Homunculi Approach		
3. Help young person identify 3-5 real life problem areas or situations that are difficult to manage. Provide prompts if necessary.		
4. Help young person come up with possible solutions using mission solutions sheet.		
5. Encourage young person to complete are your 'Homunculi working for you?' for each of the problem areas identified.		

Resources:

- Mission solutions worksheet – helps to come up with ideas for solutions to the problem
- Baseline Evaluation - Rating scales worksheet
- Questions on p51 of Homunculi Book

Session 3 **Date:_____** **Time:**

Aims

- Continue to identify problems and missions

Session structure	**Please note:** **a) Completed? (✓/x)** **b) Time taken**	**Notes (for example, what went well, what did not go so well?)**
1. Ask about the young person's week		
2. Recap session 2, in particular what problems were identified last week.		
3. Help young person identify 3-5 real life problem areas or situations that are difficult to manage. Provide prompts if necessary.		
4. Help young person come up with possible solutions using mission solutions sheet.		
5. Encourage young person to complete are your 'Homunculi working for you?' for each of the problem areas identified.		

Resources:

- Mission solutions worksheet – helps to come up with ideas for solutions to the problem
- Baseline Evaluation - Rating scales worksheet
- Questions on p51 of Homunculi Book

Session 4 **Date:_____** **Time:**

Aims

- Creating the child's agents
- Creating the gadgets

Session structure	**Please note:** **a) Completed ? (✓/x)** **b) Time taken**	**Notes (for example, what went well, what did not go so well?)**
1. Ask about the young person's week.		
2. Recap session 3, in particular, the problem areas identified.		
3. Watch video 6 to explore how the characters can be developed.		
4. Develop 3 characters as a hierarchy of support, linked to young person's interests. For example, professor, teacher and pupil		
5. Develop 2-3 characters to address the different problem areas. Invent gadgets for these characters and identify their missions.		

Resources:

- Video 6 – shows how to develop characters, their job and gadgets
- Magazines/pictures on the internet
- 'Agent and Mission' worksheet
- Use questions on p.53,54 and 55 to support conversation.

Tips for session 4:

Creating agents:

- When developing the hierarchy of characters try to use special interest as metaphor e.g. football – manager, referee, attacker, defender or mine craft- programmer, house, blocks.
- An example question you might want to ask is: So you find it hard to cope in … because you think … I wonder what type of agent would be good at sorting this kind of thing out? (wait for response)
- Establish ground rules e.g. Homunculi are peace loving species and gadgets cannot be guns or knives, there should be no blood, death or destruction.
- Encourage and use different speaking styles and catchphrases for each character

Creating gadgets:

- The gadgets in the gadget store should be created to help the problems identified e.g. gadgets for managing emotions, managing friendships, helping with relationships, managing negative thoughts, managing behaviour . Some examples:
    - 'Truth o Metre' for weighing up evidence, 'Calm Ray Beam' for emitting relaxing sounds and colours,' Magic Sorter Tray' which organises things
- The following questions may be helpful for forming gadgets:
    - What kind of gadget do you suppose would have such a capability?
    - If it were a magic … how could it help with the mission?

What to do if young person does not want to draw/write?

- If the young person does not want to draw their characters they can cut out pictures in magazines or find them online.
- If the young person does not want to write then the adult can write for them.

Session 5 **Date:_____** **Time:**

Aims

- Creating the child's agents
- Creating the gadgets

Session structure	**Please note:** **a) Completed ? (✓/x)** **b) Time taken**	**Notes (for example, what went well, what did not go so well?)**
1. Ask about the young person's week.		
2. Recap session 4 and the Homunculi characters you had begun to create.		
3. Continue to develop 3 characters as a hierarchy of support, linked to young person's interests. For example, professor, teacher and pupil		
4. Continue to develop 2-3 characters to address the different problem areas. Invent gadgets for these characters and identify their missions.		

Resources:

- Magazines/pictures on the internet
- 'Agent and Mission' worksheet
- Use questions on p. 53, 54 and 55 to support conversation

Session 6 **Date:_____** **Time:**

Aim

- Story development phase: put the agents and gadgets into a story plot, which will be their mission

Session structure	**Please note:** **a) Completed? (✓/x)** **b) Time taken**	**Notes (for example, what went well, what did not go so well?)**
1. Ask about the young person's week.		
2. Recap session 4 and 5 focusing on the Homunculi developed and the gadgets identified.		
3. Identify whether the young person wants to write a story, draw the cartoon strip OR make a digital story OR video recording.		
4. Begin to start thinking about the script for story development to help young person form a story in which they can use their Homunculi.		
5. Switch between what is happening outside of the skull and what is happening inside of the skull.		
6. Refer back to thoughts and feelings screen when the problem is identified AND when the solution is identified.		

Resources:

- Post-its/ pens to form initial ideas i.e. can write each part of the story on a different post it. Can use post-its to stick them on the thoughts and feelings screen.
- Blank cartoon templates
- Script for story development – start, middle and end
- My story record – beginning, middle and end
- Socratic dialogue sheet
- Social problem solving activity sheet
- Video 1 can be used as a reminder of how a story might be developed

Tips:

- Get the young person to come up with their own noise for the stop, think, do alarm.
- Remember the story needs to switch between role play happening outside of the head and what is happening as a result inside the head
- Then use a blank cartoon template for the child to draw or write up the sequence of events / OR if digital – act out the scenes visually for the purpose of taking digital stills of the relevant parts of the story development.

Session 7 **Date:_____** **Time:**

Aim

- Continue story development phase: put the agents and gadgets into a story plot, which will be their mission

Session structure	**Please note:** **a) Completed? (✓/x)** **b) Time taken**	**Notes (for example, what went well, what did not go so well?)**
1. Ask about the young person's week.		
2. Recap session 6 and where you had got up to in story development		
3. Use script for story development to help young person form a story in which they can use their Homunculi.		
4. Switch between what is happening outside of the skull and what is happening inside of the skull.		
5. Refer back to thoughts and feelings screen when the problem is identified AND when the solution is identified.		

