

School of Psychology

**Acknowledging Individual Strengths, Interests and Needs of Pupils
with Autistic Spectrum Conditions: Questioning ‘Theory of Mind’
(A Pilot Study).**

**Abigail Chanelle Tee
C0914625**

Doctorate in Educational Psychology (DEdPsy)

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Part 1: Major Literature Review

Part 2: Empirical Study

Part 3: Reflective Summary

Declaration

This work has not been submitted in substance for any other degree or award at this or any other university or place of learning, nor is being submitted concurrently in candidature for any degree or other award.

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I would like to extend a special thank you to all of the children and young people, parents, staff and professionals who have made this study possible. Thank you to the very inspirational children and young people, who motivated me to investigate this area of research further and who continue to inspire me every day. I would also like to express my appreciation towards my supervisor, Dr Kyla Honey for her time, support and advice (and patience!) whilst supervising me.

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Summary

This thesis contains three parts: a major literature review, an empirical study and a reflective summary. In Part 1, a review of the literature related to autistic spectrum conditions (ASC) and Theory of Mind (ToM) will be explored. The review attempts to define and characterise ToM and explain its relevance to children and young people (CYP) with ASC, particularly within an education context. In addition, the value of this literature and research to the practice of educational psychologists (EPs) will be discussed. This discussion will be followed by an overview of ToM and the main assessment tools, False Belief (FB) tasks, employed in ToM studies. An overview of key psychological theories relating to ToM is discussed and critically evaluated. Some alternative explanations for an individual with ASC's FB performance are also presented, such as the importance of taking into account the individual's specific context as well as their unique strengths, interests and needs. The literature review then considers how studies, which include more individualised, flexible and CYP led approaches may alter an individual with ASC's performance on FB/ ToM tasks. Finally, the research questions and hypotheses are presented.

In Part 2, the empirical study will describe a pragmatic approach to research that aimed to explore FB performance in pupils with ASC. Specifically, the hypothesis that pupils with ASC perform better at a FB task that has been adapted to their unique strengths, interests and areas of support, compared to a standard FB task. A McNemar's Exact statistical test revealed significant differences in the pass scores between the pupil's performance on the standard and adapted tasks ($p = .008$). Pupils in the adapted tasks were almost twice as likely to pass the tasks ($M = .89, SD = .31$) as those in the standard tasks ($M = .47, SD = .51$). Part 2 closes with a discussion about

future directions for related research and some of the implications of the present study's findings for EPs are considered.

Finally, in Part 3 a reflection on the research process is presented, both in terms of the contribution of the study to knowledge within the research area and from the researcher's own personal perspective. Part 3 explores aspects of the research such as the research design, including the researcher's epistemological and ontological stance, data collection, analysis and reflections on the findings. Discussions close by focusing on the novel insight that these findings bring to the ASC and ToM literature. In addition, implications for the future of educational psychology practice and research are addressed.

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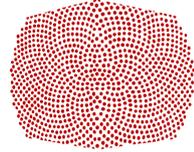
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Abbreviations

ASC	Autistic Spectrum Condition
APA	American Psychiatric Association
CYP	Children and Young People
DSM	Diagnostic and Statistical Manual of Mental Disorders
EHC	Education, Health and Care
EP	Educational Psychologist
FB	False Belief
FP	False Photograph
ICD	International Classification of Disease
SEN	Statement of Educational Need
TEP	Trainee Educational Psychologist
ToM	Theory of Mind

Part 1: Major Literature Review



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1. Introduction

‘Autistic spectrum condition’ (ASC) has been highlighted as the most prevalent primary special educational need amongst pupils who have statements of Educational and Health Care Plans (EHCs) in England (Department for Education [DfE], 2014). Also, the second most prevalent special educational primary need of maintained school pupils who have statements of Special Educational Needs (SEN) in Wales (Welsh Government Statistics for Wales, 2015). Approximately 70% of these pupils who have a diagnosis of ASC are educated in mainstream classrooms (DfE, 2014). Yet, figures from research in Wales have indicated that less than a third of parents reported that they felt mainstream school could adjust their approach and teaching materials as legally required to meet the needs of their child (Batten, Corbett, Rosenblatt, Withers & Yuille, 2006). These findings would suggest a large proportion of pupils with ASC who are educated in mainstream settings urgently require review so that school staff are better able to understand the needs of CYP with ASC and adjust their teaching approached and materials accordingly. Such reviews could contribute towards the development of effective inclusion policies in the United Kingdom.

Pupils with ASC experience significant difficulties with their social communication and interaction skills, which impacts on relationships, friendships and consequently their well-being and learning in school (Eaves & Ho, 2008). Effective support for social communication and interaction skills appears to positively impact on academic and school related outcomes in pupils with ASC (e.g., Cotugno, 2009; Laugeson, 2013). This suggests the importance of targeting these key areas of support for pupils with ASC in education settings, so that they are able to develop their social communication and interaction skills, and their well-being, and achieve in an education setting. Pupils with ASC are consistently highlighted as a group of children

and young people (CYP), who, without specific and additional support in school, are at risk of poor social, emotional and educational outcomes (e.g., Warnock, 2005).

Despite being a group of CYP who may need additional support to achieve the outcomes they are capable of in school, some pupils with ASC have been excluded from previous educational research due to researchers reporting significant challenges in ensuring their active and appropriate participation. Some researchers have suggested that the complex social communication needs can present as a barrier towards them participating in research (e.g., Lewis, 2009; Nind, 2008; Preece, 2002; Thomas, 2013). Yet, it is vital that CYP with ASC are appropriately included in research about their needs, as their participation is vital in furthering insight into the condition and possible mechanisms for support. Individuals with ASC have a unique insight into their condition and their social communication and interaction needs, which are impossible for researchers and professionals without ASC to gain (Bagatell, 2007; Barrett, 2006; Billington, 2006; Wright, Wright, Diener & Eaton, 2014).

Within the literature, a commonly-offered explanation for the apparent difficulties in social communication and interactions experienced by individuals with ASC is based on the 'Theory of Mind' (ToM) theory (Baron-Cohen, Leslie & Frith, 1985). ToM is defined as a developmental process whereby an individual acquires the ability to conceive both his/her own mental states and the mental states of others (e.g., Wellman, Cross & Watson, 2001). However, there is an ongoing debate within the literature surrounding the development of ToM and the extent to which it is associated with social communication difficulties in individuals with ASC (e.g., Bloom & German, 2000; Carlson & Moses, 2001). Developing understanding about how children come to understand the minds of others could help EPs improve tools or approaches to develop children's social communication and interaction skills. In turn,

this could facilitate a CYP's ToM ability. Thus, ToM and ASC will be the focus of this literature review. Each of the research areas will be discussed independently before, finally, compiling previous research findings to suggest an alternative to the ToM explanation, based on considering the unique strengths, interests and needs of individuals with ASC. This alternative perspective will be the focus of the present research.

1.2 Description of Key Sources

The Literature search for the present research was completed in January 2016.

