

The impact of the Attention Autism approach on joint
attention skills in a Key Stage One class in a special
school

by

Kate Buckingham
Registration number 1035773

A dissertation submitted in part fulfillment of the
requirements for the degree of

Med Autism (Children)

in the
School of Education

Dissertation Tutor
Allison Hope-West

School of Education
The University of Birmingham
April 2012

Acknowledgements

My deepest thanks go out to a number of people who have supported me in this study.

To Allison Hope-West who has supported me throughout my Masters journey.

To Gina Davies for all of her support to myself and my school setting up the Attention Autism project.

To all the staff members at school who have jumped on board, and especially to my team who have to put up with my crazy ideas!

Thank you to my family, who have encouraged and supported me.

Most of all, thank you to the participants of this study – my class. Who I will always learn more from than I can ever teach them.

Abstract

Joint attention is an important skill that plays a vital role in the development of both social and language skills. For children on the autism spectrum this skill is often absent and this impacts on their general development. However, there are few interventions and approaches that focus on teaching and developing joint attention skills to these children. This study analyses the impact of one intervention, the Attention Autism approach, on the development of joint attention skills of pupils in a key stage one special school classroom. The development of joint attention skills is assessed, alongside the ability to transfer these skills to other contexts. The intervention is put into place for six weeks and an assessment sheet is used fortnightly to assess a baseline score and then three further scores. Qualitative data is also collected in the form of a reflective journal and classroom observations. It was found that the Attention Autism approach had a positive impact on the development of joint attention skills for all pupils, although at different levels. The skills learnt were beginning to emerge in other contexts for most pupils at the end of the six week intervention, but it is felt that this area needs more time to develop.

Contents

	Page
Chapter 1: Introduction.....	5
Chapter 2: Literature Review.....	12
Chapter 3: Methodology.....	25
Chapter 4: Results and Discussion.....	38
Chapter 5: Conclusion and Implications.....	66
References.....	71

Appendices

Appendix 1: Timetable of shared attention sessions, and timings, throughout the six week intervention.

Appendix 2: Attention Autism Profile Score Assessment Sheet

Appendix 3: Ethics form

INTRODUCTION

The author

I am a qualified teacher, who has just completed my fifth year of teaching. I have worked in a special school for my whole teaching career, although I have had experience in a range of mainstream and special schools previous to beginning my teaching career. I have had a particular interest in the autism spectrum for a number of years and have been studying for my masters in autism for 3 years.

The Autism Spectrum

Children on the autism spectrum face challenges in 3 key areas, known as the Triad of Impairments. These areas are: social development, language and communication, thought and behaviour (Wing and Gould, 1979). Using the DSM IV diagnostic tool (American Psychiatric Association, 1994) autism is diagnosed on the basis of abnormal social development, abnormal communicative development, and the presence of narrow, restricted interests, and repetitive activity, along with limited imaginative ability. Autism presents itself as a spectrum of difficulties (Humphrey and Parkinson, 2006) and in 1996 Wing defined the autistic spectrum disorder to encompass the different subgroups within the spectrum, such as Asperger Syndrome and classic autism. This highlights that while all children on the autism spectrum have core difficulties within the triad of impairments, each individual on the autism spectrum is different and all have strengths and difficulties in different areas. The

autism spectrum ranges from children with a very low Intelligence Quotient (IQ) and associated learning difficulties, to children with a very high IQ who are sometimes diagnosed with high functioning autism or Asperger Syndrome.

The Attention Autism Approach

Attention is described as a vital precursor to engaging in social interactions (Jordan, 2001) and the ability to be able to focus and sustain attention is critical for learning (Patten and Watson, 2011). However attention, and particularly joint attention, is an area that many children on the autism spectrum have difficulties with. The Attention Autism approach was developed by Gina Davies (2010a), a specialist speech and language therapist, to help build communication, interaction, attention and learning skills in children on the autism spectrum. She provides a structure that allows for hands on, practical and fun activities that provide an irresistible invitation to share attention, and therefore to learn. Activities are based on visually motivating objects and there is a reduced verbal input from adults to reduce possible stress.

The Attention Autism Approach is a social communication therapy. It involves creating an environment whereby a group of pupils and adults can share a fun and motivating experience that is worth communicating about. The physical environment must be visually quiet, so as to not provide any distractions from the activity as pupils on the autism spectrum can generally focus on only one thing at a time. The lead adult must ensure that that one thing is always them. Language used is minimal, repetitive and child led.

There are 4 activities that are worked through to practice different, and higher order, shared attention skills. These are: The orientation response (bucket activity), sustained attention, interactive game and shift and refocus activities. At the beginning of each session the lead adult writes on a whiteboard what is going to happen throughout the session. This provides a visual structure and can relieve anxiety as pupils know exactly what is going to happen, and when the session will be finished. This whiteboard is referred to throughout the session, and each activity is crossed out as it is finished.

Initially you are teaching ‘orientation’ to a stimulus, through the bucket activity. This activity begins every session, and is introduced with a song. This provides further structure for the pupils. During the bucket activity the lead adult produces a highly visually motivating object (such as a singing toy, or a light up toy) from the bucket and all of the adults model paying attention to this object. Throughout the bucket activity you are aiming to achieve three moments when the whole class is sharing attention to one object. This is repeated for several objects, with more objects being added as the intervention progresses.

Once the group is able to orientate to a shared object then the sustained attention activity is introduced following the bucket. This is an activity that takes place over a longer period of time than the bucket, and that builds up to a highly motivating finale. For example, pouring coloured water in to a giant tube to mix and swirl. As the intervention progresses, and the group is able to sustain shared attention on a highly motivating experience, less motivating and more everyday activities can be introduced.

The next stage in the intervention is the ability to shift their attention, and to take turns in an interactive game. These interactive and fun games are always modelled by an adult first and all pupils in the group are supported to take turns at their own individual level. The pupils learn to take turns, to sustain their attention while waiting for a turn, and to refocus their attention once their turn has finished and their peers are having a turn.

The final stage in the intervention uses this ability to shift and refocus their attention to allow them to watch an activity be modelled by an adult in the group, and then using their own individual equipment replicate the activity at a table, before returning to the group to share achievements.

I first discovered the Attention Autism approach at a Birmingham University masters residential where Gina Davies was presenting (Davies, 2010a). The approach seemed to be what I was then looking for to use with a current class of eight children on the autism spectrum. Having returned to school enthused and ready to put the approach in to practice, I realised that the reason that the children were displaying challenging behaviours during circle time was that they were not yet able to share attention. After implementing the Attention Autism approach for half a term there was significant improvement in both attention during the sessions, and in behaviour across the whole school day. The Senior Management Team also became aware of the improvement in the class and the head teacher, deputy head teacher and myself attended a 2 day training course (Davies, 2010b). The current research study is proposed for a second class of children, as the author would like to look in more detail at the impact of the

approach on specific skills. It is hoped that this approach will be used in more classes throughout the school if it is found to be beneficial.

Research questions

The main research questions of this study are:

- What impact does the Attention Autism approach have on joint attention skills for a key stage one class of children on the autism spectrum?
- Are the skills learnt transferrable to other times of the day?

Contents and structure of the study

This study shall begin with a look at current literature that is available on this topic. There is very little research on the Attention Autism approach but I shall begin by discussing joint attention in typically developing children. I will then explore the particular difficulties that children on the autism spectrum face with joint attention and suggest some reasons why such difficulties explore. I will then analyse some research in to interventions that seek to improve joint attention skills in children and find some of the key concepts that they share. I shall conclude the literature by looking at one recent study in to the Attention Autism approach with preschool children in a mainstream setting.

The following chapter will describe the research design and methods. I will look more closely at the research questions and explain how they were chosen. I will then

explain the methodology of the study, with a particular focus on action research and case studies. The procedure that was undertaken will be described and the sample introduced. I will look at how data will be collected and analysed, discussing qualitative and quantitative data, observation and assessment sheets before describing how the data collected will be analysed. The chapter will conclude with a section on the ethical considerations that have taken place prior to the study.

The next chapter is concerned with the results that were found and a discussion of what these mean. It was decided to include the results and discussion in one chapter in order to be able to compare interrelated data and to show how the study was affected by continual assessment. Qualitative and quantitative data shall be used alongside each other to support the findings. The chapter begins by looking at the impact of the Attention Autism approach on the development of joint attention skills across the whole class, before looking more carefully at each individual pupil. Each activity and skill area is then analysed separately to assess if any area had a particular impact. The impact of the initial joint attention skill level at the baseline is then considered. The chapter then moves on to the second research question and looks at how pupils transferred the skills learnt during the intervention, to other contexts and examines each skill area separately. The chapter ends with a discussion on how this study compares to other research in this area and the biases and limitations of the study are considered.

The final chapter shall consider any changes that I would make to the study if repeated, draw conclusions from the results that were found and finally discuss implications for my own practice and for future research topics.

LITERATURE REVIEW

I will now consider the existing literature that is relevant to this study. I will begin by discussing the development of joint attention in typically developing children. I will then consider the importance of joint attention in the development of social and language skills before looking at the specific difficulties that children on the autism spectrum face with regards to joint attention. I will conclude this chapter by comparing some previous studies into different interventions to address the deficits in joint attention in children with autism before discussing a previous study using the Attention Autism approach.

Joint attention

I shall begin by looking at the definition of joint attention. I will then define the two key aspects of joint attention. I will finish by considering how joint attention develops in typically developing children and why it is considered to be important.

Smith and Ulvund (2003) describe joint attention as the “hallmark of the human condition” and refer to the capacity to coordinate attention to objects and events with attention to other people. Therefore, they suggest that joint attention is the ability to attend simultaneously to a person and a shared object, which at the most simple level involves the shifting of eye gaze from a person to an object and gesturing. Joint attention is a set of behaviours that develop early and play a critical role in both social and language development (Jones, Carr and Feeley, 2006). It involves coordinating

the attention of at least two individuals towards an object or event in their environment who can then, verbally or non-verbally, communicate about it (Bakeman and Adamson, 1984 and Meindl and Cannella-Malone, 2011). Solomons (2005) describes the process by which joint attention occurs in that a child learns to recognise the direction of an adults gaze, orient his or her own gaze to follow it and then to look in the same direction. Shared attention is also separately defined as a key aspect of joint attention, as the ability to use the skills of eye contact, pointing, showing and giving for a social purpose of sharing an experience with others.

Joint attention behaviours in typically developing children begin to emerge at an early age and are a critical skill in early childhood development (Meindl et al., 2011). Learning to initiate and respond to bids for joint attention typically develops between 8 and 15 months (Jones et al, 2006). Towards the end of the first year typically developing children are beginning to be able to coordinate attention to objects and events with attention to other people and by twelve months they are able to comprehend others actions and are beginning to shift their own gaze to refer to other persons or objects (Smith et al., 2003). Joint attention is developmentally a sequence of accomplishments and not a single skill that is acquired. In typically developing children these accomplishments follow a recognised developmental sequence from a very early age (Solomons, 2005).

Joint attention can be separated in to two discrete skills; that of responding to joint attention and that of initiating joint attention (Meindl et al., 2011). Responding to joint attention requires a child to look at an object (or event) to which someone else has directed his or her attention. This then progresses to the more sophisticated skill

of alternating their gaze between the person and the object to ensure that they are looking at, and engaging with, the object (or event). Initiating joint attention is used in order to direct another person's attention, by combining eye gazing with gesturing. Both aspects of joint attention can then develop to include verbal commenting (Jones et al., 2006)

Joint attention is a fundamental aspect of early social development and may also be related to later cognitive competence (Smith et al., 2003). It is considered a pivotal skill that appears to facilitate language as well as social development. The acquisition of joint attention skills can produce a positive change in multiple related behaviours (Jones et al., 2006). Ulvund and Smith (1996) found that the initiation of joint attention at the age of 13 months was consistently related to later cognitive and language competencies.

Atypical attention in Autism

“... focusing on an area of interest that appealed to me and to my ability for single attention” (Lawson, 2002, p. 39)

In this quote Wendy Lawson, an adult on the autism spectrum, is describing her experience of her own atypical attention. She explains that all of her attention is focused on one place and that she therefore finds it difficult to divide her attention amongst any other objects or events. This is a skill that comes naturally for typically developing children at a relatively early age. I will now look at research that has taken place in to the difficulties faced with attention, and specifically joint attention, for

children with autism. I will consider how these difficulties are presented, and look at some reasons why they occur that have been suggested.