Resources:

- Post-its/ pens to form initial ideas i.e. can write each part of the story on a different post it. Can use post-its to stick them on the thoughts and feelings screen.
- Blank cartoon templates
- Script for story development – start, middle and end
- My story record – beginning, middle and end
- Socratic dialogue sheet
- Social problem solving activity sheet

Session 8 **Date:_____** **Time:**

Aim

- Continue story development phase: put the agents and gadgets into a story plot, which will be their mission

Session structure	**Please note:** **a) Completed? (✓/x)** **b) Time taken**	**Notes (for example, what went well, what did not go so well?)**
1. Ask about the young person's week.		
2. Recap session 7 and where you had got up to in story development		
3. Use script for story development to help young person form a story in which they can use their Homunculi.		
4. Refer back to thoughts and feelings screen when the problem has been identified AND when the solution is identified to see how they change.		

Resources:

- Post-its/ pens to form initial ideas i.e. can write each part of the story on a different post it. Can use post-its to stick them on the thoughts and feelings screen.
- Blank cartoon templates
- Script for story development – start, middle and end
- My story record – beginning, middle and end
- Socratic dialogue sheet
- Social problem solving activity sheet

Session 9 **Date:_____** **Time:**

Aim

- Finish story development phase: put the agents and gadgets into a story plot, which will be their mission

Session structure	**Please note:** **a) Completed ? (✓/x)** **b) Time taken**	**Notes (for example, what went well, what did not go so well?)**
1. Ask about the young person's week.		
2. Recap session 8 and where you had got up to in story development		
3. Use script for story development to help young person form a story in which they can use their Homunculi.		
4. Refer back to thoughts and feelings screen when the problem has been identified AND when the solution is identified to see how they change.		

Resources:

- Post-its/ pens to form initial ideas i.e. can write each part of the story on a different post it. Can use post-its to stick them on the thoughts and feelings screen.
- Blank cartoon templates
- Script for story development – start, middle and end
- My story record – beginning, middle and end
- Socratic dialogue sheet
- Social problem solving activity sheet

Session 10 **Date:_____** **Time:**

Aim

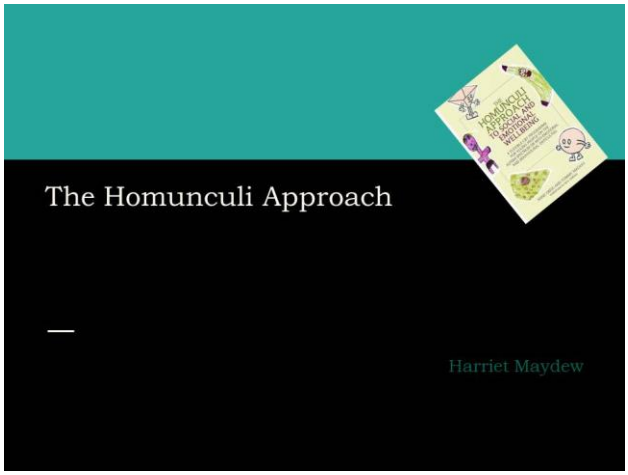
- Debrief after the intervention

Session structure	**Completed? (✓/x)**	**Notes**
1. Ask about the young person's week.		
2. Recap the story		
3. Complete the 'are your homunculi working for you?' for each of the problems identified.		
4. Check in with the young person about their feelings around it being the final session. Ask about what they have learnt/what they have enjoyed etc.		

Resources:

- The 'are your homunculi working for you' sheets
- Ask the questions in the book on page 61 and 62 of Homunculi Approach book.

7.13. Appendix M: Training Presentation



Structure and aims of training

THEORY	PRACTICAL
▪ Background to Autism ▪ Anxiety ▪ What is CBT? ▪ What is metacognition?	▪ What is the Homunculi Approach? ▪ Structure of each session ▪ Practical considerations

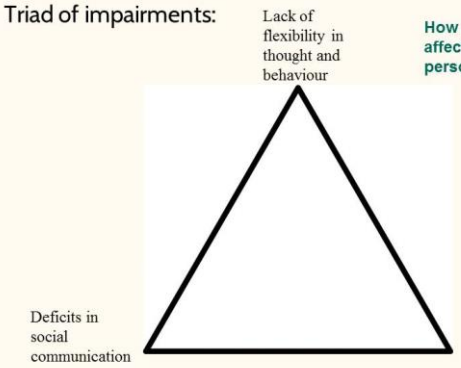
Aims

By the end of the session you should....

- Understand the principles behind the Homunculi Approach
- Feel confident in delivering the Homunculi Approach
- Begin to reflect on how you can tailor the intervention to meet the needs of the young person

Autism Spectrum Conditions

Triad of impairments:



How might anxiety affect a child/young person with Autism?

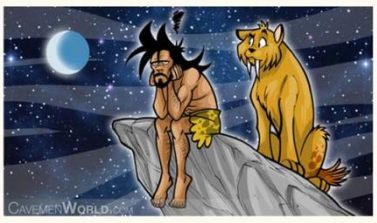
Anxiety

- Anxiety is: feeling of unease, worry and fear
- Where does it come from?



Anxiety

- Anxiety can be helpful at times
- BUT
- Sometimes the reaction can be disproportionate to actual threats from the environment



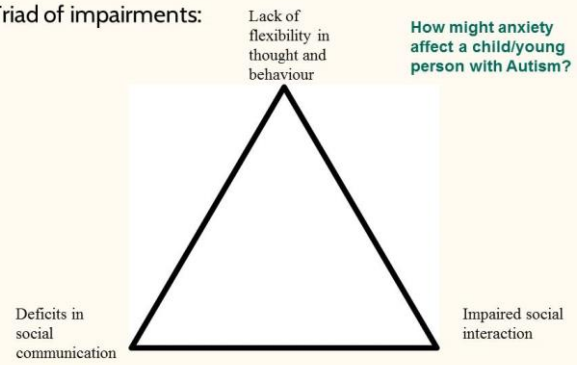
How does anxiety affect our body?