Literature included in this research was located using PsycINFO, ERIC and Science Direct, supplemented by Google Scholar. The literature search included key concepts, ASC, ToM and psychological theories related to both. Search terms included 'autism', 'autistic', 'autistic spectrum disorder', 'autism spectrum conditions', 'theory of mind', 'false belief', 'adapted false belief' and 'educational outcomes'. Due to the vast amount of literature associated with the terms, only literature most relevant to the present research was included. Specifically, the most cited research which related to standard false beliefs tasks and ASC in addition to any individualized false belief tasks and ASC. The review also incorporated information from a number of published books, reports and websites focusing on psychological theories, ASC prevalence rates and legislation, as well as personal accounts of individuals diagnosed with ASC.

2. Autistic Spectrum Conditions

2.1 Defining and Diagnosing Autistic Spectrum Conditions

Empirical and theoretical research over the last three decades has followed practice with different terms being used to describe ASC (i.e., from varying diagnostic manuals). Some of the studies described may identify individuals as having ‘autistic spectrum disorder (ASD)’, or those definitions that were associated with earlier diagnostic manuals, for instance, ‘autism’, ‘Asperger syndrome’ or ‘autistic disorder’. However, within mainstream literature, the growing emphasis on focusing upon the spectrum of both strengths and areas of needs, which an individual with ASC may exhibit, has led to a recent move whereby the term ‘disorder’ has been replaced by ‘condition’ (National Autistic Society (NAS), 2015). This revision in terminology is an attempt to reduce some of the stigma(s) associated with the condition and highlight the need to support some of the challenges individuals with ASC may face, whilst simultaneously promoting their unique strengths (e.g., Baron-Cohen et al., 2009; (See also) Silberman, 2015). For the sake of clarity, the author will adopt the terms used by the individual researchers themselves to discuss previous studies related to the present research. For all other discussions and research introduced by the present author the term ‘autistic spectrum condition’ (ASC) will be used in line with Baron-Cohen et al. (2009).

Similar debates and discussions surround the most appropriate order to describe the condition, when writing about individuals who are affected by ASD, specifically, whether ‘identity first’ (e.g., ASC individual) or ‘person first’ language (e.g., individual with ASC) should take priority when writing about ASC. Some

individuals who have a diagnosis of ASC argue that accentuating that the individual is more important than highlighting the condition, so should precede the description (e.g., Tobin, 2011). Whereas, others feel that the condition should be acknowledged first as it promotes their sense of identity (e.g., Sinclair, 1999). The author wishes to acknowledge both preferences of individuals with ASC for ‘identity first’ and ‘person first’ language, but, for the sake of clarity, the term ‘CYP with ASC’ will be used throughout this literature review.

ASC is defined as a lifelong neurodevelopmental condition, which is categorized by “persistent deficits in social communication and interaction” as well as “restricted, repetitive patterns of behaviour, interests, or activities” across multiple contexts” (American Psychiatric Association [APA], 2013, p. 50). To receive a diagnosis of ASC, the presentation of these behavioural symptoms, such as decreased social interest, decreased eye contact and repetitive behaviour and interests, must be present in an individual’s early years i.e., before the age of three years (APA, 2013). Challenges within the developmental areas of social communication and interaction, such as difficulty understanding facial expressions or tone of voice and/or difficulty expressing emotions, feelings and needs are believed to be central to those experienced by individuals with ASC (e.g., Frazier et al., 2012; NAS, 2015). However, it is important to acknowledge the presentation of both the strengths and areas of need can vary considerably between each individual with ASC (Weitlauf, Gotham, Vehorn & Warren, 2014). Thus, those individuals with ASC are a heterogeneous group of individuals whose behavioural characteristics vary greatly. Some individuals with ASC may only require minor adaptations or support to overcome the challenges they may face; others may require much more complex and individualised levels of support.

For more than the past two decades, The Diagnostic and Statistical Manual of Mental Disorders (DSM IV and V) published by the APA (APA, 1994, 2000, 2013), has been referred to by researchers and practitioners to define ASC, which is currently described in the DSM-V under the category of ‘Autistic Spectrum Disorder’ (ASD). The fourth edition of the DSM (DSM-IV; APA, 1994), first described a number of related conditions, under the heading of ‘Pervasive Developmental Disorders’, these included ‘Autistic Disorder’, which was characterized by a ‘triad of impairments’ in social, language and behavioural abilities (Wing, Gould & Gillberg, 2011). A separate category ‘Asperger Disorder’ described individuals having similar characteristics to ‘Autistic Disorder’, but differing as they did not appear to have any significant language impairments. In addition, other conditions, which were understood to have share similarities with ‘Autistic Disorder’ but had slightly different characteristics, were described, for example, ‘Pervasive Developmental Disorder Not Otherwise Specified (PDD-NOS)’ and ‘Rett’s syndrome’.

Despite the DSM-IV initially separating the two conditions ‘Asperger Disorder’ and ‘Autistic Disorder’, many researchers have debated the appropriateness of this distinction, suggesting that any sub-classification of ASC may be unscientifically sound and unreliable. Individuals who have been diagnosed with both ‘Asperger Disorder’ and ‘Autistic Disorder’ share similar characteristics, such as impairments in social interaction, social communication and social imagination and repetitive patterns of activities and interests (Mayes, Calhoun & Crites, 2001; Szatmari, Archer, Fisman, Streiner, & Wilson, 1995). Thus, it has been argued that the two conditions are better represented as a single ‘Autistic Spectrum’, as opposed to two separate categories. However, there is also a lack of consensus between diagnostic criteria proposed by different manuals within the UK. Although the DSM-V is the

most widely used current diagnostic manual within the United Kingdom, there is a second diagnostic manual entitled the International Classification of Disease, 10th Edition (ICD-10; World Health Organization, 1992). The ICD-10 describes several categories of ASC and distinguishes between ‘Autism Spectrum Disorder’ and ‘Asperger Syndrome’. Conversely, the current version of the DSM, the DSM-V, describes the spectrum of related ‘Autistic Spectrum Disorder’ conditions under one category. It is the author’s view that these varying definitions has resulted in the diagnostic process for identifying whether an individual has ASC being subjective, as the presentation and existence of ASC is socially constructed. More broadly, the author believes that ASC could be best described as a collection of signs and symptoms and not necessarily a pathology, therefore it is likely to be quite fluid, diagnostically.

2.2 Theories of Disability and Their Influence on the Study of Autistic Spectrum Conditions

Over the last three decades, theories of disability have developed from a ‘medical model’ of disability to a ‘social model’ of disability (Oliver, 1998). The ‘medical model’ of disability views disability as a ‘problem’, which is specific to the individual. By contrast, the social model of disability proposes that it is society that restricts the individual (Thomas, 2014). Rather than attempting to cure impairments in an attempt to ‘normalise’ individuals, the social model promotes the idea that society should develop ways of supporting individuals to remove the disabling barriers around them (Oliver, 1998). Mottron (2011) argues that diagnostic manuals define ASC by several negative characteristics, such as, challenges with social communication skills,

repetitive behaviours and restricted interests. As a consequence of this deficit-based categorization, many of the strengths of individuals with ASC are ignored. Similarly, the majority of interventions for individuals with ASC are based on suppressing behaviours and developing more developmentally appropriate behaviours. Although individuals with ASC require various levels of support for social communication and behavioural needs, there is a wealth of research which also provides evidence for the unique strengths which they can display. A commonly cited area of research is that individuals with ASC often outperform individuals with neurotypical development on perception tasks, for example those which involve spotting a pattern in a distracting environment (e.g., Pellicano, Maybery, Durkin & Maley, 2006). Other research has found that children with Asperger syndrome displayed a significant advantage on a non-verbal intelligence test (Raven's Progressive Matrices) over Wechsler Full-Scale and Performance scores relative to a neurotypical control sample (Dawson, Soulières, Gernsbacher & Mottron, 2007). Baron-Cohen (2003) has also carried out research to suggest how the strengths of individuals with ASC in terms of their systematic thinking may result in them having successful careers involving science or mathematics.