It has been suggested that atypical attention may be one of the earliest characteristics of autism to emerge (Elsabbagh, Volein, Holmboe, Tucker, Csibra, Baron-Cohen, Bolton, Charman, Baird and Johnson, 2009, Murray, Creaghead, Manning-Courtney, Shear, Bean, and Prendeville, 2008, Naber, Bakermans-Kranenburg, IJzendoorn, Dietz, Daalen, Swinkels, Buitelaar and Engeland, 2007 and Whalen, Schreibman, and Ingersoll, 2006). Charman (2003) suggests that joint attention behaviours are among the first abnormalities in autism that are noticed and that they become apparent at the end of the first year. Patten and Watson (2011) state that in autism the development of attention is atypical, and that this probably affects all areas of the triad of impairments. This is supported by several researchers who have implicated that disturbed attention skills affect each of the core features of the triad (Mundy, Neal and Glidden, 2001 and Swettenham, Baron – Cohen, Charman, Cox, Baird, Drew, Rees and Wheelwright, 1998). Difficulties with attention in autism are well documented, but there have been few studies that look at how this develops from infancy through childhood and into adulthood (Elsabbagh et al., 2009).

Meindl et al. (2011) compared interventions that are used to teach joint attention skills. They found that children with autism display deficits in eye-gaze shifting (Charman, Swettenham, Baron-Cohen, Cox, Baird and Drew 1997 and Charman, Baron-Cohen, Swettenham, Gillian, Drew and Cox, 2003), gestural joint attention (Charman et al, 2003, Loveland and Landry, 1986 and Mundy, Sigman and Kasari, 1990) and are less responsive to bids for joint attention (Loveland et al., 1986). They

therefore suggested that major deficits in joint attention (both initiating and responding to) are specific to children with autism.

Elsabbagh et al. (2009) studied a group of 9-10 month old siblings of children on the autism spectrum to compare their visual attention against a control group. They were trying to find early signs of autism and discovered that the siblings of children on the autism spectrum took longer to disengage from a stimuli and responded less to visual cues than the control group. However, there was no follow up to this study so we cannot be sure how many (if any) of the siblings were later diagnosed with autism.

Joint attention behaviours are frequently absent in children with autism and this has been linked to poorer language outcomes for these children (Charman et al., 1997 and Mundy et al., 1990). Joint attention plays a significant role in language development and a lack of joint attention skills limits language promoting interactions (Adamson, Bakeman, Dechner and Ronski, 2009) by further decreasing opportunities to engage in a shared experience. Charman (2003) found that improved joint attention ability was positively associated with language gains and lower social and communication symptoms. Further, increases in joint attention skills have resulted in increases in social interactions and spontaneous speech (Whalen et al, 2006) and improvements in expressive language and social communicative behaviours (Jones et al, 2006).

Naber et al (2007) investigated several types of joint attention behaviour (basic joint attention, associated joint attention and joint visual attention) and their development at 24 and 42 months old. They compared 11 children with autism, 10 children with developmental disorders and 8 children with no developmental disorders. The autism

group showed significantly less of all three joint attention behaviours at 24 months but by 42 months only the joint visual attention was significantly lower. Therefore they suggest that joint visual attention could be a core component of early screening for autism. This study compared a relatively small sample of children and contained only children with low functioning autism. However, they did compare the children with autism with children who were of the same developmental age and mental age. They suggested that impairment of joint attention is not absolute and depends on individual differences.

The key function of joint attention is social, to engage with another person in order to share an object or event that is interesting. Therefore, it is suggested that in fact the difficulties that children with autism face with joint attention are not just with the form (eye gaze, gesture) but are also related to the function of joint attention, they have a lack of interest in the social interaction (Jones et al. 2006). Vismara and Lyons (2007) explored various explanations of the underlying cause of joint attention deficits in children with autism and found that children with autism are capable of the joint attention behaviours, but lack the social motivation to share their interest with others. They went on to suggest that unless the social motivation behind joint attention is addressed through interventions children with autism may never learn to develop more complex social communicative behaviours.

Interventions

As it has been shown that joint attention is specifically impaired in children with autism, and that it is considered to be such a pivotal skill for both social and language development, it is important that it is targeted in early interventions (Jones et al., 2006). It is also important that skills are able to be generalised to other settings, people and objects as well as being maintained after an intervention (Lord, Wagner, Rogers, Szatmari, Aman, Charman, Dawson, Durand, Grossman, Guthrie, Harris, Kasari, Marcus, Murphy, Odom, Pickles, Scahill, Shaw, Siegel, Sigman, Stone, Smith and Yoder, 2005). I will now discuss some studies that have looked in to interventions to target joint attention and analysed their effectiveness. I will consider research in to some of the key factors that are important within the Attention Autism approach: the use of highly motivating stimuli, the importance of social consequences for the desired behaviours, visual structure and scaffolding children's own attempts at language through adult modelling.

There are many different approaches and interventions in the field of autism (Hanbury, 2005). These interventions can be split into two main categories, those which are comprehensive, and aim to address a wide range of needs, and those which focus specifically on certain elements of development (Humphrey and Parkinson, 2006). Patten et al., (2011) described 12 interventions used with people on the autism spectrum. They found that therapeutic approaches tend to focus on the core features of autism such as communication and socialisation, and that very few specifically address attention. However, they also found that the available evidence suggests that

children on the autism spectrum benefit from intervention that is specifically directed at improving attention.

An early study into interventions that target joint attention skills was Warren, Yoder, Gadzag, Kim and Jones (1993). They had found that while there was a wealth of research into the development of verbal communication skills, in both typically developing children and those with developmental delays, there was very little research on the development and evaluation of intervention strategies that facilitate the acquisition of prelinguistic communication skills. Their research study was initially focused on one child with Downs Syndrome. They sought to improve joint attention by teaching skills during natural play routines, building on the child's own interests and motivators and modeling the required behaviours. This intervention was successful at teaching prelinguistic requesting, commenting and vocal imitation skills within the treatment setting. They then repeated this teaching approach with four further participants and also found that all participants were able to generalise the skills learnt across materials, settings, teachers and interaction styles.

Hwang and Hughes (2000) tested a developmentally based intervention with preschoolers in order to improve their early attention and communication skills. They worked with three preverbal preschool children in their natural setting to improve eye contact, motor imitation and initiating joint attention. They imitated the preschoolers' own actions with their preferred toys. They found improvements in all of the areas for all three of the children, but found that only the improvements in eye contact and motor imitation were generalised. Joint attention skills were not generalised across other aspects of the preschoolers' day. Therefore as an intervention to improve joint

attention in a functional way this was not successful, and would need consideration as to how the skills could be generalised.

Jones et al (2006) focused more on this generalisation of joint attention skills in their research. They completed three studies, which they analysed together. The first involved just preschool teachers delivering discrete trial instruction and pivotal response training strategies to children. Discrete trial instruction is a method of teaching that is taken from Applied Behaviour Analysis (ABA) and teaches skills in small steps. Skills are broken down in to smaller, achievable tasks which are rewarded, and then built back up to the required skill one step at a time using discrete trials (Smith, 2001). Pivotal response training is another behavioural treatment intervention based on the principles of ABA. It is a loosely structured and naturalistic intervention, which relies on naturally occurring teaching opportunities and takes advantage of naturally occurring consequences for a behaviour (Schreibman, 2000). In the second study, some of the parents of these children were also trained and delivered the same interventions in the home and in the community. The third study collected responses from parents. Jones et al. (2006) emphasised the pivotal nature of joint attention skills in development, specifically for children with autism. As such they wanted to address both responding to and initiating joint attention and extend the intervention to naturalistic contexts and partners. They questioned whether interventions adequately address both the form of joint attention, and the social function. They wanted the children to be able to use joint attention skills to participate in social interactions with others. This intervention used the children's natural environments (preschool and home) and natural intervention agents (teachers and parents) to try and ensure that the skills taught could be used outside of the

intervention. They also used consequences that occurred naturally within the intervention to ensure that children were not just performing the skills in order to gain a non-social consequence. They found that their intervention developed both responding to and initiating joint attention skills and that these skills were generalised to a range of stimuli. They followed up after the intervention and 10 months later the skills had been maintained. The results of this study suggest that an intervention that: is delivered in a natural environment; by adults known to the child; and provides natural consequences that support social communication; can help a child develop skills to use joint attention in a functional manner, across a range of environments.

The successful use of natural consequences in this way is supported by Whalen and Schreibman (2003). In a controlled clinical intervention five children were taught joint attention skills using pivotal response training strategies. They used child-preferred objects to motivate the children and alternated easy and hard tasks, so that they felt that they were achieving and it was not too difficult for them. They also used natural reinforcers as consequences for the tasks, so that the consequences were functionally related to the skill being taught. They found that both responding to and initiating joint attention skills improved and there was some evidence that these skills were maintained when they followed up three months after the intervention.

Meindl et al., (2011) looked into a variety of interventions that target joint attention and found that responding to joint attention and initiating joint attention skills are mainly taught as separate and sequential skills. They discovered that basic prompting and then reinforcing interventions appeared to be the most effective methods to teach joint attention skills, but that many interventions used non-social consequences for the

skills. In eight out of the ten interventions teaching responding to joint attention non-social consequences were used. This can lead to a child displaying joint attention behaviours, but only doing it in order to gain a stimulus, rather than to coordinate and share attention with another person. They suggest that in order to ensure that the child's behaviours are instances of joint attention, and will function to obtain social attention, it is important that the behaviours are ultimately maintained by social attention. They recognise, however, that an impairment in social interaction is a key diagnostic criteria of autism (American Psychological Association, 1994) and that access to a tangible stimulus may be needed initially, but suggest that this should be paired with a social interaction and then gradually faded out.

It must, however be noted that it is not always necessary to use a tangible item as a consequence and that using social attention alone can be successful when teaching joint attention skills (Taylor and Hoch, 2008). Naoi, Tsuchiya, Yamamoto and Nakamura (2008) showed that a preference for the stimulus is like to increase initiating joint attention skills, but that there was no need for access to the stimulus to maintain these skills.

This preference for preferred items is supported in a number of studies, Jones et al. (2006) suggested that as typically developing children first partake in joint attention with familiar people and with preferred and interesting objects, then using preferred objects presented by familiar people would further support the developing joint attention skills in children with autism. Dunst, Trivette and Masiello (2011) found that interest based learning opportunities for children with autism resulted in better progress demonstrated over a short period of time. They suggested that using a child's

interests can provide a context for the expression of latent capabilities. However, their small scale study did not use randomly selected groups and relied heavily on parents reporting progress retrospectively. Vismara et al., (2007) proposed that children with autism would be more likely to enter a social interaction if the interaction was focused on their own, highly motivating interests. In their study they found an immediate increase in joint attention initiations when highly preferred items were used. They also reported an increase in joint attention initiations towards less preferred items as a result of learning these skills. This study varies from other studies as joint attention was not a specifically targeted skill in the intervention, the primary goal was to increase the child's motivation to respond to environmental and social stimuli using their own highly preferred interests to facilitate opportunities for social interactions. This small scale study had a limited time scale and no follow up was done to assess whether the children had maintained the skills learnt, or whether they had generalised the skills across other environments. It is, of course, important to consider the appropriateness of interests that are used.

A visual structure is very important for children with autism and the use of symbols and drawings to represent what is going to happen next can reduce anxiety by reducing the verbalisation that is needed (Schuler, 2002), decrease the need for adult prompting and physical direction (Gabriels, 2002) and increase on-task behaviour (Morrison, Sainato, BenChaaban & Endo, 2002).

Adult modelling plays an important role in the Attention Autism approach. All adults model key joint attention behaviours to the children in order to support their development. The language that is used throughout the sessions is child based and

taken from what the children themselves say. The use of pause is also crucial, to allow pupils to have the opportunity to reflect on what is happening and to repeat or spontaneously use language, without any pressure. Bellon, Ogletree and Harn (2000) promoted spontaneous language in a child with autism by using scaffolding techniques such as pausing before a response, adapting language complexity, and expanding on the child's utterances.

Attention Autism

There has been one recent study into the Attention Autism approach. Morgan (2011) used the approach to research in to school readiness in preschool children, within mainstream settings. The approach was used with three children, using both familiar staff and therapists trained in the approach. They were assessed for school readiness skills before and after the intervention and found that on task attention was improved and made more consistent for all children. Overall it was found that the approach benefitted the preschoolers and improved their attention. It was suggested that a greater improvement was found with the child who had lower skills initially. The generalisation of skills was varied, but it was found that overall the children found it difficult to generalise the skills to other contexts. One child did manage to generalise the skills to other group settings, and he had good attention skills at the beginning of the intervention. From the results of this study I would like to see the effects of the approach on the attention of pupils within a Key Stage One classroom in a special school. I would also like to focus further on the ability to generalise the skills across different contexts.

RESEARCH DESIGN AND METHODS

There are many different approaches and frameworks that research studies can use. The particular approach, and methods of data collection that are chosen, must depend on the nature of the inquiry and the type of information that is required (Bell, 2010). In this research study I hope to gain a greater understanding of specific behaviours (related to shared attention) in specific contexts (attention sessions), as well as looking at the transfer of skills throughout the day (Cohen and Manion, 1994). In this chapter I shall revisit the research questions and discuss how they were decided on. I will then look at the methodology of this research study and discuss the reasons that the approaches used were chosen. The procedure that was followed will be outlined and the sample that was used explained. I will then discuss the data collection and analysis with particular focus on the differences between qualitative and quantitative data, the use of participant observation and assessment sheets. I will outline some changes that were made to the data collection following a pilot study, before discussing the ethics behind the study.