- Breathe rapidly
- Be jumpy
- Feel sick
- Perspire/feel hot
- Butterflies
- Feeling faint

Autism Spectrum Conditions

Triad of impairments:



How can anxiety affect thoughts?

- Low confidence
- Paranoia
- Worried about what others may think
- Feeling 'on edge'
- Wanting to run away/escape from situations
- Unable to concentrate

Anxiety and Autism

- 40% of children with Autism experience anxiety (Van Steensel et al., 2011)
- Anxiety can be presented through behaviours:
  - Repetitive movements,
  - Refusal to follow instructions
  - Shouting out
  - Self-injurious behaviour etc.

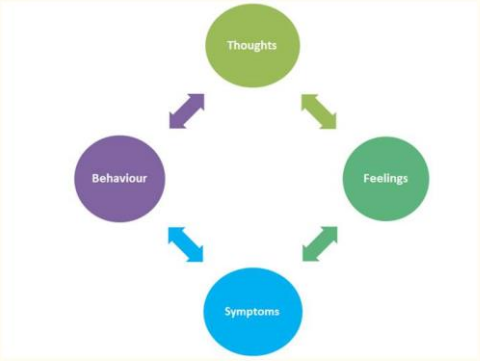


- What anxiety-related behaviours is the identified young person/people displaying in school?

Cognitive behavioural approaches

- How you are thinking (cognitions)
- How you are feeling (emotions)
- How your body feels (symptoms)
- What you do (behaviour)

CBT circle



Different interpretations



We can all interpret the same situation differently

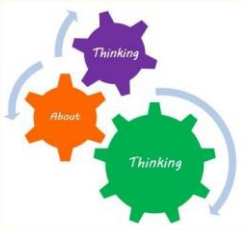
Things might go wrong for the young person because:

- A) they misinterpret the severity of the situation or
- B) their ability to cope with it

We can use questioning skills to help explore the young person's thoughts, feelings, symptoms and behaviours

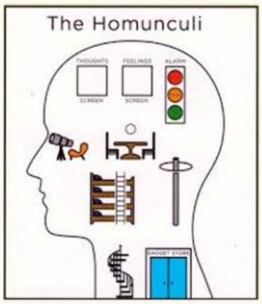
Metacognition

- People's knowledge and regulation of their own cognitive processes while thinking.
- Allows young people step back and to think about their own thinking



The Homunculi Approach

- Based on cognitive behavioural principles and metacognition
- Designed for pupils with Autism aged 7-18
- Aims to decrease stress, depression and **anxiety**
- Homunculi= "little men"
- Targets 3-5 problem areas
- 10 week intervention
- Can be delivered by anyone!
- (Grieg & MacKay, 2013)



The Homunculi Approach



Step 1: Meeting the Homunculi and Step 2: Seeing the Homunculi in Action

Explain the skull

- Thoughts/feelings screen
- Alarm

Introduce the Homunculi

- What do they look like?
- How big are they?
- What is their mission?
- How are they involved in thoughts, feelings and actions

Resources:

- 'sample cartoon'
- Video Clip 1
- Skull- paper and pens to draw your own skull?

Step 3: Identifying problems and missions

3-5 real life problem areas or situations

Use questioning to help young person identify the nature of the problem:

- What is most difficult for you?
- Is it something which others do?
- Is it something others say?
- Is it a thought you have?
- Is it a feeling you have?
- Do you think we could find an agent to help with that one?
- Maybe we could find a good mission and gadget for him/her?

Resources:

- 'Mission Solutions' activity sheet

Step 4: Do they work? A pre-programme evaluation

Complete the rating scales

Could also use emotional literacy checklist

Resource:

- Complete 'are your Homunculi working for you? Before...' sheet.

Step 5 – creating agents and gadgets

Watch video clip 6

Agents

- Create the agents who will go on the mission
- Must have 3 core agents (hierarchy metaphor)
- Build on child's special interests
- Develop a mission target for each agent
- Use the Agent and Mission Template



Step 5 – creating agents and gadgets

Gadgets

- Create gadgets for the agents to use to help them solving the mission
- Help to control, change or divert the thoughts and feelings
- Use The Gadget Store template



Questioning...

- What kind of gadget do you suppose would have such a capability?
- If it were a magic ... how could it help with the mission?

'Psychoeducation' along the way

Psychoeducation involves...

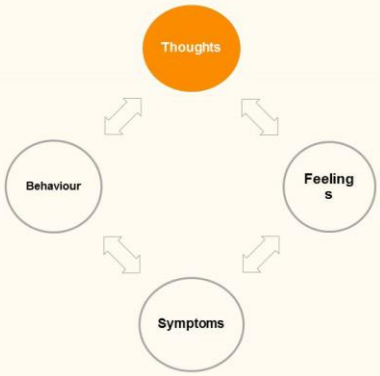
1. Teaching children the difference between **thoughts**, **feelings**, **symptoms** and **behaviours**.

2. Developing their emotional vocabulary and their ability to talk about a range of emotions!

Making a difference over time…

- Teaching students how to spot the symptoms of difficult feelings.
- Encouraging students to identify *their* difficult (e.g. worry, angry) thoughts.
- Providing students with strategies to take their mind off of their difficult feelings.
- Introducing strategies for addressing the physical symptoms of difficult feelings.

How can we make a difference?



Controlling your thoughts



Controlling your thoughts

- Whilst we work with students to **identify and challenge their negative thoughts**, there may still be times when they encounter situations which trigger their worries.
- At these times, it is important to use a range of strategies to '**spend less time**' thinking about worries, so that they may calm down.

Mental Imagery:

- Provides relief from troubling thoughts, emotions, or feelings
- Spending less time on worries
- Evokes a pleasing, calming mental image (e.g., the beach, park, forest, playing with a favorite pet)



Distraction:

In some situations you may feel uncomfortable or have regular negative thoughts, at these times **distraction** can be helpful!

Distraction helps to take your mind off your negative thoughts!