The idea of neurodiversity was developed in the 1990s to challenge discourses that focus on deficits and problems associated with individuals with ASC (Jaarsma & Welin, 2012). This concept introduced a paradigm shift in the way that CYP with individual needs are perceived. As opposed to focusing on potential deficits associated with such needs, neurodiversity promotes and celebrates the strengths of individuals. Advocates of neurodiversity suggest that as a result of focusing on individuals' strengths, educators should focus on constructing positive and individualized approaches and environments that meet the unique needs of the individual (Armstrong,

2012; Silberman, 2015). This need for a more person centered and individualized approach to working with CYP with ASC is also echoed by Mottron (2011) who proposes that, “Scientists, too, should do more than simply study autistic deficits. By emphasizing the abilities and strengths of people with autism, deciphering how autistics learn and succeed in natural settings, and avoiding language that frames autism as a defect to be corrected, they can help shape the entire discussion” (p.35). Thus, championing a more appreciative, as well as person-centred and individualised approach to working with CYP with ASC could continue to challenge the disablism, which underlies the beliefs that produce practices that are based on identifying deficits associated with ASC.

2.3 Prevalence of Autistic Spectrum Conditions

Prevalence studies of ASC estimate that 1.1% of the population in the UK has a diagnosis of ASC (Baird et al., 2006, Brugha et al., 2012; Brugha et al., 2011; Brugha et al., 2009). Another systematic review of epidemiological surveys examining the global prevalence of ASC has estimated global prevalence to be 17 per 10,000 (Elsabbagh et al., 2012). These recent estimations have led some scholars to suggest that there has been a rise in the number of individuals diagnosed with ASC, each year (e.g., Hertz-Picciotto & Delwiche, 2009). However, controversy exists surrounding whether this reflects an actual increase in the prevalence of ASC, or whether this is due to other factors, such as raised awareness of ASC, better diagnostic procedures or changes in practice (Buescher, Cidav, Knapp & Mandell, 2014; Chakrabarti & Fombonne, 2014; Hansen, Schendel & Parner, 2015; Russell, Rodgers, Ukoumne & Ford, 2014).

2.4 Educational Outcomes for Pupils with Autistic Spectrum Conditions

Without appropriate support for social communication and interaction, pupils with ASC may experience challenges such as misunderstandings, bullying and rejection by peers and loneliness (e.g., Mazurek, 2013; Reid, 2011). Some studies suggest that over 80% of children diagnosed with ‘Asperger syndrome’, or high functioning ‘autism’, have reported being bullied during their school age years (Bancroft, Batten, Lambert & Madders, 2012).

Challenges experienced by pupils with ASC also appear to extend to difficulties later on in their lives. Specifically, without appropriate social and emotional support, higher functioning adolescents and adults may be at heightened risk of developing mental health needs, such as depression and anxiety (Bellini, 2004). Yet, families of pupils with ASC suggest that areas within the domain of social communication are the most commonly unmet needs in schools (Eaves & Ho, 2008). Greater mental health challenges are statistically associated with poorer social skills (Ratcliffe, Wong, Dossier & Hayes, 2015). Such social impairments and mental health challenges may have a significant impact on an individual’s ability to live independent lives later on. Academic and employment outcomes for individuals with ASC in adolescence and adulthood are generally poor (Ratto & Mesibov, 2015). By contrast, developing competent social communication and interaction skills can positively impact on academic and school related outcomes. For example, effective social skills programmes at school can improve outcomes for school leavers with ASC (e.g., Laugeson, 2013). Further, social communication support may help target specific areas of need and subsequently promote particular strengths of pupils with ASC, rather than

explicitly focusing on their difficulties. In turn, this may build CYP with ASC's resilience and optimism for achieving positive educational outcomes.

2.5 Psychological Explanations of Autistic Spectrum Conditions

The exact causes of ASC remain unclear. However, a number of potential biological (e.g., genetic) and environmental factors (e.g., toxin exposure) have been suggested as causal factors in the development of the condition (Bailey et al., 1995; Landrigan, 2010; London, 2000; Morrow et al., 2006; Muhle, Trentacoste, & Rapin, 2004; Persico & Bourgeron, 2006). A current consensus within the literature is that ASC is most probably triggered by a complex interaction between both biological and environmental factors (e.g., Chaste & Leboyer, 2012; Deth, Muratore, Benzecry, Power-Charnitsky & Waly, 2008). Due to the complexity in understanding the specific causes of ASC, much research has instead sought to understand and support the development of the key challenges in social communication and interactions associated with the condition. Theoretically, ASC research appears to centre around three main social-cognitive theories, namely, The Executive Dysfunction Theory (Ozonoff, Pennington & Rogers, 1991), Weak Central Coherence Theory (Frith, 1989; 2003; Happé & Frith, 2006) and Theory of Mind (ToM) Theory (Baron-Cohen, 2001; Baron-Cohen, Leslie & Frith, 1985).

The theory of Executive Functioning attempts to explain the key characteristics associated with ASC in terms of a weakness in executive functioning skills, such as working memory, planning and inhibition. However, evidence for this theory appears mixed. Some researchers have found that individuals with ASC show impairments, compared to 'neurotypical' controls, in terms of their inhibition and

flexibility in addition to planning and verbal fluency (Geurts, Verte', Oosterlaan, Roeyers & Sergeant 2004). However, these individuals with ASC displayed strengths in their working memory skills, compared to 'neurotypical' controls. By contrast, Happé, Booth, Charlton and Hughes (2006) found that individuals with ASC displayed relatively strong inhibition, but were weaker in their ability to monitor tasks. White, Burges and Hill (2009) suggest that these varied findings may be a result of a range of executive functioning deficits that combine with the social communication difficulties experienced by individuals with ASC, rather than a common executive functioning impairment.

The Weak Central Coherence Theory hypothesises that individuals with ASC have difficulties in employing global cognitive skills. As a result, individuals with ASC have a tendency to be focused on finer details within a situation, which can be at the expense of understanding the whole context of a situation. However, a number of studies have found that ASC individuals can perform as well as 'neurotypical' controls in terms of their global and local information processing skills (e.g., López & Leekam, 2003; Mottron, Burack, Iarocci, Belleville & Enns, 2003).

Finally, the Theory of Mind (ToM) theory is the most cited and considered to be most prevalent theory within the ASC literature (Anderson & Cushing, 2013). ToM attempts to explain the apparent difficulties faced by individuals with ASC as a result of an inability to attribute the mental states of others (i.e., difficulty understanding another person's thoughts or feelings and successfully predicting the intentions of that person; Baron-Cohen et al., 1985). However, debates exist about the validity of ToM, specifically with regard to whether ToM develops in individuals with ASC in a similar way to 'neurotypical' individuals, but at a later chronological and mental age, or whether the development is deviant and incomplete (e.g., Paynter & Peterson, 2010;

Scheeran, de Rosnay, Koot & Begeer, 2013). Nevertheless, ToM remains the most influential social-cognitive theory which has been developed to explain the social communication and interaction needs associated with individuals with ASC, despite there being a lack of consensus surrounding its validity. These debates have led to ToM being the focus of the present research, in an attempt to explore its validity further.