Research questions

Research questions are important to focus the study. In this study I will be examining the improvement of shared attention skills, including (but not limited to) the ability to: orientate attention, sustain attention and shift attention. These skills will be assessed within specific attention sessions, but also the skills that have been learnt will be assessed throughout the whole school day to see if the skills that have been learnt are

transferrable to other areas. In my previous work using the Attention Autism approach I have seen improvements in shared attention skills, so it is hoped that that all of the pupils in this sample will see some improvement in their shared attention skills. However in my previous work it was not clear how easily these skills were transferred to other contexts. Therefore in this study I will be looking into the ability of the pupils to generalise the skills that they have learnt. I will examine whether pupils who make larger improvements in their skills find it easier to transfer them, or whether there is a certain developmental point at which the skills begin to be transferred.

The main research questions of this study have therefore been identified as:

- What impact does the Attention Autism approach have on shared attention skills for a key stage one class of children on the autism spectrum?
- Are the skills learnt transferrable to other times of the day?

Methodology

I will now examine the research methodology that has been used in this study and the reasons that each has been chosen. As this is applied research, which will be carried out by a practitioner who has identified a need for a change, or to improve practice, it will be classed as action research. This piece of action research aims to provide recommendations for good practice that will enhance the performance of both an individual (the author) and an organisation (the school) through changes to the ways in which they operate (Denscombe, 2010). Action research is a continuous process of research (Brown and McIntyre, 1981). The purpose of this research study is not to test a theory, but to collect new information (Flick, 2009) that can be reviewed, evaluated

and continue to improve practice even after the study has finished (Bell, 2010). It is hoped that the initial findings from this study will generate possibilities for change for individual practitioners and for the whole school, which can be implemented and evaluated as a prelude to further investigations (Denscombe, 2007).

I decided that a case study would be the most appropriate approach for this project. A case study provides the opportunity for one or two problems or phenomenon to be studied in some depth (Bell, 2010, Sage, 2008). A case study approach has been found to be of particular value when the research aims to improve existing professional practice (Hitchcock and Hughes, 1989); however it is not without its disadvantages. Verma, Mallick and Neesham (1998) also suggest that it is a time consuming approach to take that is very open to unrecognised biases of the researcher. Bell (2010) agrees and warns of the dangers of data being distorted by selective reporting by the author. This is an area that I must be open and honest about, and must be aware of when analyzing and discussing the results.

The value of a case study has been questioned many times as by its nature it reports only on a single event. It is often argued that it is not possible to generalise findings from a case study as it involves only one individual or event (Denscombe, 2003 and Verma et al., 1998). However, Denscombe (2007) later argues that it is possible to generalise from a case study, but the extent to which this is possible depends on how similar the case study is to other examples of the same type. Bassey (1981) used the term “relatability” rather than generalisation. He suggested that a case study is more useful if another professional is able to relate the findings to their own work, rather than being able to generalise the findings. Therefore if the details are sufficient and

appropriate for a teacher working in a similar situation to relate to then the case study is valid. He suggests that if case studies are carried out systematically and critically, are aimed at the improvement of education, are relatable and extend the boundaries of existing knowledge, then they are valid forms of educational research.

A case study approach was chosen over other methods after careful consideration of the research questions, time constraints and my own working environment.

Procedure

Initially my staff team received training from myself in the intervention, during team meetings. This was very important as the adults in the group play a vital role in the Attention Autism approach and it was important that they were all aware of their roles and my expectations. Following these training sessions I introduced shared attention sessions on a daily basis. Initially the sessions were short (some just a few minutes long) and very frequent, but as the approach developed they increased in time and decreased in frequency. By the end of the six week intervention sessions were taking place once a day for up to forty five minutes. A timetable of sessions can be seen in Appendix 1 to show how the sessions progressed. Shared attention sessions took place where the pupils were used to having circle time. This means that they did not have to adjust to a new environment, and already had an understanding of what is happening. The circle time environment was adjusted in order to create a visually clear background to reduce distractions. The sessions began after the pupils had finished an activity such as choose or snack time and they were directed to the session using their

individual schedules as appropriate. After each session the pupils were directed to a short rewarding activity.

To begin with the sessions involved only the bucket activity but this quickly moved on to include sustained attention activities, interactive games and shift and refocus activities. The pupils were assessed using the observation sheet during the first session (which will provide a baseline) and then at fortnightly intervals until the six week final assessment. The progression through the activities will be child led and dependent on the progress of the group.

Sample

The sample for this study contains a class group of eight year two children (aged six – seven) with complex learning difficulties, in a special school. Of the group, seven of the children are on the autism spectrum. There are three girls and five boys. This is a small-scale study with no formal control group. Convenience sampling was used, a non-probability and non-random approach (Biggam, 2008), as the case study will focus on my own class. Convenience sampling involves choosing those who are most convenient to take part in the study (Robson, 2011) in this case the class of children which I am teaching as I know them, they know me and I have daily access to them to implement the intervention. I am aware of the drawbacks of this type of sampling, but with the constraints in place this was considered the most appropriate method of selection. I must consider when analysing the results of the study how the sample affects the results and the ability to generalise them.

Data collection and analysis

This research study aims to draw upon a mixture both qualitative and quantitative data as is common in modern research (Creswell, 2003). Using both of these elements allows for triangulation to occur, that is for findings to be crosschecked for validity (Bell, 2010). Howe (1988) suggests that using both qualitative and quantitative data is a useful tool, and goes so far as to suggest that in some instances quantitative and qualitative methods are inseparable.

Quantitative studies collect facts and study possible relationships between one set of facts and another (Bell, 2010). They are generally easy to replicate and are therefore considered to be testable by other researchers (Robson, 2002). They produce quantified data that can sometimes be used to draw generalisable conclusions from (Bell, 2010). Punch (2005) states that quantitative studies use numerical data and typically use structured and predetermined research questions, designs and frameworks. The quantitative data that shall be collected in this research study will by means of an assessment sheet. The assessment sheet will be completed at the beginning of the study, and then at fortnightly intervals to assess improvements in shared attention skills that have been identified.

Qualitative studies allow for a more in-depth interpretation of individuals perceptions of the world (Bell, 2010). Qualitative data interprets people's actions and aims and uses these to describe and justify conclusions (Towne and Shavelson, 2002). Qualitative studies have previously been criticised as being unreliable and untestable (Robson, 2002) but have become more robust and more popular as the advantages

have been seen (Blaxter, Hughes and Tight, 1996). The author will use qualitative data, taken from reflective journals and from classroom observations to support the findings from the assessment sheets. This will also allow a flexibility that the rigid assessment sheets do not.

Observation

The main method of data collection for this study will be through observation, both structured, in order to complete the assessment sheets, and unstructured, for the qualitative data. Observation allows the researcher to witness situations as they actually take place (Denscombe, 2003) and does not rely on information being given by a third party (Robson, 2011). The observations shall be taking place in natural setting (the classroom), away from any controls. This will minimize any disruption or anxiety to the pupils and allows the author to report on real situations as they occur (Descombe, 2003) and interact with the pupils in their own environment (Burgess, 1982). Handen, McAuliffe, Janosky, Feldman and Breaux (1998) report that observation in a natural setting allows researchers to report with a “lack of artificiality” that is not possible when using other techniques.

I shall be a participant observer throughout the study and therefore should be able to complete observations without disrupting or altering any effects or dynamics (Robson, 2002). The pupils will all be familiar with me as their class teacher. However, it is possible that using participant observation can cause problems. Robson (2002) suggested that it is possible that the observer will effect the observation

because of “expectancy effects”. That is that the observer will know what they want, or what they expect to happen before they begin and therefore do not enter the observation with an open mind. As the class teacher I am familiar with personalities, strengths and weaknesses of the pupils and may overlook aspects of behaviour that would be immediately apparent to a non-participant observer seeing the situation for the first time (Bell, 2010). Participant observation is again open to bias, preconceived ideas and prejudices of the researcher (Denscombe 2003 and Sage, 2008) suggests that as a second observer is unlikely to find the same conclusions the outcomes cannot be considered reliable or be generalised. I must be aware of these dangers throughout the observation period and when analysing and discussing the data.

Assessment sheet

During the structured observation sessions an assessment sheet will be completed (Appendix 2). I have chosen to use the assessment sheet designed by Gina Davies, the founder of the Attention Autism approach. This assessment sheet provides a detailed developmental checklist of shared attention skills, split in to each section used during the intervention. The assessment sheet allows not only an assessment of each pupil, but shows where to next go with the intervention in order to allow the children to progress.

The assessment sheet uses an ordinal scale to show the abilities of the child against each skill. These are numbered 1 – 4 to represent the gradual acquisition of each skill. A number 1 shall show an emerging skill, a 2 represents a developing skill, a 3

suggests that the skill is being used frequently and a number 4 will represent that they are consistently and regularly using that skill fluently. This allows for even small steps of progress to be identified. The assessment sheet will be completed as a direct result of the observation and from the authors' knowledge of the pupils, through the observations. This means that if the pupils have an off day I can use my own knowledge to complete the assessment sheet. This also allows the sheets to be completed to show small steps progress in the acquisition of skills, as in order to gain 4 pupils must be consistently and regularly using a skill, and this cannot be seen in one observation session. The majority of the checklist focuses on skills that will be evident during shared attention sessions, but each section also contains a "real life" application of the skill. This will allow me to analyse whether the skills being taught and learnt in shared attention sessions are being transferred to other areas.

Data analysis

I shall analyse the data from both a confirmatory and exploratory angle. I will use confirmatory analysis to see if the shared attention skills of the group have improved through the use of the intervention. I shall then use an exploratory analysis to see if and how these skills are transferred and generalised.

As previously discussed this study will draw upon both quantitative and qualitative data. The quantitative data will come from the assessment sheets that will have been completed fortnightly. From this I will be able to plot the individual children's progress across all shared attention skill areas as well as the overall skill progression.

It will be possible to find out whether shared attention skills have improved by a significant amount, for both individual pupils and for the whole group. The author also hopes to be able to analyse whether there are particular areas of shared attention that have improved, or not improved, significantly across the group. The assessment sheet has been piloted and several different sets of data have been used and analysed from it. The qualitative data will be drawn from the authors' reflective journals, and from unstructured classroom observations. It is hoped that the qualitative data will support the findings from the quantitative data, but also that alternative use of the skills, or non-use of the skills will also be found.

I will then explore whether pupils were able to transfer the joint attention skills that they had learnt during the intervention sessions to other contexts. I will do this by exploring the point increases in just "everyday use" sections. I will explore which skills pupils were, and were not, able to transfer to different contexts across the group. I will then analyse whether there is a particular level which the children must reach in skill acquisition in order to be able to transfer the skills and whether this level is overall or in a particular area. The qualitative data will be particularly useful in this exploratory analysis as it will provide further evidence of pupils using the skills outside of the intervention.

Pilot study

The assessment sheet has been piloted across a separate class of pupils. Initially it was thought that an outside observer should be able to complete the assessment sheets

from fortnightly observations. However, it was found that there was a need for the person filling in the form to have seen the pupils across a range of shared attention sessions in order to accurately assess their skills and assess how frequently and consistently the skills were being demonstrated. It was therefore decided that the lead adult should complete the assessment sheets.

Ethics

It is important that every researcher considers the ethical issues surrounding a research study. I have carefully considered the ethical issues within this research study and they can be further seen in the ethics form (Appendix 3).

In this research study the data is being analysed from an intervention that the children would be receiving whether they were part of the research study or not as it is an integral part of their daily curriculum. Because of this permission will be sought from the school head teacher and from parents. The permission from the parents will be permission to be included in the report of the study and not permission to be included in the intervention. The letter to the parents will include full details of the intervention and also it will be made clear that this is an activity that their child would be involved in without the presence of the research study. The parents will also have the right to withdraw their child from the report at any point and this, and the ways in which to do so, will be made clear in the letter.

I am aware that the pupils in this research study are vulnerable children, children with complex learning difficulties and on the autism spectrum. These children have a limited ability to be able to verbalise or otherwise say if they are not happy with the intervention in place. However, the intervention is a part of the school curriculum, and it is being implemented by the class teacher and by class staff who are well known to the children, and who know the children well. All the children will be monitored closely, as they are throughout their school day, for any adverse reactions to the change in routine or activities involved. As they are being monitored by staff who know them well a decision will be made as to whether they should continue with the intervention, with continued monitoring, or whether they should be withdrawn.

It is important that everyone involved in the study and the school involved, have the right to anonymity (Robson, 2002). Therefore pseudonyms shall be used throughout the report and any identifying features of people or the school will be omitted. Some of the records that will be used are school records that are kept on a password-protected server. These will be kept as per school policy. Other records, such as reflective journal entries and observations will be accessed only the author and shall be shredded after the completion of the study (Sage, 2008). Any data that is taken from the school server for use outside of school shall be stored on an encrypted memory stick that is only accessible by the author.