The idea is to train yourself to keep your mind busy doing what you want it to do...

Examples of distraction:

1. **Thinking puzzles:**

Counting backwards from 123 in nines

Spelling the names of your family backwards

Naming all the players in your favourite sports team

The puzzle has to be hard, to challenge you. This way, the puzzle should take over and drown out the negative thoughts!

Throw them away:

Thoughts race around inside our head:

- No one hears them
- No one questions them

Sometimes it is useful to empty our heads and clear our thoughts. At the end of the day, write down your negative thoughts on a piece of paper, once you have finished – scrunch up your paper tightly and throw those thoughts in the bin!

Absorbing Activities:

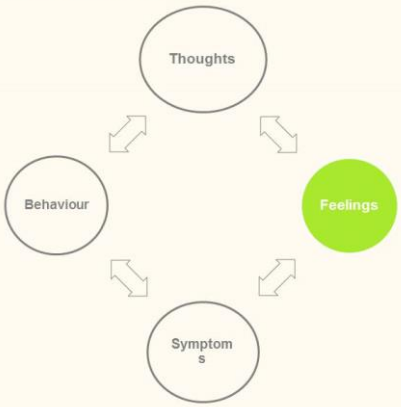


The more you concentrate on what you're doing, the more you drown out your negative thoughts.

At those times when you become aware that you are listening to your negative thoughts, try one of the activities which you find useful.

Crosswords, computer games, reading, watching the TV or a DVD, playing an instrument or listening to music might help.

How can we intervene?



Controlling your feelings



Controlling your feelings

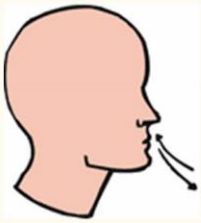
Anxiety brings about unpleasant physical feelings. If you wanted to reduce these 'symptoms', what might you try?

Deep Breathing

Breathe from the stomach rather than from the lungs

Can be used in class without anyone noticing

Can be used during stressful moments such as taking an exam or while trying to relax at home



Muscle relaxation techniques



Alternating between states of muscle tension and relaxation helps differentiate between the two states, whilst relaxing muscles in the process

Many good tapes/CDs available on relaxation

Especially suited for secondary school students as can be subtly included in the class room.

Physical exercise

Can distract students from their worries or 'burn off' unwanted adrenaline or cortisol which may build up during anxiety.

It may useful to prompt students to return to activities that they may recently have been ignoring...

...or perhaps pupils may be encouraged to try new activities/sports?



Relaxing activities

Encourage students to reserve 'me time' throughout their week, to dedicate to activities of their choosing.

Reading a book, playing a game, watching TV, walking the dog are examples.

It gives students something to look forward to!

Step 6 – Deciding the story method and plot planning

Decide on story method

- Cartoon story board – writing and drawing
- Digital comic strip
- Role play and video recording



Planning for the story

- Social problem solving activity sheet
- Script for Story Development
- My story record – beginning, middle, end

Step 7 – Story development

Work alongside the child to write their story and solve the mission

Key tips...

- plan the whole mission before you start filming/recording
- make use of the story board templates for sequencing
- Follow the formula of start, middle and end
- Remember to switch between inside and outside of the head
- Use post-its for the changing thoughts and feelings board. Remember, the thoughts identified at the start should be negative self statements (e.g. I am hopeless, Everyone hates me, I am stupid) and the feelings should be negative (e.g. I am angry, I am afraid, I hate everybody)

Step 8 - Debrief

Reflect on key learning and feedback

Measure outcomes

- Complete post measures

Discussion prompts



What we hope the children will gain from the sessions:

- Learn ways of coping with the real-life social problems which are important to them
- Opportunity to develop emotional literacy skills through talking about thoughts and feelings
- Perspective taking
- Support managing impulse control through stop, think and do methods (recognising early warnings!)
- Chance to engage in a fun and creative intervention

During the intervention

- At the beginning of each session, ask the young person to complete the PI-ED questionnaire
- Take 5-10 minutes to speak to the young person about how their week has been
- Provide quick recap of previous session
- Use the session outline to help guide you through the sessions.
- Provide homework goal

The intervention:

Before you start:

- Buy the Homunculi Approach book (amazon)

Before each session:

- Take time to plan the session (approx. 1 hour)

  Organise and collect the materials you need to deliver the session

What you will be provided with

- Session outlines
- Copies of the PI-ED questionnaire

- Supervision every 2 weeks

After each session

- Complete checklist



7.14. Appendix N: Initial Letter to Schools

The University of Nottingham

UNITED KINGDOM · CHINA · MALAYSIA

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

t: +44 (0)115 951 5361

e: psychology@nottingham.ac.uk

www.nottingham.ac.uk/psychology

13/01/17

Dear X School,

I am currently working as a Trainee Educational Psychologist in [LA area], supervised by [supervisor's name]. As part of my doctoral training at the University of Nottingham, I am hoping to conduct a research project in [LA area] schools to evaluate the effectiveness of a cognitive behavioural based intervention in reducing anxiety of young people with Autism Spectrum Disorders (ASD). I am contacting you to ask whether your school might be interested in participating in this research.

As you will be aware, in recent years, supporting pupils' mental wellbeing in schools has becoming increasingly important. The prevalence of mental health problems in the autistic population is widespread (Green et al., 2005); with anxiety being one of the most commonly reported mental health problem for pupils with ASD (Skokauskas & Gallagher, 2012). A relatively recent intervention, called the **Homunculi Approach** (Greig & MacKay, 2013), has been designed for pupils with ASD and is based upon cognitive behavioural principles. Research evaluating this intervention could be very useful for schools in order to ensure schools are delivering evidence-based interventions in schools which promote positive mental wellbeing for pupils.

<u>What is the Homunculi Approach?</u>

The Homunculi Approach is a 10 week cognitive behavioural based therapeutic intervention. Each session lasts approximately 1 hour. The intervention has been designed for pupils with ASD and can be delivered by members of school staff. It is a programme which develops social and emotional resilience through thinking skills by teaching pupils the links between thoughts, feelings and behaviour, how to stop, think and plan before acting, how to solve problems, how to cooperate with others in a learning task and how to make good choices.