3. Theory of Mind

3.1 Defining Theory of Mind

The term ‘Theory of Mind’ (ToM) was introduced by Premack and Woodruff (1978) to explain how chimpanzees may be capable of inferring the mental states of others within their same species. The term was then later expanded by child psychologists to describe a transition in child development, which results in a child’s ability to understand another person’s thoughts, feelings and successfully predict the intentions of that other person (Leslie, 1987). Over the last three decades, ToM has been a strong focus of research for psychologists interested in the development of social cognition in CYP (e.g., Adolphs, 2001). An early definition of ToM by Baron-Cohen et al. (1985) described ToM as a developmental process whereby an individual establishes the ability to conceive both his/her own mental states and the mental states of others. Through this process an individual learns how “other people know, want, feel, or believe things” (Baron-Cohen et al., 1985, p. 38). All modern definitions of ToM similarly focus on skills which involve a person’s understanding of the desires, beliefs, intentions and other people’s inner experiences that both result in and are expressed in human action (e.g., Wellman et al., 2001).

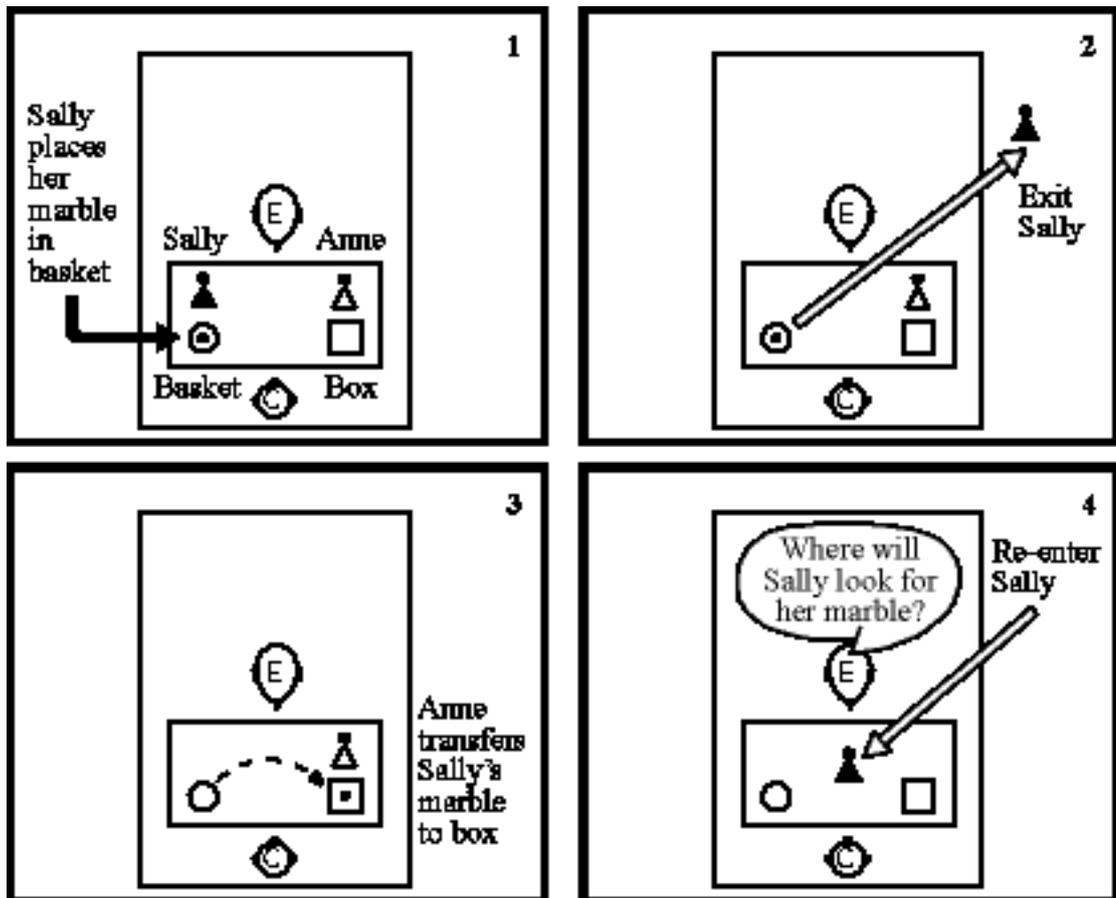
3.2. Assessing Theory of Mind-False Belief Tasks

In an attempt to further understand how ToM develops, researchers have developed several assessment tools, which have aimed to explore and make sense of how CYP reason about the desires, emotions, beliefs and intentions of others. The most widely used of these tasks within psychological literature are ‘False Belief’ (FB) tasks (Carlson & Moses, 2001). FB tasks require children to predict the actions or thoughts

of protagonists who hold false beliefs that the children themselves. Various developmental psychologists believe that the FB task is an appropriate ToM assessment tool, as it typically relies on an individual's ability to distinguish between unobservable thoughts within one's own mind and observable actions in the real world (Baron-Cohen et al., 1985, Premack, 2010; Wellman et al., 2001).

One of the most commonly used FB tasks is the 'Sally-Anne' false belief task (Baron-Cohen et al., 1985; see figure 1). During this task individuals are presented with a story involving two characters. Typically, the individual is shown two dolls, Sally and Anne. Sally has a basket and Anne has a box. In addition, Sally has a marble. Sally places the marble in her basket, prior to leaving the room. Whilst Sally is not present in the room, Anne removes the marble from the basket and places it in the box. Sally is then brought back into the room and the individual is asked where he/she thinks Sally will look for the marble. An individual is considered to have passed the task if he or she states that Sally will look in the basket, where she placed the marble before leaving the room. In contrast to this, an individual who fails the task will answer that Sally will look in the box, where the child knows the marble has been hidden. However, it is not possible that Sally could know this, since she did not observe it being placed there.

Figure 1: Diagram of the ‘Sally-Anne’ False belief task



3.2.1 Reliability and Validity of False Belief Tasks

Researchers investigating the reliability and validity of the ‘The Sally Anne’ FB task have found a high internal validity (the extent to which it can be concluded that the change in the ToM dependent variable was produced exclusively by the FB task independent variable and not by any other confounding variables) of 77% (Grant, Grayson & Butcher, 2001). Other studies have also reported strong internal consistency (evidence to suggest that the task consistently measures the same construct of ToM) within the task (e.g., Hughes, Adlam, Happé, Jackson, Taylor & Caspi 2000). These studies suggest that the task is a substantially accurate and valid measure

of an individual's FB understanding (Hughes et al., 2000; Hughes & Cutting, 1999; Hughes & Dunn, 1998); and further, that this strong validity is independent of various different task designs, including whether CYP view the FB situation as coincidental or a deliberate ploy to deceive a protagonist, or if the CYP is asked about someone else's false belief or their own. Importantly, these studies investigated the reliability and validity of FB solely on one quantitative measure (i.e., one question answered correctly within the FB task). Previous researchers have not yet investigated further understanding about CYP's reasons for their answers.