At the end of the study the report shall be made available to parents and colleagues and opportunities for discussing the results shall be made available.

RESULTS AND DISCUSSION

The results and discussion of this study are presented together in one chapter, so that a comprehensive discussion can take place and the results can be compared to each other.

The intervention followed the expected procedure, however as progression through the intervention is child led, we did not manage to complete all areas of the intervention that were assessed on the assessment sheet. This will be reflected in the results that we found. However it was decided to continue with the six week time scale and assess the progress that had been made in this time.

Within this chapter all of the pupils involved have been given pseudonyms to protect their identity. I shall begin by looking at the impact of the intervention on joint attention skills for the whole class. I will then look at the progress that each individual pupil made before looking more closely at each skill area on its own. I will assess how the initial skill level at the baseline assessment affects the increase in joint attention skills. I will then move on to look at how well the pupils were able to transfer the skills learnt and practiced in the intervention to other contexts and I will examine each skill area to try and find any patterns. I shall then seek to compare the results that I have found to those found by other research studies. This chapter will conclude by identifying the limitations and potential biases of this study.

What impact does the Attention Autism approach have on joint attention skills for a key stage one class of children on the autism spectrum?

Initially I want to assess and evaluate what impact the Attention Autism approach had on the joint attention skills of the sample. For this I will use the quantitative data that was collected by the assessment sheets (Appendix 2), I have used this data to create figures and tables to make the data more readable. Figure A shows the overall profile scores for each pupil at the baseline and then at the final 6 week assessment. From this I can clearly see that all pupils' joint attention skills improved over the six week intervention. At the baseline pupils had an average score of 50, and this average score increased by 29% to 84 (out of a total of 116) at the end assessment. The individual progress made ranged from an increase of 27 points up to an increase of 43 points.

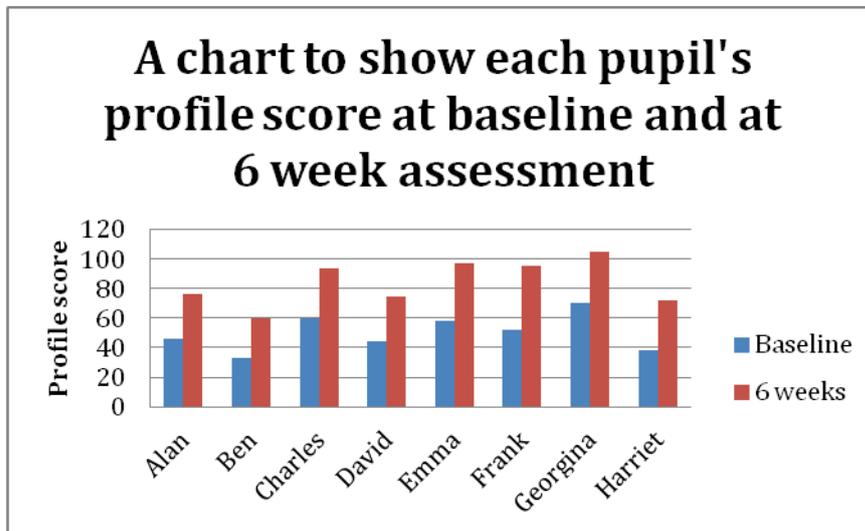


Figure A

These results show that all pupils made some progress in their joint attention skills following the Attention Autism intervention. All of the pupils had a maximum point score of 12 in the first section of the assessment sheet at baseline, so I have chosen to disregard that section in my results and discussion. I would like to look more closely

to see how much progress the pupils made, if there were particular areas in which they made progress, and if a higher or lower baseline score affected the progress that they made.

How much progress was made?

I will now look at individual pupils to see how much progress they made with their joint attention skills.

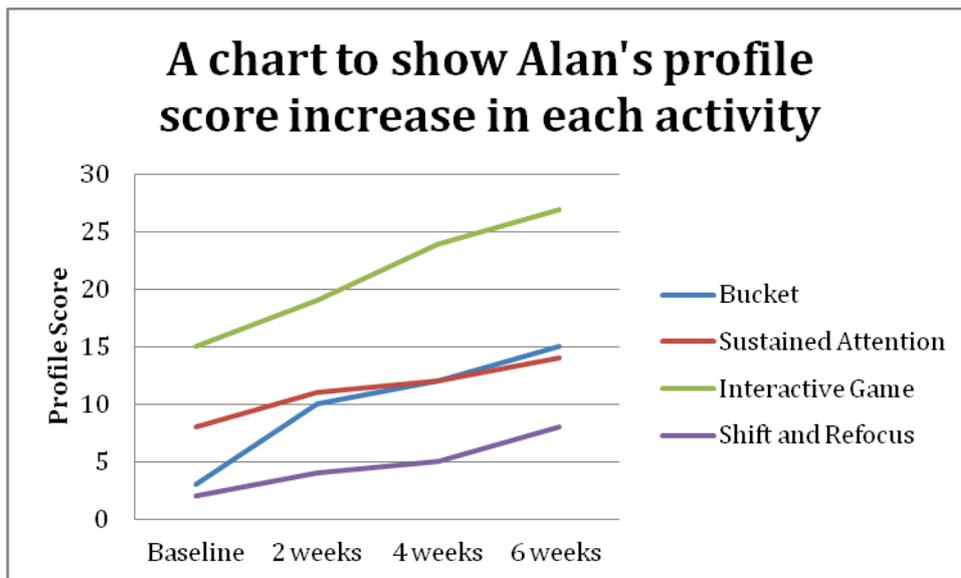


Figure B

I will begin by assessing Alan. Alan had an initial baseline score of 46, which was just below average within the sample. He increased his score by 30 points throughout the intervention. He had some points in each area at the baseline, although his score in the Shift and Refocus activity was very low. Figure B shows that he increased his points quite evenly across all areas of shared attention. His skills in the bucket activity

increased rapidly in the first two weeks and then continued to increase more steadily. In the interactive game skills he continued to improve steadily throughout the six weeks. In the other skill areas, his progress increased at a steady rate throughout the intervention. It would appear that he made most progress in the first two weeks of the intervention as he learnt, or began to use, new skills and that these then developed and became more refined as the intervention progressed.

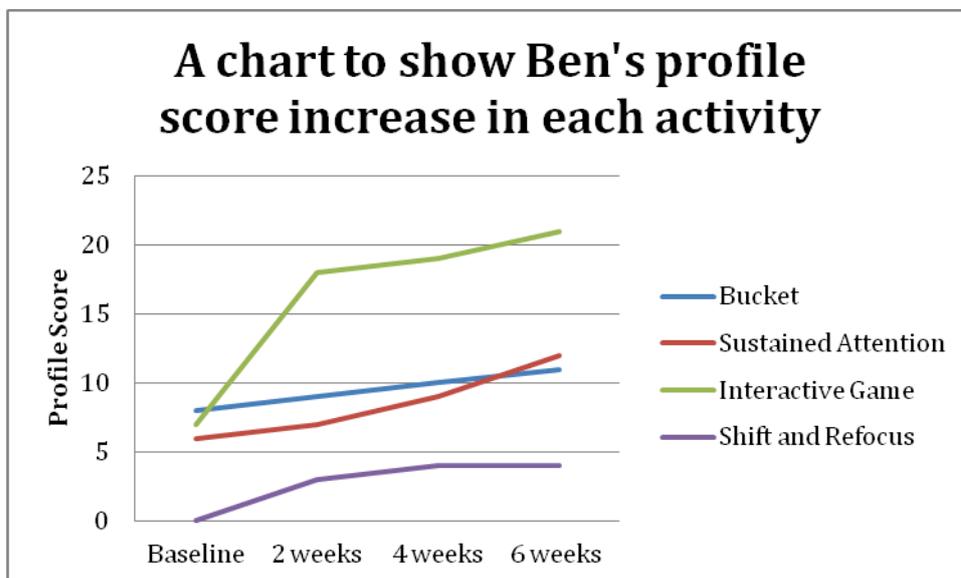


Figure C

Ben had the lowest baseline score to begin with and had a score of 0 for shift and refocus skills. His baseline score was 33 and this increased by 27 points to 60 at the end of the six weeks. Figure C shows that he made steady progress throughout the six weeks in the area of bucket. However, in shift and refocus and particularly the interactive game, he made very good progress during the first two weeks which then reached a plateau in the following weeks. Conversely, for sustained attention he progressed slowly during the first two weeks and then improved more in the final four

weeks. Ben's overall progress does not show a clear leap during any of the time gaps, and it would appear that he was developing skills in one area at a time.

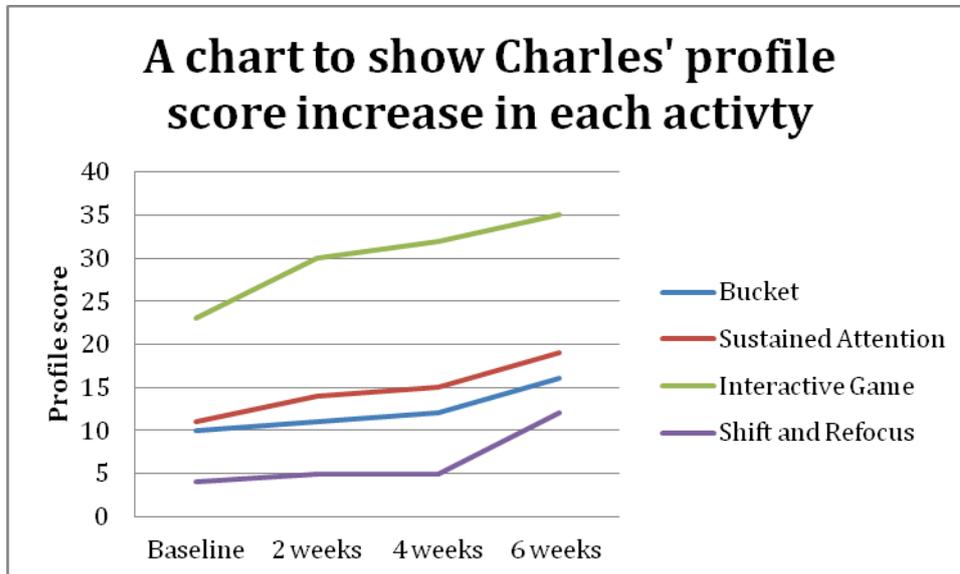


Figure D

Charles had an above average baseline score of 60 which increased by 34 points. Charles varies from the previous two pupils as in all areas, except the interactive game, he made steady progress until the final two weeks, as seen in figure D. As he had a higher baseline score in these areas, it would suggest that he in fact was practicing skills that he already had throughout the first four weeks, and he then made good improvements in his skills during the final two weeks. In the interactive game skills Charles made a leap of seven points in the first two weeks before his progress became more evened out.

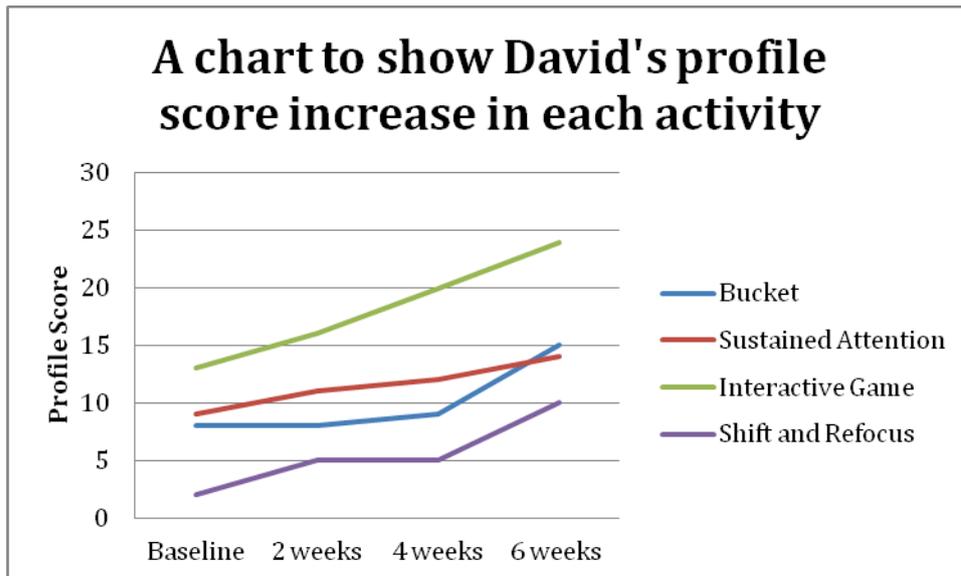


Figure E

David's baseline score was 44, again below average and he made slightly below average progress throughout the six weeks, increasing his score to 75 points. In figure E we can see that David made more progress during the first two weeks and the final two weeks, and it would appear that in the middle of the intervention his progress plateaued or increased slightly in all areas. David, it would appear improved skills immediately and then took time to practice these skills, before moving on to new skills.