What does the research project aim to explore?

The research project aims:

- To explore how effective the intervention is in reducing levels of anxiety in pupils with ASD.
- To evaluate the effectiveness of the intervention through the use of questionnaires, classroom measures and interviews with the pupils after the intervention.

What are the benefits for your school taking part?

- A member of school staff will receive training in the intervention which will mean they will be able to deliver the intervention with other pupils following the research project.
- The pupil/s identified will receive the 10 week intervention which aims to reduce anxiety and anxiety-related behaviours within school.
- The trained member of staff will receive regular support from the researcher, who is a trainee Educational Psychologist, in delivering the approach.
- The intervention will be evaluated so schools will be able to gain an insight into how effective the programme was for their pupil/s.
- The full findings from the research project will be disseminated to the school so the school is aware of how effective the programme has been in other schools as well as their own.

What is the school required to do to take part?

- To work with the researcher to identify a suitable pupil/s with ASD in the school who is aged between 11 and 14 with anxiety.
- To identify a member of staff who would have time and capacity to receive a half day training session and could deliver the 10 week intervention. The cost of this would be 1 session of EPS time and would include training, support with tailoring the intervention for the pupil and regular support throughout the delivery of the intervention.
- To buy the intervention book, this costs between £17 and £20. All the resources within the book can be reused.
- To provide time for a member of staff to complete questionnaires before and after the intervention as well as conducting weekly observation measures.
- To allow the identified pupil to receive the intervention for 1 hour per week for 10 weeks.

At the moment I am not expecting any formal agreement to take part in the study. However, I would be grateful if you could contact me before February half term if you would be interested in finding out more about the proposed research. Please also do not hesitate to contact me, [Placement Supervisor]

or [Research Supervisor], if you have any further queries using the details below.

I look forward to hearing from you,

Best Wishes

Harriet Maydew

Trainee Educational Psychologist

Contact Details:

Harriet Maydew

Tel: xxxxxxxxxxxxx
Email: xxxxxxxxxxxxxx

[Placement Supervisor]

Tel: xxxxxxxxxxxxxxxx
Email: xxxxxxxxxxxxx

[Research Supervisor]
xxxxxxxxxxxxxxxxxxxxxx

7.15. Appendix O: Parent Information and Consent Forms

Dear parent/carer,

My name is Harriet Maydew and I am currently working as a Trainee Educational Psychologist within [LA on placement]. I am also currently studying for a doctorate in Applied Educational Psychology at The University of Nottingham, School of Psychology. I am carrying out a research project which investigates the effectiveness of a cognitive behavioural based intervention in reducing anxiety for pupils with Autism Spectrum Conditions (ASC).

I am writing to seek your consent for your son/daughter to take part in the project.

Attached to this letter is:

- An information sheet about the project,
- An information sheet about the programme which is called the Homunculi Approach and,
- A consent form

If you have any questions regarding the project please feel free to contact me using the details below.

If you would be happy for your son/daughter to take part you will need to select the 'yes' option for all questions on the consent form and sign it at the bottom. The consent form should be returned to:

…….

By the…….

If you consent to your son/daughter taking part in the project I will arrange a time to meet with them in school to explain the project in more detail and provide them with an opportunity to decide whether they would like to take part.

Thank you very much for taking the time to read this letter.

Yours sincerely,

Harriet Maydew
Trainee Educational Psychologist
Email:xxxxxxxx, tel:xxxxxxxxxxxxxxx

School of Psychology

Information Sheet

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

Title of Project: An evaluation of the Homunculi Approach intervention for pupils with Autism Spectrum Conditions (ASC): evaluating the impact on Young People's anxiety

[Contact information removed]

This is an invitation for your son/daughter to take part in a research study assessing the effectiveness of the Homunculi Approach in reducing anxiety in pupils with Autism Spectrum Conditions.

Before you decide if you wish for your son/daughter 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 you consent to your son/daughter participating in the study, your son/daughter will receive a 10 week therapeutic intervention for 1 hour per week. The intervention, called the Homunculi Approach, is based on principles of cognitive-behavioural therapy. It works by adjusting the way in which the young person thinks in order to positively alter their feelings and behaviours. The intervention will be delivered by a trained member of school staff, who will receive support from the researcher throughout the project.

In order to know whether the intervention has been effective for your son/daughter the following measures will be taken:

- Before and after the intervention questionnaires will be completed by a member of school staff, a parent and the young person themselves. The questionnaires should take between 10 and 20 minutes to complete and will explore the emotional wellbeing of the young person.
- Before and during the intervention the young person will be asked to rate their mood daily (either through an app on their phone or a paper version) and asked to complete a short anxiety questionnaire once a week in school. Additionally, a member of staff will complete a weekly behavioural measure to see how your son/daughter is getting on in school.
- After your son/daughter has completed the Homunculi Approach they will be asked if they would like to provide feedback regarding how they found the intervention and what they liked/disliked about it.

If you would like your daughter/son to take part in the project it is important that they are not currently receiving any psychological treatment outside of school.

The project will be set up in the Summer Term 2017 to begin in the Autumn Term 2017 and the programme will run for 10 weeks.

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. It will be stored in compliance with the Data Protection Act.

If you have any questions or concerns please don't hesitate to contact me directly using the contact details above. We can also be contacted after your participation using the above details.