3.2.2 Educational Outcomes Related to False Belief Task Performance

A profusion of empirical research studies investigating CYP's performance on FB tasks has highlighted that children's understanding of FBs is typically believed to emerge between the ages of 4 and 6 years old. In contrast, three-year-old children who are perceived to be developing typically tend to find the task challenging and consequently answer incorrectly (e.g., Wellman & Woolley, 1990). Psychologists have proposed that the development of a child's FB represents a specific conceptual change during their early development. Prior to this age, children are expected to have difficulty understanding representational mental states (e.g., Perner, 1998; 2000). Thus, the ability to be successful at FB tasks and demonstrate ToM follows from the development of a representational understanding of mental states. ToM is often incorporated as an important measure in developmental assessments of individuals at a young age, as its successful development has been associated with a number of later outcomes, for example, school readiness and even later success in education (Hughes, 2015; Hughes & Devine, 2015). These findings suggest that a well-developed ToM

may be associated with the development of social skills, which may increase educational outcomes at a later stage in life.

4. Autistic Spectrum Conditions and Theory of Mind

4.1. A Critique of Theory of Mind and Autistic Spectrum Conditions

A wealth of these studies investigating children's performance on FB tasks has highlighted that children with ASC appear to have difficulties in passing the test, in comparison to children who are considered to experience 'neurotypical' development (e.g., Baron-Cohen et al., 1985; Begeer, Bernstein, van Wijhe, Scheeren, & Koot, 2012; Charman & Baron-Cohen, 1992; Cohen & German, 2010; Happé, 1995; Leekam & Perner, 1991). Additional research has also suggested that children with ASC have specific difficulties on FB tasks, which might exceed those of CYP with other deficits or cognitive needs, such as Down's syndrome (Baron-Cohen et al., 1985), Attention Hyperactivity Disorder (ADHD; Kain & Perner, 2003), William's Syndrome (Karmiloff-Smith, Klima, Bellugi, Grant, & Baron-Cohen, 1995) and, Fragile X syndrome (FXS; Losh, Martin, Klusek, Hogan-Brown, & Sideris, 2012), a monogenic X-linked syndrome. FXS studies have been particularly interesting to consider in debating about validity of the ToM theory of ASC, as the characteristics of this condition present most similarly to ASC. Individuals with a diagnosis of FXS have social communication difficulties, which are similar to those of individuals with ASC and include social anxiety and eye-gaze avoidance. Studies indicate that individuals with FXS do not appear to have any atypical deficits in ToM. However, those individuals who have both FXS and ASC appear to show deficits in ToM as well as in pragmatics, otherwise known as 'social language' (Losh et al., 2012). Pragmatics includes using language for different purposes (e.g., greeting someone), changing language according to the needs of the listener/situation (e.g., talking different to a baby, compared to an adult) and following rules for conversations and storytelling

(e.g., turning taking; Losh et al., 2012). These findings of studies that have compared the performance of individuals with a variety of additional needs on FB tasks have been highlighted within the literature to suggest support for the hypothesis that difficulties in ToM are specific to CYP with ASC (e.g., Frith, 1989; Senju, Southgate, White, & Frith, 2009). Presently, a prevalent view in the ASC literature is that all individuals with ASC of varying symptom severity have some extent of deficits in their ToM abilities (e.g., Ponnet, Roeyers, Buysse, De Clercq & Van Der Heyden, 2004). In addition, that these challenges with ToM experienced by individuals with ASC may be central to explaining their apparent characteristic difficulties in their social communication and interaction skills and development (e.g., Baron-Cohen et al., 1985).

Advancing understanding about how individuals with and without ASC develop ToM is important. For instance, views regarding whether ToM is either delayed (a progression of development that is line with what may be expected of the general population, but one which progresses at a slower rate) or deviant (a progression of development that is different in terms of its rate and sequence of progression) may influence practice and ultimately outcomes for CYP people with ASC. Further research investigating the development of ToM in CYP with ASC could change the way in which ToM development and social communication and interaction skills are perceived and supported in individuals with ASC. The current premise of the ToM theory is based on the notion that individuals with ASC have impairment in ToM, which leads to general difficulties in communicating and interacting with others. Clarifying understanding about the validity of the ToM theory could enable EPs to develop training and approaches which could increase awareness about the nature of

social communication difficulties that CYP with ASC can experience and how best to support them.

Despite their wide use and previously reported sufficient reliability and validity as a measure of ToM, FB tasks have been criticised by some researchers due to reported inconsistencies in CYP's performance during the task (e.g., Bloom & German, 2000; Carlson & Moses, 2001). Criticisms of FB tasks appear to fall into two major categories. Firstly, although research has revealed a tendency for typically developing children to outperform children with ASC on FB tasks, there are a number of children with ASC who can successfully pass, and even excel at, FB tasks (e.g., Luckett, Powell, Messer, Thornton, Schulz, 2002; Tager-Flusberg, 2007; Yirmiya, Erel, Shaked & Solomonica-Levi, 1998). Secondly, some CYP with 'neurotypical' development have also been unsuccessful at FB tasks (e.g., Hoogenhout & Malcolm-Smith, 2014). These findings have led to researchers questioning the validity of the ToM theory of ASC.

Some researchers have argued that individuals with ASC may be more likely to pass FB tasks when they have an older 'verbal mental age' i.e., a greater understanding of verbal language, expressed as the chronological age at which an average individual reaches the same level of ability (e.g., Begeer, Koot, Rieffe, Meerum Terwogt & Stegge, 2008; Happé, 1995; Rajendran & Mitchell, 2007; Wellman et al., 2001), or exhibit less severe social communication needs (e.g., Paytner & Peterson, 2010; Steele, Joseph & Tager-Flusberg, 2003). However, challenges remain in terms of understanding whether the FB task performance of individuals with ASC highlights a delayed or deviant ToM (e.g., Hoogenhout & Malcolm-Smith, 2014). Attempts to create additional novel research designs to investigate the development in ToM in individuals with ASC could improve understanding about the condition. Through more

novel designs, it may be possible to incorporate multiple factors, which take into account a greater range of individual differences for CYP with ASC, which have not yet been fully explored.

4.2 Psychological Explanations of the Theory of Mind Theory

Researchers have highlighted several factors that need to be considered when exploring the validity and reliability of the ToM theory in individuals with ASC. These considerations are both methodological and theoretical in nature. The most prevalent explanations in the literature for the apparent weaker FB task performance of individuals with ASC appear to be linked to social communication skills (e.g., Senju et al., 2009), language skills (e.g., Paynter & Peterson, 2010; Pellicano, 2010) and executive functioning skills (e.g., Russell, Saltmarsh & Hill, 1999). Each of these three areas of development has been hypothesised to possibly contribute to the pattern of differences in performance reported between individuals with ASC and individuals with ‘neurotypical’ development on FB tasks and will be discussed in the next section. Exploring each of these factors in turn is important for evaluating whether CYP with ASC have genuine, specific ToM difficulties, or for example, whether their apparent difficulties may be related to challenges in accessing the standard FB tasks which are most commonly used to assess ToM.

4.2.1 Executive Functioning Skills

Within the literature, executive functioning is often described as a set of cognitive functions which an individual requires for flexible and future orientated behaviour. These functions enable individuals to engage in a number of skills, for example, to

plan, organize, memorize, focus their attention and employ previous information and experiences in order to engage in a present task (Pennington & Ozonoff, 1996).