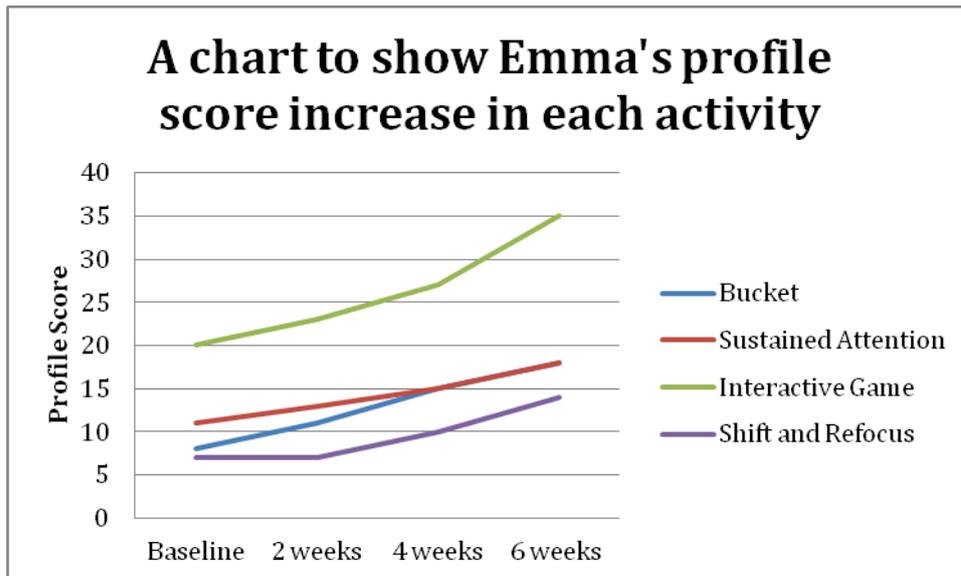


Figure F

Emma had a higher than average baseline at 58 and made good overall progress, with a point increase of 39. Looking at Figure F we can see that, again, she appears to have made little progress in the first two weeks, and that after that her progress increased. This supports the suggestion that pupil's take time to process and practice skills before making progress in new areas.

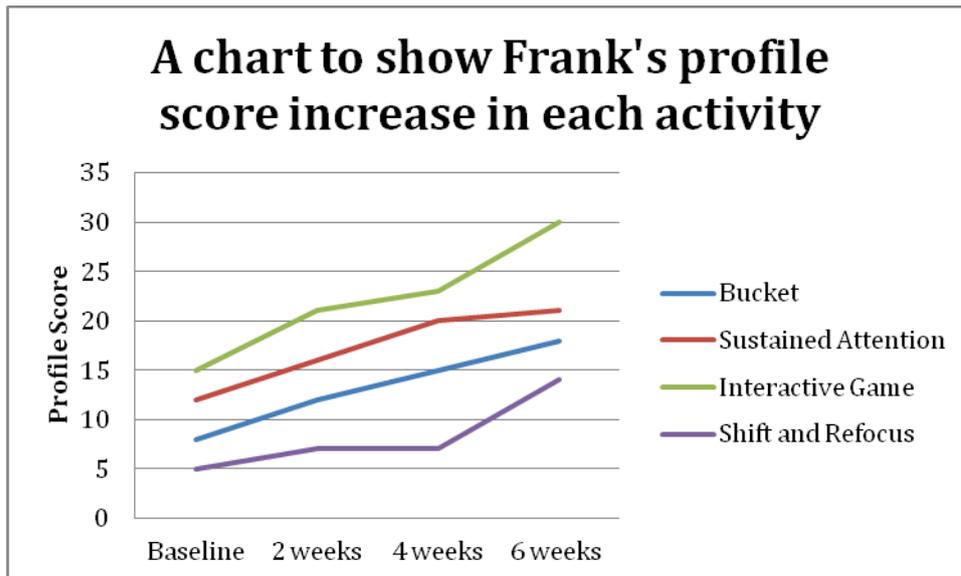


Figure G

Frank had a fairly average baseline score of 52, but made the most progress of all of the pupils with a point increase of 43 by the end of the intervention. Figure G shows us that he made steady progress in bucket, sustained attention and shift and refocus skills throughout the first four weeks. His progress in sustained attention then slowed but in all other areas in the final two weeks he had large score increases. By this point, in all areas other than shift and refocus he was reaching the maximum points for each area. In the area of the interactive game he made good progress during the first two and the final two weeks.

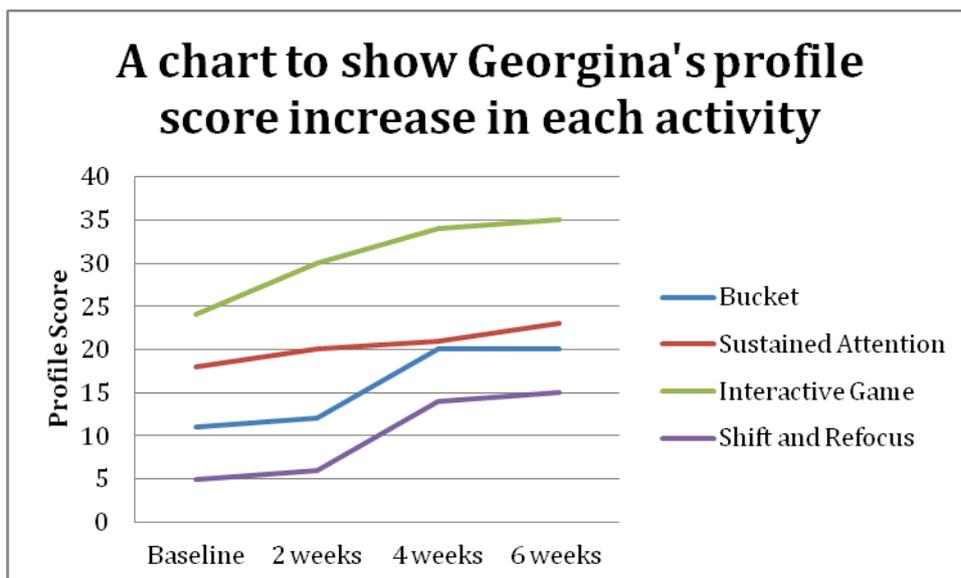


Figure H

Georgina had the highest baseline score of the sample group. Her baseline score was 70 and this increased to 105 by the end of the six weeks. By the end of the intervention Georgina had the maximum points in the section of the assessment and was one point from the maximum in both the sustained attention and interactive game. This would go some way to explain how her progress tailed off during the final two weeks according to this figure. However, it is possible that she was continuing to make progress that was not assessed on the assessment sheet. Georgina was the only pupil to make the most progress during the middle two weeks of the intervention.

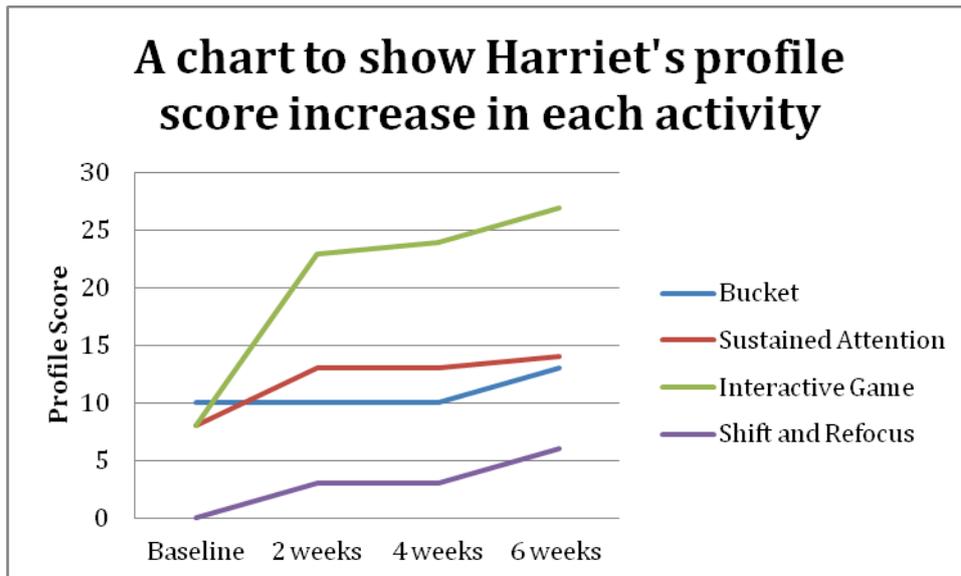


Figure I

Harriet had a lower than average baseline score of 38 but made average progress to result in a final score of 72. She began with no points in the area of shift and refocus skills, but following the intervention had six points in that area. She made particular progress in the first two weeks in interactive game skills. This would suggest that these were skills that she had, but that she had not yet learnt to use in the context of joint attention. Harriet followed the pattern of an increase in skills during the first two and the final two weeks, again supporting the suggestion that pupils need to practice and consolidate skills before displaying new ones.

Looking at these results I can see that while all of the pupils developed their skills at different rates, and at different times during the intervention, most of the pupils in this sample showed a greater increase in their points during the final two weeks of the intervention. This suggests that there was a need to practice earlier skills for a sustained period of time before further skills could be learnt. It could also suggest that skills that are practiced in the later activities support the development of earlier skills.

Individual Areas

I would now like to look at the pupils' progress in each activity and skill area to see if there were any particular areas that were supported by this intervention. Table 1 shows us an overview of the point increase for each activity. From this I can see that the greatest point increases were in the interactive game activity and the bucket activity. I will now look more closely at each individual activity.

A table to show the point increase for each activity from baseline to six week assessment

	<u>Baseline point score</u>	<u>6 week assessment point score</u>	<u>Point increase</u>	<u>% increase</u>
Orientation (Bucket)	9	16	7	34%
Sustained Attention	10	17	7	27%
Shift attention (Interactive Game)	16	29	13	38%
Shift and Refocus	3	10	7	29%

Table 1

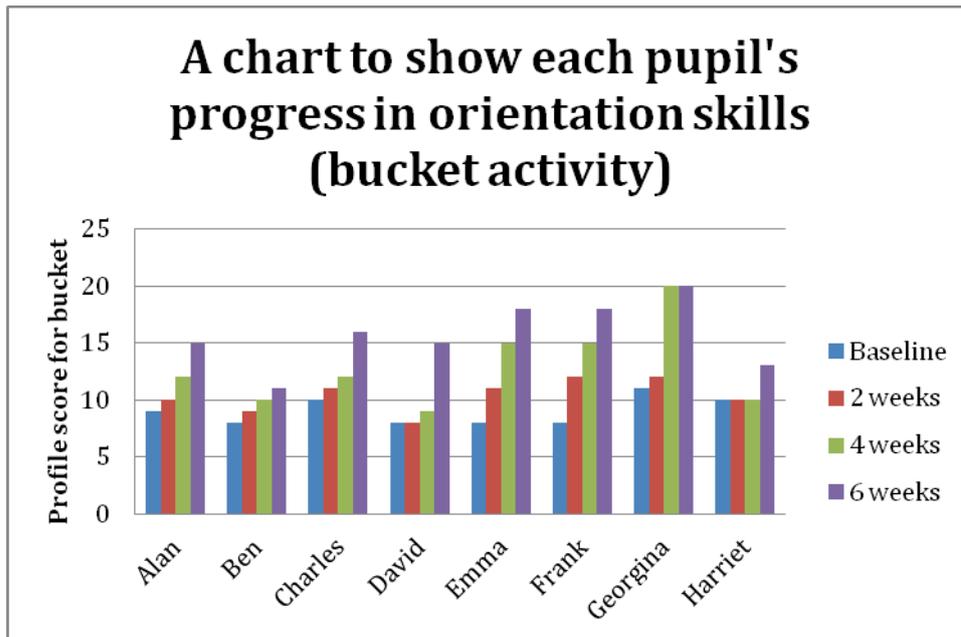


Figure J

I will begin by looking at the progress made in orientation skills, through the bucket activity. Looking at Figure J we can see that all pupils made progress in these skills. Most pupils made steady progress during the first four weeks and then made a larger point increase in the last two weeks. The only pupil who did not make progress in this area in the last two weeks was Georgina, and this is because she had already reached the maximum points for this section at week 4. Table 1 tells us that at the baseline the average point score for this section was 9. This increased during the six weeks by 34% to 16. This was the first group of skills that all of the pupils were working on improving. There was a total of 20 points in this section and at the baseline 4 pupils scored 8, 1 pupil scored 9, 2 pupils scored 10 and 1 pupil scored 11. At the end of the intervention 1 pupil had achieved 20 points and 2 pupils had achieved 18 points. This is a great improvement, and suggests that the development of these skills were vastly supported by the intervention, for most of the pupils.