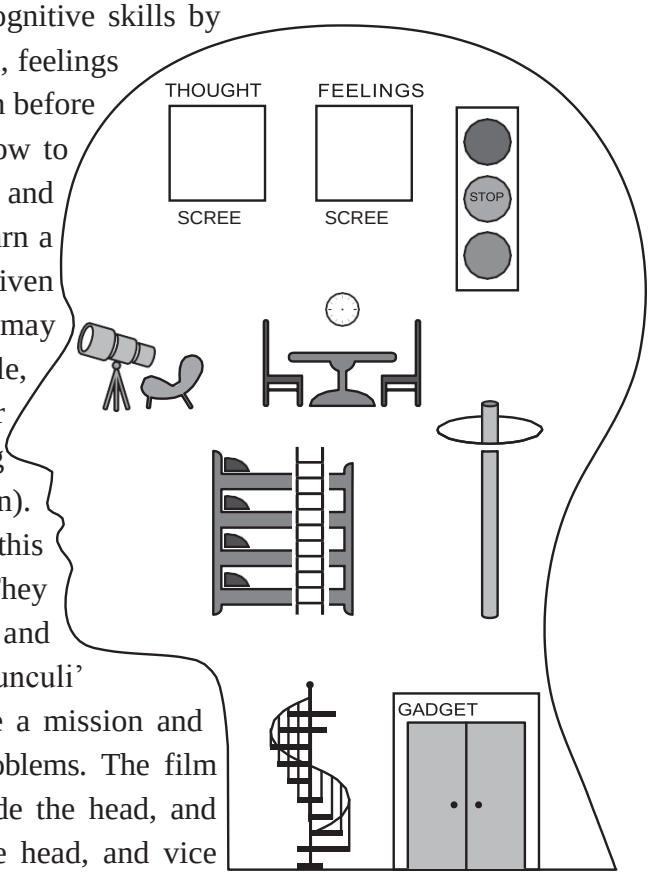
If you have any complaints about the study, please contact:

xxxx (Chair of Ethics Committee)

[*Contact details removed*]

Homunculi Information sheet for parents (from Greig &MacKay, 2013b)

At times of sudden change, and also during normal life transitions such as moving to a new school, children and young people can experience stress and need to be prepared and supported during the process. *The Homunculi* is a creative project for young people, preparing them to manage better the stresses in their lives. It is essentially a package that develops social and emotional resilience through thinking skills. It helps participants to develop cognitive skills by teaching them the links between thoughts, feelings and behaviour, how to stop, think and plan before acting, how to solve social problems, how to cooperate with others in a learning task and how to make good choices. They also learn a lot about technology. Participants are given typical problem scenarios they may encounter at the new school (for example, exam and homework stress, peer pressure, bullying, feeling alone, getting lost, making friends, getting detention). They will usually make a cartoon film of this scenario or draw it on a cartoon strip. They work with a giant poster of a head and cartoon characters that live in it ('Homunculi' means 'little people') - they each have a mission and gadgets that help them to solve the problems. The film switches between actual role play outside the head, and what is happening as a result inside the head, and vice versa. The cartoon people in the head have an alarm that stops them and makes them think and plan when there is a problem outside the head. They also have Thoughts and Feelings Screens that need to be consulted after role play. The story format always has a basic scripted format that they must follow and the story always has to be appropriately and happily resolved. The participants may download and edit their clips and put them on to a secure site (or email them) to take home.



Parent Consent Form

School of Psychology

Consent Form

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

Title of Project: An evaluation of the Homunculi Approach intervention for pupils with Autism Spectrum Conditions (ASC): evaluating the impact on Young People's anxiety

[Contact information removed]

The parent/guardian 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? YES/NO
- Do you understand that you are free to withdraw your son/daughter from the study? (at any time and without giving a reason) YES/NO
- I give permission for my son/daughter's data from this study to be shared with other researchers provided that their anonymity is completely protected. YES/NO
- I give permission for the researcher to access information from school regarding demographics and the support my son/daughter receives in school. YES/NO
- Do you agree for your son/daughter to take part in the study? 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 my son/daughter from the project at any time."

Signature of the Participant: Date:

Name (in block capitals):

Email address:

I have explained the study to the above participant and he/she has agreed to take part.

Signature of researcher: Date:

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

xxxx (Chair of Ethics Committee)

[*Contact details removed*]

7.16. Appendix P: School Staff Information Sheet and Consent Form

School of Psychology

Information Sheet



Title of Project**:** An evaluation of the Homunculi Approach intervention for pupils with Autism Spectrum Conditions (ASC): evaluating the impact on Young People's anxiety

[Contact information removed]

This is an invitation regarding a research study assessing the effectiveness of the Homunculi Approach in reducing anxiety in pupils with Autism Spectrum Conditions. We have received consent for a pupil/s in your school to take part in this study.
This young person will receive a 10 week therapeutic intervention for 1 hour per week. The intervention, called the Homunculi Approach, is based on principles of cognitive-behavioural therapy. The aim is if we can think differently about certain situations our feelings and behaviours will change too. The sessions will be delivered by a trained member of school staff, who will work alongside the researcher during the project.
In order to know whether the intervention has been effective the following measures will be taken:

- Before and after the intervention questionnaires will be completed by a member of school staff, a parent and the young person. The questionnaires should take between 10 and 20 minutes to complete and will explore the young person's emotional wellbeing.
- Before and during the intervention the young person will be asked to rate their mood everyday (either using an app on their phone or a paper version) and they will be asked to complete a short anxiety questionnaire once a week in school. Additionally, a member of staff will complete a weekly behavioural measure to see how they're getting on in school.
- After the young person has completed the Homunculi Approach they will be asked if you would like to tell us how they found the programme and what they liked/disliked about it.

The project will be set up in the Summer Term 2017 to begin in the Autumn Term 2017 and the programme will run for 10 weeks.

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. It will be stored in compliance with the Data Protection Act.

If you have any questions or concerns please don't hesitate to contact me directly using the contact details above. We can also be contacted after your participation using the details above.

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

xxxx (Chair of Ethics Committee)

[*Contact details removed*]

School Staff Consent Form

School of Psychology

Consent Form

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

Title of Project**:** An evaluation of the Homunculi Approach intervention for pupils with Autism Spectrum Conditions (ASC): evaluating the impact on Young People's anxiety

[Contact information removed]

The 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? YES/NO
- Do you understand that you are free to withdraw from the study? YES/NO (at any time and without giving a reason)
- I give permission for my data from this study to be shared with other researchers provided that my anonymity is completely protected. YES/NO
- I give permission for the researcher to access information from school regarding demographics and the support the pupil receives in school. YES/NO
- Do you agree to take part in the study? 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."