Demands on executive functioning skills are therefore particularly likely in novel situations, where an individual has to employ previous knowledge to make sense of a new situation. Thus, executive functioning skills are fundamental to enabling an individual to successfully complete a FB task (e.g., Carlson & Moses, 2001; Russell, Saltmarsh & Hill, 1999). Success at a Sally Anne FB task relies on a number of individual executive functioning abilities, for example, memorising information about Sally, Anne and the objects they are involved with correctly, suppressing irrelevant knowledge about an object's correct location and answering correctly with Sally's correct expected location for the hidden object, whilst simultaneously processing and holding these types of information.

Studies that have examined executive functioning and ToM in CYP with ASC have reported significant positive correlations between executive functioning ability and ToM task performance. These findings have led some researchers to develop the hypothesis that ToM may be impaired in CYP with ASC, due to a deficit in their executive functioning skills (e.g., Hill, 2004; Joseph & Tager-Flusberg, 2004; Ozonoff, Pennington & Rogers, 1991; Zelazo, Jacques, Burack, & Frye, 2002). To test the executive functioning ToM hypothesis, researchers have designed FB tasks which aim to minimise the demands placed on the individual's executive functioning skills. These designs have aimed to explore whether minimizing the need to employ executive functioning skills leads to improved ToM performance in children with ASC.

One of the most commonly cited FB task adaptations to investigate FB understanding in children with ASC is the False Photograph (FP) task developed by

Hill (2004) and Apperly, Samson, Chiavarino, Bickerton and Humphreys (2007). The FP task aimed to replicate the Sally Anne task, but reduce an individual's need to employ executive function skills to complete the task. In the FP task, Sally puts her marble in the basket. A Polaroid camera is used to photograph the scene with the basket containing the marble and the empty box. While the photograph is developing, Anne removes the marble from the basket to the box. The individual is then asked about Sally's expected location of the marble in the photograph.

There is literature to suggest that children with typical development will perform similarly on FP tasks as they do during FB tasks. In contrast, children with ASC generally appear to perform better on FB tasks, in comparison to FP tasks (e.g., Leekam & Perner, 1991; Leslie & Thaiss, 1992; Peterson & Seigal, 1998). Likewise, children with ASC tend to respond incorrectly to a FP task if the executive demands are akin to the executive demands of FB tasks (Russell, Saltmarsh & Hill, 1999). Other empirical evidence has indicated that participants with ASC had difficulties on a task that were designed to match the executive functioning skills required by FB tasks, but did not require the ability to interpret another individual's mental states (Bowler, Briskman, Gurvidi & Fornells-Ambrojo, 2005).

These comparison studies of children with ASC and those who appear to have typical development on FB and FP tasks, suggest that ToM abilities in individuals with ASC may be related to difficulties in holding information in their mind, whilst simultaneously shifting between arbitrary rules and cognitive demands. Thus, children with ASC may not have domain specific impairments in their ToM. Instead, their performance in FB tasks may be moderated by their executive functioning skills. These executive functioning skills are ones, which are already recognised as areas of need for individuals with ASC. Therefore, individuals with ASCs' weaker

performance on FB tasks could be due to difficulties employing executive functioning skills, rather than a deficit with their ToM.

In spite of evidence from FP tasks, it is important to note that several researchers have argued that the studies investigating association between FB and FP tasks may not be a suitable comparison for examining ToM in ASC. The FB task requires an individual to interpret the difference between a previous situation and a later misrepresentation of that situation. Conversely, a FP task only requires an individual to interpret a past situation that has been photographed (Egeth & Kurzban, 2009; Perner, 1995). Similarly, a FB task appears to present greater cognitive demands, in comparison to the FP task, which involves non-mental representations. The FB task may place a greater demand on working memory (Gordon & Oslon, 1998), attention skills (Apperly, Samson & Humphreys, 2005) and the need to resist conflict between the individual's own beliefs and those of the character in the task (e.g., Russell, Saltmarsh & Hill, 1999). FP research is also limited by methodological challenges. For example, small samples and varying definitions of the term 'impairment', make accurate comparisons between FB and FP task performance a complex task. The specific nature of the relationship between FB performance in ToM and executive functioning remains unclear. A number of factors inter-relate executive functioning and ToM and these variables are complex to isolate in empirical research.

A study by Pellicano (2007) took account of some of the previous methodological limitations in exploring associations between executive functioning and ToM abilities. The researcher employed two different criteria to define 'impairment', when investigating the relationship between ToM and executive functioning in young children with ASD between 4 and 7 years of age. 30 children with a diagnosis of ASD were compared with a sample of 40 typically developing

children, who were matched on age and ability. Pellicano included a variety of tasks to measure FB performance, as well as executive functioning skills, for example, planning and inhibition. Findings indicated that there was a significant correlation between executive functioning skills and ToM in children with ASD. Analyses of executive functioning and ToM composite scores revealed that one third of the sample of children with ASD displayed intact ToM and executive functioning skills. Conversely, 40% of the group demonstrated impairments in both areas. Within these results eight children with ASD displayed impairments in ToM with intact executive functioning performance. However, no child with ASD showed impairments in executive functioning with intact ToM. Thus, the author concluded that impairments in ToM are not always combined with deficits in executive functioning skills in children with ASD. Further, these results appeared to be significant, regardless of the pupil's age, IQ and non-verbal IQ, although one factor, verbal IQ, appeared to moderate the relationship between executive functioning ability and ToM. Overall, children with ASD who displayed intact ToM and executive functioning skills were found to have significantly higher verbal IQ scores than children who had showed impairments in ToM.

Challenges exist in examining the extent to which executive functioning influences ToM. Ultimately, passing FB tasks may demonstrate that an individual has a ToM. However, failing the test does not prove that an individual does not have ToM (Egeth & Kurzban, 2009). Thus, differences in performance could be explained due to factors irrelevant to ToM functioning. In summary, Pellicano's (2007) study provides evidence to suggest that ToM abilities do not exist independent of other developed abilities, such as verbal language abilities. Executive functioning studies suggest that FB task performance may reflect a variety of different individual demands and

differences in ability, rather than a domain-specific ToM representational deficit in ASC. This is contrary to the implications of the ToM theory.

4.2.2 Language Skills

A number of studies have suggested that individuals with ASC may appear to have difficulties with ToM due to difficulties with language skills, rather than executive functioning skills (e.g., Happé, 1995; Tager-Flusberg, 1999; Tager-Flusberg & Sullivan, 2000; Yirmiya, Erel, Shaked & Solomonica-Levi, 1998). However, another study by Luckett et al. (2002) found that for children with ASC to achieve a 50% success rate on FB tasks ('The Sally Anne' and 'The Smarties' tests) language competence as measured by The Test for Reception of Grammar (TROG; Bishop, 1989) was only slightly higher than that found to characterize children in the comparison group (children who were described as having 'moderate learning difficulties'). Luckett and colleagues' findings indicate that language competence might not be as influential in the development of ToM in individuals as previously thought; language skills appeared to play an important role in FB for both children with and without ASC. This led to Luckett et al.'s conclusion that, whilst language might play an important role in ToM development, it is unlikely to be the only factor which determines a young person's performance during a FB task.