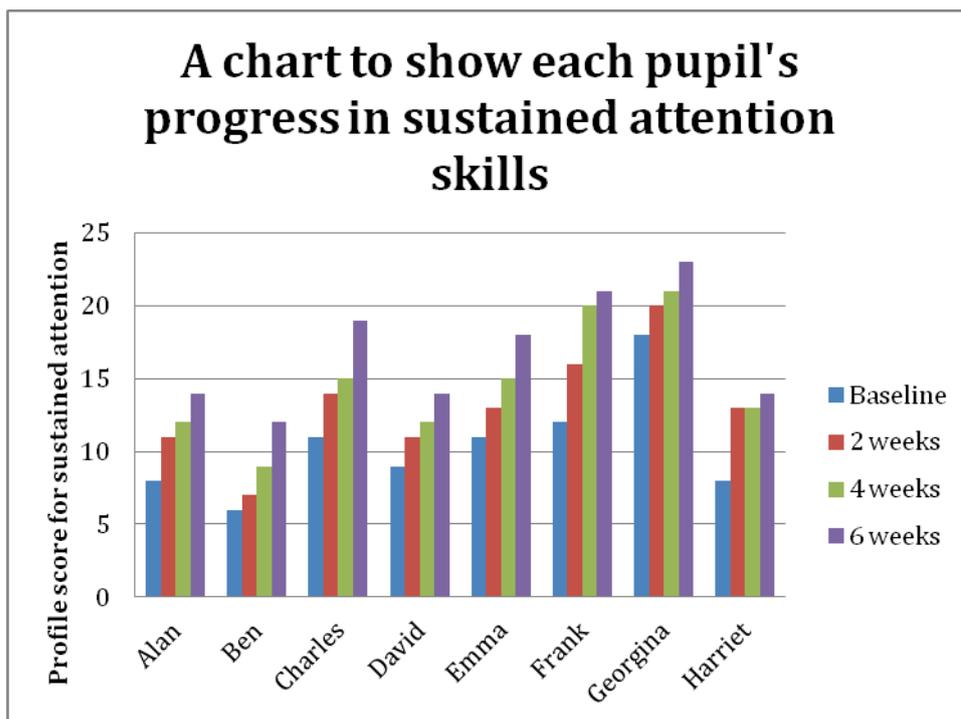


Figure K

Figure K shows the progress made by each pupil in the area of sustained attention. We can see that all pupils made progress in this area, and for most pupils this progress was fairly steady throughout the six weeks. Looking at Table 1 we can see that the area of sustained attention showed the least increase in point scores. At the baseline the average score was 10 points, which increased by 27% to 17 points. One reason that this area may not have shown such a great increase is that one of the assessment criteria is to be able to “focus and sustain attention for a range of attention building activities that are less motivating”. This is a transition from the use of highly motivating resources and activities, to more everyday activities. However, I do feel that with more time many of the pupils in this sample would show more progress in this area.

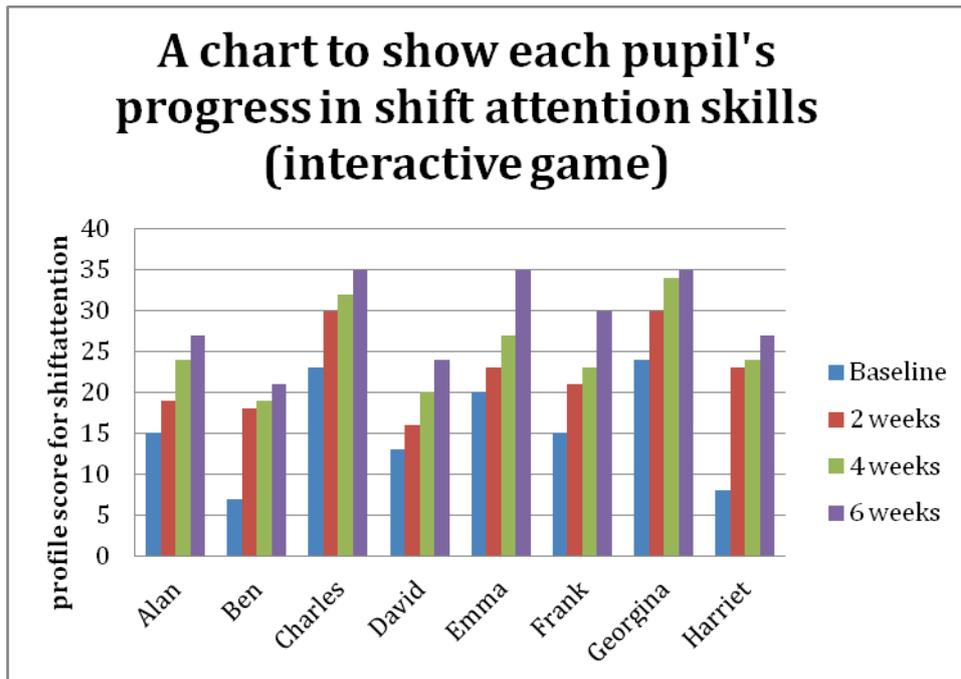


Figure L

Table 1 has shown us that shift attention skills showed the greatest increase in points throughout the intervention. The average baseline score for this skill was 16 which increased by 38% to 29 at the end of the intervention. Figure L shows us that a number of the pupils made a large leap in this skill during the first two weeks. This again, suggests that these are skills that the pupils already had, but had been lacking the motivation or appropriate situation to show and develop them. There are also more sections for assessment in this section, which allowed a more thorough assessment of the small steps that pupils were taking towards this skill. Many of the pupils found this activity highly motivating as it was at this point in the intervention when they were able to take part and not just watch anymore. I feel that this motivation to join in the activity has also played a part in them developing their skills at an increased rate compared to other areas.

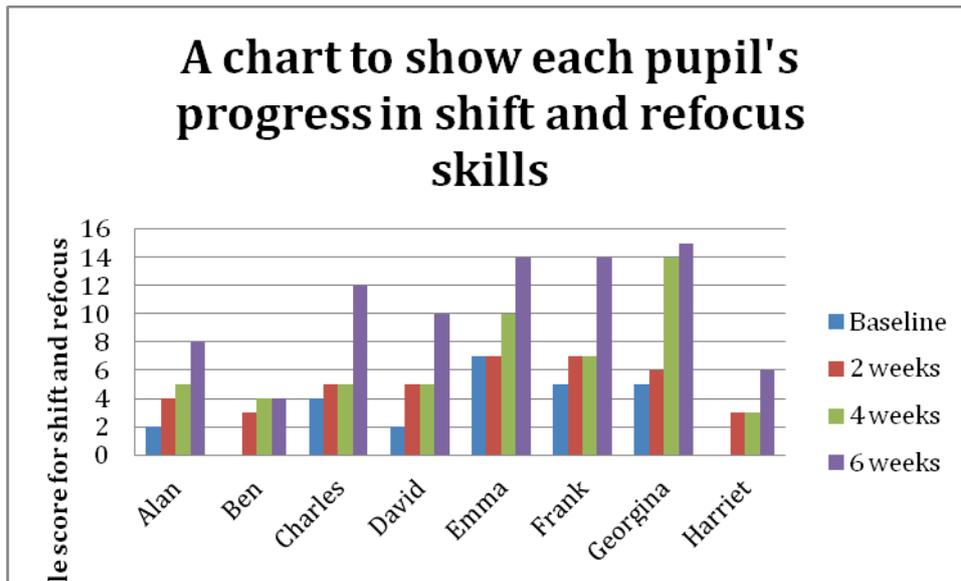


Figure M

The shift and refocus activity was the final activity to be introduced, and represents the culmination of previous skills, as well as introducing new skills to be learnt. Table 1 shows us that this was a low scoring section of the assessment sheet with an average baseline score of 3. However, there was a 30% increase in scores over the six week period, to end with an average score of 10. It is clear to see from Figure M that progress was made most sharply in the final two weeks of the intervention, and this is when the shift and refocus activity was focused on. As mentioned in the introduction to this chapter, there were some areas of the assessment sheet that were not fully covered in the six week timescale, and the shift and refocus activity was one of these. We did not cover sharing an activity with either an adult partner or a peer, and so pupils were limited in the points that they could achieve for this section.

I can see that all the areas of joint attention skills that the assessment sheet covered improved during the six week intervention. Some areas improved more than others

and I have discussed reasons as to why this might be. I have also suggested that with a longer timescale, greater improvements may have been seen in other areas.

The effect of the baseline score

I am interested to see how the original baseline of joint attention skills is reflected in the progress made during this intervention. I would like to see if a higher (or lower) baseline shows a greater improvement in skills.

A table to show point increases at the six week assessment, related to baseline scores.

<u>Child</u>	<u>Baseline Point Score</u>	<u>6 Week Point Score</u>	<u>Point Increase</u>
Ben	33	60	27
Harriet	38	72	34
David	44	75	31
Alan	46	76	30
Frank	52	95	43
Emma	58	97	39
Charles	60	94	34
Georgina	70	105	35

Table 2

Table 2 organises the point score increase by the baseline point scores (starting with the lowest baseline). It would appear to show that the point increase spikes in the middle of the sample group. This suggests that the pupils who made the most progress are those in the middle of the sample, who had an average (from this group) baseline of skills from which to work on. Those below this average group (except Harriet, who appears to buck this trend) made less than average progress. This could be because these pupils were working on the earliest joint attention skills, and needed more time to practice and consolidate these skills. Those pupils who were above the average

group (Charles and Georgina) saw a drop in point increase. This could be because they were reaching the end of the assessment sheet, and in fact were increasing their skills but these increases were not being recorded. It could also be that they already had many of the basic skills necessary at the baseline and therefore did not make so much progress with the early skills. For this sample, the intervention was most successful for pupils in the middle section of the group as they made the most progress.

Are the skills learnt transferrable to other times of the day?

I will now use both quantitative and qualitative data to assess how well the pupils in the sample were able to transfer the joint attention skills that they learnt through the intervention to other contexts and situations. For the quantitative data I will be using the final assessment box for each area. I shall compare this to progress within this area and overall progress. I will also be using qualitative data from my own reflective journal and general classroom observations to see if the skills were seen in other areas of the day. Initially I shall look any general patterns that appeared, before looking at each skill area separately. I will look at each area to see how the skills were transferred, at what point during the intervention these skills were seen outside of the intervention and what skills appear to be a pre-requisite to being able to transfer the skills.

General Patterns

A table to show total “everyday use” points throughout the intervention

<u>Child</u>	<u>Baseline</u>	<u>2 week assessment</u>	<u>4 week assessment</u>	<u>6 week assessment</u>
Alan	0	0	2	6
Ben	0	0	0	1
Charles	0	0	0	9
David	0	0	0	7
Emma	2	2	8	13
Frank	0	0	4	11
Georgina	3	5	14	15
Harriet	0	0	0	5

Table 3

My quantitative data (Table 3) shows that most of the pupils showed no evidence of transferring the skills during the baseline and 2 week assessment. The two exceptions to this are Emma, who scored a 2 (developing skill) in the shift and refocus activity in both the baseline and 2 week assessment and Georgina who scored a 3 (frequently showing skill) at baseline and 2 week assessment in sustained attention and a 2 at the 2 week assessment in the Interactive Game. For all other pupils, the quantitative data shows no transfer of skills before the 4 week assessment. This is backed up by my qualitative data where there was very little evidence of skills being used throughout the day. However it was reported that pupils were “paying more attention”, “more engaged during circle time for short periods” and “showed more awareness of adult input during 1:1 work”. This suggests that while the skills were not being used in other contexts, they were beginning to cause pupils to be more attentive and aware throughout the day even at an early stage of the intervention. I would suggest that this result means that pupils need to consistently develop skills during the intervention before they are able to transfer these skills to other contexts. This is supported by my data, which shows that pupils need to be achieving 4 points in skill areas (consistently

using the skill) before they were able to successfully transfer skills. It also appears that it is important that pupils had developed (or begun to develop) skills across the skill area before they begin to transfer them. Table 4 shows that there was evidence that a higher baseline score resulted in the skills being transferred across different contexts more. Those pupils in the sample who had above average baseline scores (above 50) appear to have a significantly increased score for everyday use at the 6 week assessment.

A table to show the relationship between baseline point score and the transfer of skills at week 6.

<u>Baseline Point Score</u>	<u>Everyday use score at week 6</u>
33	1
38	5
44	7
46	6
52	11
58	13
60	9
70	15

Table 4

All four skill areas scored a similar amount of points at the 6 week assessment for everyday use, I will now look at each skill area separately.

Orientation (Bucket)

In the orientation (bucket) skill area the everyday use assessment was “focuses attention on objects presented by an adult, e.g. a whisk used in cookery, or a paintbrush in art”. All of the pupils achieved at least a score of 1 (emerging skill) by the end of the intervention. Half of the sample did not show this until the final

assessment. Pupils with a baseline of less than 50 did not achieve more than 2 points in this area and only one pupil from the sample scored a 4. Two of the pupils (Alan and Harriet) achieved just a 1 for this section and these two pupils had the lowest baseline scores. They also showed slow progress in developing the other skills in this section. Georgina scored a 4 in this area, and she had maximum points for this section in total. Two pupils scored a 3 in this area, and both of these pupils had consistently scored 4s and 3s in the other skills in this area. These results suggest that, for this skill, pupils need to develop and practice the necessary skills during the intervention before they begin to use them in other contexts. It also suggests that these skills begin to emerge in other contexts before they are consistent during the intervention. Qualitative data (Table 5) describes some of the ways in which these skills were presented throughout the day. This supports the suggestion that skills were transferred to other contexts for each pupil, at their own level.