Signature of the Participant: Date:
Name (in block capitals):

Email address:

I have explained the study to the above participant and he/she has agreed to take part.

Signature of researcher: Date:

If you have any complaints about the study, please contact:
xxxx (Chair of Ethics Committee)

[*Contact details removed*]

7.17. Appendix Q: Participant Information Sheet and Consent Form

School of Psychology

Information Sheet

The University of Nottingham

UNITED KINGDOM · CHINA · MALAYSIA

Title of Project**:** An evaluation of the Homunculi Approach intervention for pupils with Autism Spectrum Conditions (ASC): evaluating the impact on Young People's anxiety

[Contact information removed]

This is an invitation for you to take part in a research study assessing the effectiveness of the Homunculi Approach in reducing anxiety in pupils with Autism Spectrum Conditions.
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 you agree to take part in the study, you will receive a 10 week therapeutic intervention for 1 hour per week. The intervention, called the Homunculi Approach, looks at how our feelings, thoughts and behaviours are linked. The aim is if we can think differently about certain situations our feelings and behaviours will change too. The sessions will be delivered by a trained member of school staff, who will work alongside the researcher during the project.

In order to know whether the intervention has been helpful for you the following measures will be taken:

- Before and after the intervention questionnaires will be completed by a member of school staff, a parent and yourself. The questionnaires should take between 10 and 20 minutes to complete and will explore your emotional wellbeing.
- Before and during the intervention you will be asked to rate your mood everyday (either through an app on your phone or using a paper version) and you will be asked to complete a short questionnaire each week. Additionally, a member of staff will complete a weekly behavioural measure to see how you're getting on in school.
- After you have completed the Homunculi Approach you will be asked if you would like to tell us how you found the programme and what you liked/disliked about it.

The project will be set up in the Summer Term 2017 to begin in the Autumn Term 2017 and the programme will run for 10 weeks.

You do not have to take part in this study if you do not wish to, it is your choice. If you decide to take part you are free to stop taking part at any point before or during the study. All data collected will be kept confidential and used for research purposes only. It will be stored in compliance with the Data Protection Act.

If you have any questions or concerns please don't hesitate to contact me directly using the contact details above. We can also be contacted after your participation using the details above.

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

xxxx (Chair of Ethics Committee)

[*Contact details removed*]

Participant Consent Form

School of Psychology

Consent Form

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

Title of Project: An evaluation of the Homunculi Approach intervention for pupils with Autism Spectrum Conditions (ASC): evaluating the impact on Young People's anxiety

[Contact information removed]

The 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? YES/NO
  Do you understand that you are free to withdraw from the study (at any time and without giving a reason)? YES/NO
- I give permission for my data from this study to be shared with other researchers provided that my anonymity is completely protected. YES/NO
- I give permission for the researcher to access information from school regarding demographics and the support I receive in school. YES/NO
- Do you agree to take part in the study? 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."

Signature of the Participant: Date:

Name (in block capitals):

Email address:

I have explained the study to the above participant and he/she has agreed to take part.

Signature of researcher: Date:

If you have any complaints about the study, please contact:
xxxx (Chair of Ethics Committee)

[*Contact details removed*]

7.18. Appendix R: Staff Information Sheets and Consent Forms for Phase 2



Dear *member of school staff*,

Thank you for your participation in the research project exploring the effectiveness of the Homunculi Approach in reducing anxiety for pupils with Autism Spectrum Conditions. The time you have taken to deliver the intervention is greatly appreciated.

The purpose of this letter is to invite you to take part in a second phase of the study which aims to explore the helping and hindering factors of implementing the Homunculi Approach in a school environment.

The interview will take place at a time and date which suits you in your school setting. It is anticipated the interview will last between 30 minutes to 1 hour. The interview will consist of the researcher asking you several open ended questions regarding the intervention and your responses will be verbally recorded using a Dictaphone.

The data will be transcribed and your responses will remain confidential. The data will be stored securely and you will be provided with the opportunity to review the transcribed information to check for any inaccuracies or misinterpretations.

Attached to this letter is a consent form for you to complete if you would be happy to take part in the second and final phase of the project.

Furthermore, as previously mentioned, you have the right to withdraw from the project at any point should you wish.

If you have any queries regarding this phase of the project or regarding the project more generally then please do not hesitate to contact me or my supervisors using the details below.

Thank you again for your support in the project.

Kind regards,

Harriet Maydew

Tel: xxxxxxxxxxxxx
Email: xxxxxxxxxxxxxx

[Placement Supervisor]

Tel: xxxxxxxxxxxxxxxx
Email: xxxxxxxxxxxxx

[Research Supervisor]
xxxxxxxxxxxxxxxxxxxxxx

School of Psychology

Consent Form

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

Title of Project**:** An evaluation of the Homunculi Approach intervention for pupils with Autism Spectrum Conditions (ASC): evaluating the impact on Young People's anxiety

[Contact Information Removed]

The member of staff should answer these questions independently:

- Have you read and understood the Information Letter?
  YES/NO
- Have you had the opportunity to ask questions about the second phase of the study?
  YES/NO
- Have all your questions been answered satisfactorily?
  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 give permission for the data from the interview to be transcribed and findings to be anonymously included in the research? YES/NO
- Do you agree to take part in the study?
  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 from the project at any time."

Signature of the Participant: Date:

Name (in block capitals):

Email address:

I have explained the study to the above participant and he/she has agreed to take part.

Signature of researcher: Date:

If you have any complaints about the study, please contact:
[Contact Information Removed]

7.19. Appendix S: Interview Prompts using Activity Theory

- We are going to use activity theory to explore the factors which may have affected implementation of the intervention. These factors might be positive or negative.
- Activity theory is a tool to explore the interactions and relationships in complex systems, like schools and tends to be a collaborative process which we will work through together.
- During the interview we will use the activity theory framework to help structure the discussion and I will explain each part as we go through it.