When considering such conflicting findings, the methodological limitations of the above studies should be discussed. The language studies mentioned above applied an overall pass/fail criterion from a 'forced response' question, which makes it difficult to explore reasons for the participants' responses and interpret whether they truly have a ToM. For example, participants might have answered correctly based on where they think the researcher would look for the object, but this would be incorrect

in terms of where the character is in the FB task (Zelazo, Burack, Boseovski, Jacques, & Frye, 2001). Other aspects of language development, such as expressive language skills, which have been associated with positive engagement in CYP with ASC, have not been explored in ToM studies (Dykstra Steinbrenner & Watson, 2015). Therefore, data from present language and ToM studies appear to only offer limited information, as the majority appear to be based on quantitative data.

A study by Van Buijsen, Hendriks, Ketelaars & Verhoeven (2011) tested the hypothesis that ToM performance is dependent upon the task employed and the level of language skills required to complete it. The authors recruited a sample of 81 children between the ages of four and seven years old (27 children had a diagnosis of ASC, 27 were described as ‘typically developing’ and 27 were diagnosed with ‘specific language impairments’). All children were tested on three classic ToM tasks including ‘The Sally Anne Test’ and two other FB tasks, ‘The Charlie Test’ and ‘The Smarties Test’. ‘The Charlie Test’ was based on a FB task designed by Baron-Cohen, Campbell, Karmiloff-Smith, Grant and Walker (1995). At the beginning of the task, the child’s ability to name the items he/she was presented with was checked. The child was then asked which item he/she likes best and what he/she would like to be given. The child’s performance during the task was assessed via her/his ability to name the object that a character in the task wanted, independent of her/his own desire. The researchers then adapted three different versions of the test involving three different characters and three different objects (e.g., fruits, toys, and sweets) to match each of the three presentation modes.

‘The Smarties Test’ was based on a FB task developed by Perner, Leslie and Leekam (1989). The task involved using different characters and different boxes containing ‘unexpected’ contents (e.g., a Smarties box with a pencil) During the task,

the child was asked what he/she thought was contained in a box on two occasions: firstly, prior to the contents being revealed to him/her and secondly, after the contents had been revealed. Following this, a character was introduced and the child was asked what he/she thought the character would think was in the box. The child took part in three different versions of the test using different materials, but each involving the same procedure.

The tasks were presented in three different ways to the children (video, line-drawings and spoken instructions). The authors found differential effects of presentation for all three ToM tests. When the children were tested on the Sally Anne task, children with ASC performed similarly in the video and drawing conditions. However, they were weaker in the spoken condition. Whereas the children with ASC performed best on the spoken condition on 'The Charlie Test' and the video and spoken conditions on 'The Smarties Test'. Van Buijsen and colleagues concluded that their findings suggest that ToM ability is not directly influenced by language ability in children with ASC. However, the extent to which language skills impact on FB task performance in children with ASC appears from this study to be dependent upon the amount or type of language used in the task presentation.

4.2.3 Executive Functioning and Language Skills

Much of the research which has attempted to determine the extent to which the deficits associated with ASC, for example language and executive function, impact on FB task performance, has only focused on one of these factors. Methodological differences in the various studies make it difficult to draw firm conclusions regarding the influence

of executive functioning and language on FB task performance, as studies often employed participants matched on mental age rather than chronological ages. Thus, children in the control conditions (without ASC) and those in experimental conditions (diagnosed with ASC) are likely to be significantly different in terms of their chronological age and consequently their experiences and maturation due to this difference in chronological age could result in confounding variables (Tolmie, Muijs & McAteer, 2011). Further, executive functioning studies may be weakened by the use of different types of FB tasks; some studies have used one FB task (e.g., Leekam & Perner, 1991), whilst others have used several different tasks (e.g., Van Buijsen et al., 2011), some of which have also been designed for younger children (e.g., ‘The Smarties Test’). Overall, there seems to be a lack of studies in the literature which have attempted to match control and experimental participants and take into account the various individual differences amongst CYP with ASC.

In an attempt to investigate whether children with ASC have difficulties in understanding both mental and non-mental representations, independent of their apparent deficits in both language and executive function, Iao and Leekam (2014) designed a series of three experiments, each investigating three different types of FB tasks. The first study that employed a FB task devised by Apperly, Samson, Chiavarino and Humphreys (2004) was predominantly non-verbal in nature. Furthermore, the real location of the hidden object was signalled by the protagonist on most trials therefore, reducing the requirement of participants to inhibit other response and the demands on an individual’s executive functioning. The task involved a man hiding in one of two boxes. A woman saw where he hid, although the participants did not, but the woman pointed towards the location. During the test trial, the woman left the room. Whilst the woman was out of the room, the man swapped the boxes around.

When the women returned to the scenario, she pointed to the box to suggest where she thought the man was currently hiding. In order to complete the task correctly, participants had to interpret her FB appropriately. Thus, to answer correctly participants must state that the woman will believe that the man is in the original box, but are aided by her pointing towards the original location he was in. The woman was not present when the boxes were swapped, therefore, she would not be aware that the man had swapped boxes, and so believe the man was still present in the original box.

The second task in Iao and Leekam's research employed a version of the FP task devised by Apperly et al. (2007). The final task was a novel false non-mental representation task devised by Iao and Leekam, which they described as a 'false sign task'. The task included an electrically operated signpost, which was non-mentally operated (through electricity) to reduce the likelihood that a participant would need to understand mental representations (such as those associated with ToM). The signpost was used to signal the situation in the task and also to represent a false situation through disrupting the electricity supply. When operating correctly, the signpost would signal towards a particular location, by turning to the direction of that location. Conversely, when the electricity becomes faulty, it is unable to change direction to signal a correct location.

In the first experiment conducted by Iao and Leekam, they compared the performance of 40 typically developing children aged between 41 and 83 months using the FB tasks devised by Apperly et al. (2007) and the false sign task. Given that both of the tasks were non-verbal and the participants did not know the real location of the object, they suggested that the demands on the participants' language and cognitive inhibition were minimised. In a second experiment in Iao and Leekam's research, they aimed to further explore the association between the FB and false sign tasks through

using both verbal and non-verbal tasks within the same experiment. Twenty-six children between the ages of 39-88 months were tested on the standard verbal reality-known and the non-verbal reality unknown test. Results from experiments one and two suggested that typically developing children performed similarly in both non-verbal and verbal tasks on both the FB and false-sign tasks. Therefore, the authors concluded that language and cognitive inhibition exerts a minimal role in task performance. In the final experiment, 18 children with a diagnosis of ASD and 18 children with typical development were tested using the same tasks as in Iao and Leekam's first experiment. The aim of experiment three was to explore whether children with a diagnosis of ASD have difficulties in understanding representations, independent of other cognitive deficits.

The results from Iao and Leekam's research suggested that children with ASD were less accurate in their responses during the false representation test trials in comparison to typically developing children. Further, that their performance was equivalent across non-verbal and verbal false representation tasks. Therefore, Iao and Leekam concluded that the comparative performance of 'neurotypical' children and children with ASD could not be explained by differing demands on language and cognitive inhibition between the tasks. Children with ASD appeared to understand mental representation. Similarly, the children with ASD did not seem to have deficits in language and executive function which could potentially mask their understanding of mental and non-mental representation.