Table to show ways in which bucket skills were seen in other contexts

<u>Pupil</u>	<u>6 week score</u>	<u>Description of behaviour (week shown)</u>
Alan	2	“looked briefly at a puzzle presented by an adult” (week 5)
Ben	1	“showing awareness of adult presenting equipment to him” (week 6)
Charles	2	“during 1:1 work focused attention on some bricks for a short period of time” (week 6)
David	2	“able to look at apparatus shown to him, when there is little distraction around” (week 4)
Emma	3	“looked intently at the mixer the adult was demonstrating” (week 3)
Frank	3	“looked carefully at a range of paintbrushes of different sizes the adult showed him, before making a decision” (week 2)
Georgina	4	“focused her attention on all equipment used during whole cookery session” (week 3)
Harriet	1	“paid attention to highly motivating object shown to her by an adult during choose time” (week 5)

Table 5

Sustained Attention

The skill that was assessed in everyday use for sustained attention was the ability to “sustain attention in structured activities led by an adult”. A similar pattern was seen as for the bucket skills, in that pupils with a below average baseline score took longer to show the skills in other contexts and those pupils with an above average baseline score showed greater progress, and more consistently applied the skills. One pupil (Ben) scored no points in this area, and this was reflected in the qualitative data. Again, Georgina performed well in this area and at the baseline she scored a 3. She was the only pupil to have any score before the 4 week assessment and progressed to gain a 4 in this area. However, she had a very good overview of all of the skills in this area, with a score of 23 (out of a possible 24) at the end of the intervention. This further supports that suggestion that as pupils develop and apply the skills in the intervention, the skills are seen more across other contexts. Only one pupil (Emma) gained a 3 in this area, and again she showed an emerging consistency across the skills during the intervention. Table 6 shows some examples of ways that sustained attention skills were shown in other contexts.

Table to show ways in which sustained attention skills were seen in other contexts

<u>Pupil</u>	<u>6 week score</u>	<u>Description of behaviour (week shown)</u>
Alan	2	“paid attention to adult led activity in circle time for a short period” (week 5)
Ben	0	“showed little attention during circle time, however stayed in the circle for a sustained period of time” (week 6)
Charles	2	“enjoyed a highly motivating adult led activity (singing toys) during group work” (week 4)
David	2	“sustained attention during register song until his turn (3 rd)” (week 4)
Emma	3	“focused on adult model during 1:1 work” (week 5)
Frank	2	“allowed an adult to take the lead during group work session” (week 4)
Georgina	4	“focused on adult leading assembly for most of the time” (week 5)
Harriet	1	“looked briefly at adult during circle time” (week 5)

Table 6

Shift Attention (Interactive Game)

It was previously discovered that the skills necessary for the interactive game were most improved by the intervention. It was suggested that this was because the pupils in the sample already had the skills, but had previously lacked the social motivation to use them in a joint attention situation. It was also suggested that this activity was highly motivating for many of the pupils as they were able to join in. For everyday use I was looking for the ability to be able to “tolerate turn-taking in structured group activities”. This was likely to be seen during circle times and group work activities. Table 7 shows some examples of how the skills were seen. For some pupils this involved taking turns with an adult, for others it involved taking turns with one or more peers with adult support. The majority of the sample (6 out of 8) did not show any sign of this skill even emerging until the final weeks of the intervention. The four

pupils who scored less than average at the baseline showed only emerging and developing (one pupil) skills in everyday contexts, whereas all four pupils who scored above average at baseline all scored a 3 (frequent) skills in everyday contexts. Again, these pupils who were frequently using the skills outside of the intervention, had consistently developed the skills within the intervention before using them in other contexts during the final weeks. One pupil (Ben) scored a 0 in this section and while he was developing skills during the intervention, he was not yet consistent for many of these skills. Similarly the two pupils who achieved a score of 1 (Alan and Harriet) were still developing their skills during the intervention and were not yet consistently using them within the setting of the intervention.

Table to show ways in which interactive game skills were seen in other contexts

<u>Pupil</u>	<u>6 week score</u>	<u>Description of behaviour (week shown)</u>
Alan	1	“tolerated highly structured turn taking activity with adult” (week 6)
Ben	0	“got very angry during turn taking activity with 1 adult” (week 6)
Charles	3	“allowed a friend to take a turn on the computer game” (week 5)
David	2	“allowed an adult to have a very short turn with his preferred toy” (week 6)
Emma	3	“played a turn taking game with a friend with minimal verbal support” (week 3)
Frank	3	“with a visual schedule took turns playing with the playdough with a friend” (week 5)
Georgina	3	“waited for her turn during circle time until the last go” (week 4)
Harriet	1	“with visual support took turns with a musical instrument for a short period of time” (week 5)

Table 7

Shift and Refocus Attention

The skills used in this area are very important and useful skills that allow the pupils to follow a model to work independently. For the assessment sheet we were looking for pupil to “use demonstration and imitation as learning strategies”. For many pupils these skills were not shown in other contexts until the final weeks of the intervention. This is as expected since, as previously discussed, the shift and refocus activities were not introduced until later in the intervention. One pupil (Emma) scored a 2 at both the baseline and 2 week assessment, and she continued to develop these skills and finished the intervention with a score of 4. This suggests that with time to practice these skills, they can be transferred in to other areas. There was, once again a clear divide that showed that pupils who had a higher score at baseline, proceeded to transfer the skills to everyday use than those who scored less than average at the baseline. The emerging skills that were displayed by these pupils were generally during 1:1 sessions, either during structured work times, or unstructured play times. Table 8 describes some of the ways in which the skills were seen during the day. We can see that even the pupils who had low scores on the assessment sheet, were beginning to use the skills that they were learning through the intervention.

Table to show ways in which shift and refocus skills were seen in other contexts

<u>Pupil</u>	<u>6 week score</u>	<u>Description of behaviour (week shown)</u>
Alan	1	“placed bricks as modeled by an adult, directly afterwards” (week 6)
Ben	0	“watched adult model, but showed little interest in recreating it himself” (week 5)
Charles	2	“in the ‘toys’ area copied an adult playing with the cars ” (week 6)
David	1	“during 1:1 work copied an adult model to sort objects” (week 6)
Emma	4	“copied the procedures that an adult had modeled during circle time to create a piece of art work” (week 3)
Frank	3	“copied an adult to join in a game on the playground” (week 5)
Georgina	4	“copied an adult model to complete a practical maths task independently” (week 4)
Harriet	2	“watched carefully as an adult coloured in a picture, and attempted to colour her own” (week 6)

Table 8

By looking at each skill area separately it has become apparent that there are certain themes that have run through these results. That is that:

- pupils with a higher baseline score proceeded to transfer their skills more successfully (although not necessarily more quickly) across other areas of the day.
- it was important for pupils to practice and consolidate skills during the intervention before they begin to use the skills in other contexts.
- pupils needed to have a solid and consistent overview of most of the skills in a section before they were able to effectively use them in other contexts.

Comparisons with previous studies

This study supports previous research discussed that suggested that some pupils on the autism spectrum have the skills necessary for joint attention, but lack the motivation to use them to share attention with another person (Jones et al. 2006 and Vismara et al. 2007). The use of motivating objects and activities in this study increased the joint attention skills presented, but the objects and activities were not given to the pupils themselves. This supports the suggestion that while a preference for a stimulus increases joint attention, access to the stimulus is not necessary (Dunst et al. 2011, Naoi et al. 2008 and Vismara et al. 2007). The intervention provided natural consequences when pupils used joint attention skills and the use of social attention as a consequence was successful, without the need for a tangible reward (Taylor et al. 2008). Jones et al. (2006) also found that when attempting to facilitate the generalisation of joint attention skills it was beneficial to use an intervention that is based in a natural environment, by known adults and with natural consequences.

The previous study in to the Attention Autism Approach (Morgan, 2011) agreed that the approach was beneficial to all pupils that took part, at their own level. It was found that the preschool pupils who had lower skills initially benefitted more from the intervention than the others. However I found that in my sample, pupils who were in the middle of the sample (those who did not have the lowest or the highest initial skills) increased their skills more. Morgan (2011) also found that the pupils found generalisation difficult, but agreed that pupils with a higher initial baseline were more able to generalise the skills learnt to other areas.

Biases and Limitations

It is important that I recognise the limitations of the study and that I identify any of my own biases that may have affected the results.

This was a very small scale study, with a small sample and a short time frame. While I have reported the results that I have found, and made suggestions as to the reasons why I found these results with this sample of pupils, it is impossible to generalise these to the wider population without further research. It was also conducted over a short time frame, and while this allowed the study to stay concise, it would have been useful to extend the study to see if further progress was made, and also to conduct a follow up assessment to see if progress was sustained.

There was no control group within this study and as such it is hard to say whether the pupils would have made this progress anyway, without the intervention. However, with knowledge of the sample and their previous progress, and the rapid rate of improvement in joint attention skills shown, I feel that much of the progress can be attributed to the intervention.

It is possible that through the use of the intervention, and through seeing its positive effects, that I have changed my teaching style across the day. This would mean that pupils were not only learning and practising the skill during the set time for the intervention, but at other points of the day as well. However, I do not see this as a negative and more as an improvement to my own teaching.

The children in the sample were well known to me and it is possible that this would have affected my data collection. It is possible that another observer would have seen different behaviours and skills and assessed them differently on the assessment sheet. However I have tried to be as objective as possible throughout the study.

CONCLUSION AND IMPLICATIONS

In this final chapter I shall begin by considering changes that I would make to the study if I were to repeat it. I will then discuss the findings of the study before suggesting some implications of this study on my own practice. I shall conclude by considering some further areas of research on this subject.

Conclusions

The study was successful, and I am happy with the design that I choose to use. A case study worked well and the assessment sheet allowed me to gather quantitative data, without being too time consuming. It was definitely beneficial to use this assessment sheet alongside the qualitative data, as this qualitative data provided a more personalised view and allowed me to observe small steps achieved by pupils. If I were to repeat this study there are, however, some changes that I would make. I would have allowed a longer time scale in order to fully answer my research questions. The time scale used worked very well for my first question, regarding the development of joint attention skills, but for my second question a longer time scale would have allowed the skills to develop further in order to be generalised to other contexts. I would like to have adapted the assessment sheet more to suit the needs of the study, and I would like to try to make each section have the same number of points to make them comparable. It would have been useful to have more precise definitions for the scoring system, so that another person would assess exactly as I did.

From my own observations it was very clear to me that all of the children enjoyed the intervention and participation in the sessions grew as the intervention progressed. This was backed up by members of the senior management team, and other teaching staff. The children were excited when I reached for my bucket, and would often sing my opening song at me as a way of requesting a session. The group shared laughs and excitement, which previously they did not do. It was also great to hear some of the more able pupils begin to talk about something that had happened during the intervention, to an adult or to a peer.

Further, my results show me that the Attention Autism approach had a beneficial impact on the development of their joint attention skills. All children showed progress in the development of their skills, but they all developed at different rates. Most of the progress was seen in the final two weeks of the intervention. It is possible that this is because the pupils needed to practice new skills that they acquired, before they were able to learn new ones. By looking at the initial baseline scores I can see that pupils with an average baseline score made the most progress from this intervention. However, it is important to note that pupils with a lower baseline still made good progress and developed their skills substantially. Pupils with a higher baseline also made good progress, and it is possible that they made better progress than is reflected in the data as they were reaching the end of the assessment sheet and were therefore making progress beyond the observed skills.

In relation to the generalisation and transferability of the skills I did not see as much progress as I expected. However many of the pupils were beginning to use the skills that they had learnt in other settings, and I believe that with more time and more

practise this would increase further. There was no significant use of the skills before the four week assessment using the quantitative data, but using the qualitative data it was clear that there were some emerging skills in this time. I would suggest that these skills were not seen immediately in other contexts as the pupils needed to develop and practise the skills many times before being able to begin to use them in other contexts. Pupils with a higher baseline score showed more ability to generalise the skills learnt to other contexts. This could be because there is a need to have a higher level of skill within the intervention before skills are transferred.

Implications for practice

The main implication for my practice from this study is the recognition that many pupils that I am teaching are not developmentally ready to be taught as a whole group. They need to be taught these skills, and allowed time to practise and develop them. There is no point in me trying to disseminate important information during circle time, when the pupils are not able to listen and take it in. Therefore I shall place a higher emphasis on developing pupils learning skills.

Following on from this study I will continue to use the Attention Autism approach with this class, and future classes of children as appropriate. It is important for me to recognise when this intervention is appropriate, and to allow time in the school day for it to occur.