Subject

Definition: this is the individual who is engaged in the activity- yourself! Here we have some information regarding your own background and job role which you provided me before beginning the intervention, have I captured this correctly?

What qualifications do you hold and have you had any CPD (continuing professional development)/training opportunities which you feel were relevant to implementing the Homunculi Approach?

Is there anything else you feel would be relevant for this section?

Object

Definition: The object is the description of the activity undertaken or worked on

What do you feel was the activity taking place in this project?

What have you been working on?

Is there anything else you feel would be relevant for this section?

Outcome

Definition: The motive of the object

What did you hope to achieve?

Is there anything else you feel would be relevant for this section

We are now going to explore factors which may have affected the object *[insert what participant said object was*] and its outcome [*insert what participant said outcome was*].

Tools and/or artefacts

Definition: What did you use to carry out the action- tools can be either physical objects or psychological tools, i.e. patience.

What did you use?

How did you use it?

Why did you use it?

Where did you hope to get to by using it?

How had you come to use it in this way?

Were there any tools/artefacts you did not have that you feel would have been beneficial?

Is there anything else you feel would be relevant for this section?

Rules

Definition: Rules can be school rules/rules within the system which might be explicit or might be more implicit. It could also include routines, habits and values. They are things which supported or restricted you in being able to implement the intervention.

What facilitated and supported what you did?

What constrained and restricted what you did?

Were there any other factors that influenced and determined what you did?

How had these come to be?

Is there anything else you feel would be relevant for this section?

Community

Definition: the other people who were involved in this Activity?

Who else was involved in this activity?

What was their role and 'working' relationship to you?

How had this come to be/how had they come to be involved?

Further prompts might include: i.e. young person/staff-line manager/class teachers/researcher

Is there anything else you feel would be relevant for this section?

Division of labour

Definition: To explore how the work was divided up between those involved in the activity.

How were the roles and responsibilities shared/divided between you?

What did you each undertake to do?

How had that come about?

Is there anything else you feel would be relevant for this section?

At the end

I'm going to just go through now what we have discussed to make sure I have captured everything we have spoken about appropriately and to provide you with the opportunity to add anything we have missed.

[Try and identify any contradictions when talking it through]

Afterwards, I will check through the audio recording and if there is anything I need to add I will send you an updated copy for you to check, if that's okay?

7.20. Appendix T: Ethical Approval

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

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

t: +44 (0)115 951 5361

e: psychology@nottingham.ac.uk

www.nottingham.ac.uk/psychology

SJ

Ref: S954R

Monday, 27 March 2017

Dear Sarah Atkinson and Harriet Maydew,

Ethics Committee Review

Thank you for submitting an account of your proposed research 'An Evaluation Of The Homunculi Approach Intervention For Pupils With Autism Spectrum Conditions (ASC): Evaluating The Impact On Young People's Anxiety'.

That proposal has now been reviewed by the Ethics Committee and I am pleased to tell you that your submission has met with the committee's approval.

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. The Committee should be informed immediately should any participant complaints or adverse events arise during the study.

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

7.21. Appendix U: Homunculi Approach Questionnaire Responses

Questions	Participant 1: William	Participant 2: Sophie	Participant 3: Alex	Participant 4: Ben
1. What did you like best and why?	The scenarios because coming up with them took some time.	The coping mechanisms and it helped me to know how to calm myself.	Creating the characters and gadgets because it allowed me to be creative/imaginative and let me do what I wanted to do.	Talking about issues as it helps me.
2. What part was most helpful to you?	Thinking of the scenarios.	Coping mechanism	Making the interior of the skull. Made me think about what should be going on inside my head.	Talking about issues as it helps me.
3. What part was least helpful to you?	Gadget store	Acting out the story on the skull, it felt a bit babyish like playing with toys.	Watching the videos about how the Homunculi affected different kids.	Not really anything
4. Are there bits you found to hard? Why?	Thinking of what to do when there is a problem.	The drawing of the characters	Thinking about specific details in the 3 stories because after I had planned the main plots out	Not really

			I was unsure of how to lead the story in specific directions without a little assistance.	
5. Who is your favourite agent and why?	Snake because it helps me not to snitch on anyone and give me a bad reputation.	Bella and Shelly, they always got the situation under control.	Dr. Watson because I admire his 'quest' to gain knowledge and find truths. Also, I like his top hat which I gave him.	Thorun- he is strong and part of my favourite story.
6. What is your favourite gadget and why?	I don't know	Happiness jar, when I feel self-conscious or something I can keep that in mind.	The magic dust because it isn't aggressive in any way like the Taser and can about always get its job done.	Phone- its technology which I enjoy.
7. What would you do differently next time?	Try being more friendly.	After school sessions	Try to include Aspie- the apprentice- a little bit more in my stories and have a go at the video making.	Possibly change the situation/problems being addressed.
8. If I were doing this with another person, what advice would you	Try to overcome your fears.	After school sessions	Try to get the person to work on, or think about, both the video and cartoon.	Don't know-too hard.

give me to improve it?				
9. Tell me what is the main thing you learnt through the Homunculi Approach?	To not get annoyed at school.	When a situation is really hard don't give up because there are ways you can make it better.	I've learnt that I'm always able to change my thoughts on a situation or approach it differently with an open mind and by thinking about the Homunculi the situation generally turns out more positively.	I've developed more confidence and begun to address my problems.

7.22. Appendix V: Interrater Scores for Visual Analysis

"How certain or convinced are you that the child's responses underwent a practical and significant improvement from the baseline to the intervention phase?

1 **2** **3** **4** **5**

Not at all convinced

Very convinced

Participant	Measure	1. Not at all convinced	2. Unsure	3. It is possible	4. Reasonably certain	5. Very convinced
William	PI-ED	**XO**				
	Behavioural observation	**XO**				
Sophie	PI-ED					**XO**
Alex	PI-ED				**O**	**X**
Ben	PI-ED	**XO**				
	Behavioural observation				**XO**	

O= Informant 1

X= Informant 2