I have found that through using this intervention, my teaching style across the whole day has changed. There are several attributes of the Attention Autism approach that I have felt beneficial in other areas and I believe that this has improved my practice. For example, the use of whiteboards to create a visual schedule and the reduction in language. Most importantly I have rediscovered how important it is to have fun with a class and to share laughs together.

I have shared both the intervention, and the resulting change in teaching style, with both my class team, and the other teaching staff in my school. I hope that this intervention will be used across the school to provide an alternative approach for all the children who would benefit from it.

Implications for future research

Following on from this study there are several areas that I would like to further research into the Attention Autism approach. Morgan (2011) looked at the approach with preschool children in a mainstream setting. I would like to look more closely at how the approach can be used for pupils of different ages and when it is most beneficial and appropriate. Following on from that I would like to complete a follow up study, in two to five years, to assess how the joint attention skills of pupils who have previously taken part in the intervention compare to those who have not. I think that this intervention could be used across a range of age groups and would be interested in how to make it age appropriate for groups of older pupils. In my results I found that pupils with average baseline scores made the most progress. I would like to

do more work to assess which groups of pupils, with which particular needs, benefit the most from this intervention, and to see if there are any adaptations that could be made to make it more beneficial to other pupils.

I believe that there is more work to be done in relation to the transfer of skills. In my study I saw the skills learnt beginning to emerge in everyday life and I would like to take this further to see whether over a longer time scale these skills continued to develop and become useful skills.

Ideally I would replicate this study with a larger sample to see if the same results were found.

REFERENCES

Adamson, L. B., Bakeman, R., Deckner, D. F. and Ronski, M. (2009) Joint engagement and the emergence of language in children with autism and Down syndrome *Journal of Autism and Developmental Disorders*, **39**, pp. 84–96

American Psychiatric Association (1994) *Diagnostic and statistical manual of mental health disorders (4th ed)*, Washington DC: American Psychiatric Association

Bakeman, R., & Adamson, L. (1984) Coordinating attention to people and objects in mother- infant and peer-infant interaction *Child Development*, **55**, pp. 1278-1289

Bassey, M. (1981) ‘Pedagogic research: on the relative merits of the search for generalization and study of single events’, *Oxford Review of Education*, **7**(1), pp. 73 - 93

Bell, J. (2010) *Doing Your research Project: A guide for first-time researchers in education, health and social science (5th ed.)* Maidenhead: Open University Press

Bellon, M.L., Ogletree, B.T. & Harn, W. (2000) Repeated storybook reading as a language intervention for children with autism: A case study on the application of scaffolding *Focus on Autism and Other Developmental Disabilities*, **15**, pp. 52-58.

Biggam, J. (2008) *Succeeding with Your Masters Dissertation: A Practical Step-by-Step Handbook*. Berkshire: Open University Press

Blaxter, L., Hughes, C. and Tight, M (1996) *How to research.* Buckingham and Philadelphia: Open University Press

Brown, S. and McIntyre, D. (1981) An action-research approach to innovation in centralized educational systems, *European Journal of Science Education*, **3** (3) pp. 243- 258

Burgess, R. (1982) (ed.) *Field Research: A sourcebook and Field Manual.* London: George Allen and Unwin

Charman, T. (2003) Why is joint attention a pivotal skill in autism? *Philosophical Transactions of the Royal Society of London Series B – Biological Sciences*, **358**, pp. 315-324.

Charman, T., Swettenham, J., Baron-Cohen, S., Cox, A., Baird, G. and Drew, A. (1997) Infants with autism: An investigation of empathy, pretend play, joint attention, and imitation, *Developmental Psychology*, **33**, pp. 781–789

Charman, T., Baron-Cohen, S., Swettenham, J., Gillian, B., Drew, A. and Cox, A. (2003) Predicting language outcome in infants with autism and pervasive developmental disorder *International Journal of Language & Communication Disorders*, **38**, pp. 265–285

Cohen, L. and Manion, L. (1994) *Research Methods in Education.* London: Routledge

Creswell, J. (2003) *Research Design: Qualitative, Quantitative and mixed method approaches.* London: Sage Publications

Davies, G (2010a) Autism Residential Study Weekend *Attention Autism: Gaining and Maintaining Attention* (Lecture) March 27, Birmingham: University of Birmingham

Davies, G (2010b) *Attention: Getting it, keeping it, sharing it* (Workshop) November, Guildford: St. Saviours Church

Dunst, C., Trivette, C. and Masiello, T. (2011) Exploratory investigation of the effects of interest-based learning on the development of young children with autism *Autism* **15** pp. 295 – 305

Denscombe, M. (2003) (2nd Ed.) *Good Research Guide: For Small- Scale Research, Projects.* Maidenhead: Open University Press

Denscombe, M. (2007) (3rd Ed.) *Good Research Guide: For Small- Scale Research, Projects.* Maidenhead: Open University Press

Denscombe, M. (2010) *Ground Rules for Good Research: Guidelines for Good Practice.* Buckingham: Open University Press

Elsabbagh, M., Volein, A., Holmboe, K., Tucker, L., Csibra, G., Baron-Cohen, S., Bolton, P., Charman, T., Baird, G. & Johnson, M.H. (2009) Visual orienting in the early broader autism phenotype: Disengagement and facilitation *Journal of Child Psychology and Psychiatry*, **50**, pp. 637-642.

Flick, U (2009) *'An Introduction to Qualitative Research'* London: Routledge

Gabriels, R. (2002) Therapy: Laying the foundations for individual and family growth.
In: Gabriels, R. and Hill, D. (eds.) Autism: From research to Individualized Practice.
London: Jessica Kingsley Publishers pp. 91 – 126

Hanbury (2005) *Educating Pupils with Autistic Spectrum Disorders: A practical guide*, London: Paul Chapman Publishing

Handen, B., McAuliffe, S., Janosky, J., Feldman, H. and Breaux, A. (1998) A playroom observation procedure to assess children with mental retardation and ADHD *Journal of Abnormal Child Psychology*, **26**, pp. 709 – 727

Hitchcock, G and Hughes, D (1989) *'Research and the Teacher.'* London: Routledge

Howe, K. (1988) Against the quantitative – qualitative incompatibility thesis: or dogmas die hard *Educational Researcher* **19** pp. 10 - 16

Humphrey, N and Parkinson, G (2006) Research interventions for children and young people on the autistic spectrum: a critical perspective. *Journal of Research in Special Educational Needs* **6**, (2) pp. 76 – 86

Hwang, B., & Hughes, C. (2000) Increasing early social-communicative skills of preverbal preschool children with autism through social interactive training *Journal of the Association for Persons with Severe Handicaps*, **25**, pp. 18-28.

Jones, E. A., Carr, E. G. and Feeley, K.M. (2006) Multiple effects of joint attention intervention for children with autism *Behavior Modification*, **30**, pp. 782–834

Lawson, W. (2002) Autism: a matter of attention, *Good Autism Practice Journal*, **Oct**, pp. 38 – 42

Lord, C., Wagner, A., Rogers, S., Szatmari, P., Aman, M., Charman, T., Dawson, G., Durand, V.M., Grossman, L., Guthrie, D., Harris, S., Kasari, C., Marcus, L., Murphy, S., Odom, S., Pickles, A., Scahill, L., Shaw, E., Siegel, B., Sigman, M., Stone, W., Smith, T. & Yoder, P. (2005) Challenges in evaluating psychosocial interventions for autistic spectrum disorders *Journal of Autism and Developmental Disorders*, **35**, pp. 695-708.

Loveland, K. A. and Landry S.H. (1986) Joint attention and language in autism and development language delay *Journal of Autism and Developmental Disorders*, **16**, pp. 335–349

Meindl, J. N. and Cannella – Malone, H. I. (2011) Initiating and responding to joint attention bids in children with autism: A review of the literature *Research in Developmental Disabilities* **32** (5) pp. 1441 – 1454

Morgan (2011) *Evaluation of Attention Hillingdon: a social communication intervention for preschoolers with autism spectrum disorder* MSc. Institute of Education, University of London.

Morrison, R.S., Sainato, D.M., BenChaaban, D. & Endo, S. (2002) Increasing play skills of children with autism using activity schedules and correspondence training *Journal of Early Intervention*, **25**, pp. 58-72.

Mundy, P., Sigman, M. and Kasari, C. (1990) A longitudinal study of joint attention and language development in autistic children *Journal of Autism and Developmental Disorders*, **20**, pp. 115–128

Mundy, P., Neal, A., & Glidden, L. (2001). Neural plasticity, joint attention, and a transactional social-orienting model of autism. *International review of research in mental retardation: Autism* **23** pp. 139–168

Murray, D. S., Creaghead, N. A., Manning-Courtney, P., Shear, P.K., Bean, J. and Prendeville J. A. (2008) The relationship between joint attention and language in children with autism spectrum disorders *Focus on Autism and Other Developmental Disabilities*, **23**, pp. 5–14

Naber, F., Bakermans-Kranenburg, M., IJzendoorn M., Dietz, C., Daalen, E., Swinkels, S., Buitelaar, J. and Engeland, H. (2007) Joint attention development in toddlers with autism *European Child & Adolescent Psychiatry* **17** (3) pp.143 - 152

Naoi, N., Tsuchiya, R., Yamamoto, J. I. and Nakamura, K. (2008) Functional training for initiating joint attention in children with autism *Research in Developmental Disabilities*, **29**, pp. 595–609

Patten, E and Watson, L (2011) Interventions Targetting Attention in Young CHildren with Autism. *American Journal of Speech – Language Pathology (Online)* **20** (1) pp. 60 – 71

Punch, K. (2005) (2nd Ed.) *Introduction to Social Research: Quantitative and Qualitative Approaches*, London: Sage Publications

Robson, C. (2002) *real world research – a resource for social scientists and practitioner-researchers*. Oxford: Blackwell

Robson, C. (2011) *Real World Research, A resource for users of social research methods in applied settings*. Chichester: John Wiley and Sons Ltd.

Sage (2008) *The Sage encyclopaedia of qualitative research methods*. London: SAGE Publications

Schuler, A (2002) Making communication meaningful: cracking the language interaction code. In: Gabriels, R. and Hill, D. (eds.) *Autism: From research to Individualized Practice*. London: Jessica Kingsley Publishers pp. 127 – 155

Schreibman, L. (2000) Intensive behavioural/ psychoeducational treatments for autism: research needs and future directions *Journal of Autism and Developmental Disorders* **30** (5) pp. 373 - 378

Smith, T. (2001) Discrete Trial Training in the Treatment of Autism *Focus on Autism and Other Developmental Disabilities*, **16**, pp. 86-92.

Smith, L. and Ulvund, S. E. (2003) The Role of Joint Attention in Later Development Among Preterm Children: Linkages Between Early and Middle Childhood *Social Development* **12** (2) pp. 222-234

Solomons, S (2005) Using aromatherapy massage to increase shared attention behaviours in children with autistic spectrum disorders and severe learning difficulties. *British Journal of Special Education* **32** (3) pp. 127 – 137

Swettenham, J., Baron-Cohen, S., Charman, T., Cox, A., Baird, G., Drew, A., Rees, L. and Wheelwright, S (1998) The Frequency and Distribution of Spontaneous Attention Shifts between Social and Nonsocial Stimuli in Autistic, Typically Developing, and Nonautistic Developmentally Delayed Infants. *Journal of Child Psychology and Psychiatry* **39** (5) pp. 747 - 753

Taylor, B. A. and Hoch, H. (2008) Teaching children with autism to respond to and initiate bids for joint attention *Journal of Applied Behavior Analysis*, **41**, pp. 377–391

Towne, L. and Shavelson, R. J. (2002) *National Research Council Staff. Scientific Research in Education*. Washington, DC, USA: National Academies Press

Ulvund, S. E. & Smith, L. (1996) The predictive validity of nonverbal communicative skills in infants with perinatal hazards. *Infant Behaviour and Development*, **19**, pp. 441–449.

Verma, G., Mallick, V. and Neasham, T. (1998) ‘*Researching Education: Perspectives and Techniques.*’ London: Falmer Press

Vismara, L. and Lyons, G. (2007) Using Perseverative Interests to Elicit Joint Attention Behaviors in Young Children with Autism: Theoretical and Clinical Implications for Understanding Motivation, *Journal of Positive Behavior Interventions* **9** pp. 214–228.

Warren, S. F., Yoder, P. J., Gazdag, G., Kim, K., & Jones, H. (1993) Facilitating prelinguistic communication skills in young children with developmental delay. *Journal of Speech and Hearing Research*, **36**, pp. 83-97.

Whalen, C., & Schreibman, L. (2003) Joint attention training for children with autism using behavior modification procedures *Journal of Child Psychology and Psychiatry*, **44**, pp. 456-468

Whalen, C., Schreibman, L. and Ingersoll, B. (2006) The collateral effects of joint attention training on social initiations, positive affect, imitation, and spontaneous speech for young children with autism *Journal of Autism and Developmental Disorders*, **36**, pp. 655–664