4.2.4 Social Communication and Interaction Skills

Much of the debate around the ToM theory of ASC focuses on factors which could be described as mainly ‘within’ person factors, e.g., language and executive functioning abilities. However, these within person factors do not acknowledge other environmental, situational or social factors that exist within the real-life context of the individual being assessed, for instance involvement with others around them, which may be most problematic for young people with ASC (e.g., Begeer, Koot, Rieffe, Terwogt & Stegge, 2008; Frith, 2003; Irish, 2013; Hughes & Devine, 2015). Similarly, individuals with ASC who have provided personal accounts of the challenges associated with ASC have described social communication and interaction as the areas of development in which they need the greatest support (e.g., see Bluestone, 2007).

A wealth of research has found differences between the way in which typically developing CYP and CYP with ASC employ social communication skills when engaging in FB tasks. Correlational studies have generally revealed positive correlations between CYP's social communication skills and their ToM abilities (Garfield, Peterson & Perry, 2001; Happé, 1995; Sicotte & Stemberger, 1999). There has also been some evidence to suggest that these findings extend to social competence in everyday settings in CYP with ASC (e.g., Fombonne, Siddons, Achard, Frith & Happé 1994; Frith, Happé & Siddons, 1994). These findings have led to researchers questioning whether the challenges that individuals with ASC encounter in understanding FBs are associated with some of the difficulties they experience when interacting with others and developing and maintaining relationships in real life (e.g., Baron-Cohen & Wheelwright, 2004). However, research findings are mixed; a number of studies have found that social competence in everyday situations does not

reflect performance during FB tasks (e.g., Frith et al., 1994; Hadwin, Baron-Cohen, Howlin & Hill, 1997; Ozonoff & Miller, 1995). Notably, the majority of these social communication and interaction studies rely on teacher/carer self-reports, which aim to quantify complex skills (e.g., an individual's use and understanding of non-verbal language, ability to 'turn take' in conversations and engaging in joint attention), which can be difficult to observe and rate/score based on one, closed response. Questions surrounding the ecological validity of FB tasks and their generalizability to real life settings suggest the need for further exploration (e.g., Frith et al., 1994; Peterson, Slaughter & Paynter, 2007; Travis, Sigman & Ruskin, 2001). Present research designs enable only the exploration of relationships/associations between social communication skills and ToM skills. Therefore, they cannot infer causality i.e., that FB performance and ToM ability is dependent on adequately developed social communication skills, or vice versa.

5. Alternative Explanations for the Apparent Theory of Mind Difficulties in Individuals with Autistic Spectrum Condition

5.1 The Effects of Context on Theory of Mind in Individuals with Autistic Spectrum Conditions

A common theme within the main theoretical explanations for the weaker performance trends on FB tasks for CYP with ASC, as compared to ‘neurotypical’ CYP, is that they each rely on skills, which are already understood to be primary areas of need for CYP with ASC (i.e., executive functioning, language, social communication and interaction). Further, these theoretical explanations are often assessed in contexts that lack relevance to real life settings where these skills may be executed, for example, in education settings. Therefore, it is perhaps plausible to suggest that standard FB tasks may mask individuals with ASC’s ToM competence due to reliance on skills, which are known to be challenging for them. CYP who answer incorrectly on FB tasks may be answering in a way that is both meaningful and logical to them, but without appropriate support/adaptions in a suitable context they are unable to communicate this and demonstrate ToM.

5.1.1 Research in Real Life Contexts

In recognition of the need to examine FB performance and ToM skills in CYP with ASC in contexts that are more relevant to real life settings, Begeer, Malle, Nieuwland and Keysar (2010) developed a communication game task. This task required participants to take into account another individual’s perspective. The authors compared the performance of 34 adolescents and adults with ASC with 34 ‘neurotypical’ control participants (matched on chronological age and cognitive abilities) during the communication game. During the game, the researcher acted as a

‘Director’ and the participant was the ‘Addressee’. The Director instructed the Addressee to move an object, for example, a big spoon within a 3D grid. Some objects were mutually visible, whereas others were only visible to the Addressee. To move an object correctly and demonstrate ToM skills, the Addressee had to move the mutually visible object. Findings revealed no significant differences between the performance of individuals with ASC and those without ASC during the communication game. These results provide evidence to suggest that adolescents and adults with ASC were able to demonstrate ToM in situations which more closely resemble real life. Yet, these results were still restricted to a ‘game’ setting, which may be somewhat different to those real-life settings whereby CYP would usually employ such ToM skills.

In a more recent study by Loyd (2015), 10 pupils with ASC aged between 16 and 18 years of age were studied in an educational environment. The pupils were interviewed as part of a study which aimed to gain their views about Drama education. The interview also involved two standard FB tests (‘The Sally Anne’ and ‘The Smarties Test’). These tests were compared with interview data observations of the CYP’s ToM skills in real life settings. Lloyd’s study employed varied and flexible methodology to enable pupils to access and respond to the questions using their preferred communication style, for example through verbal or visual means. A key objective of the research was to consider the influence of social context on perspective taking in individuals with ASC; further, to examine the extent to which experimental tests of ToM, such as FB tasks, are a true reflection of ToM abilities within real life contexts. Findings from Lloyd’s research revealed that a number of the pupils were able to identify through their chosen method of communication that their behaviour could affect the behaviour of others, which was contradictory to their performance on the standard ToM tests, where they did not demonstrate a ToM. Thus, the authors

concluded that their findings suggest that experimental tests of ToM, such as FB tasks, may not accurately reflect an individual's ToM functioning in real-world social contexts. This study appeared to be innovative due to the researcher's efforts to increase the ecological validity of its findings. However, like Begeer et al.'s (2010) study, it employed an older age range of 16-18 year olds. It is difficult to determine whether these individuals may have developed certain strategies or support mechanisms to compensate for any difficulties in ToM. Therefore, findings cannot be generalized to a younger population. Nevertheless, Lloyd's study provides evidence to suggest that contexts which most closely resemble real life settings may be more likely to facilitate FB performance in CYP with ASC, as these contexts are more meaningful and/or engaging to them.

5.1.2 Engaging the Strengths and Interests of Individuals During False Belief Tasks

To date, little research has examined the possibility that FB tasks may be perceived as trivial and/or appear unengaging to the young people taking part. A growing body of research suggests that ToM impairments displayed by children with ASC are less evident in settings when the tasks include preferred/choice items (e.g., Keen & Pennell, 2015; Lough, Rice & Lough, 2012), individualised materials (Kamps, Leonard, Dugan, Boland & Greenwood, 1991), are student directed (Dykstra Steinbrenner & Watson, 2015) and promote an individual's sense of social connection (Epley, Waytz & Cacioppo, 2007).

In examining the effects of more interesting/engaging contexts on ToM skills, Kristen, Vuori and Sodian (2015) compared children's ToM skills across three different contexts. These contexts included a narrative context (using a picture sequencing task), motivating context (technical toy), and elicited interactive context

(picture book task). Kristen et al. employed a sample of 24 children with ASD and 25 children with ‘neurotypical’ development, who were matched on verbal and mental age to the children with ASD. Findings suggested that children with ASC produced significantly more internal state language (e.g., emotion terms such as “sad” and “happy”) during the motivating context than during the elicited interactive and narrative context. Thus, this research suggests that ToM skills of CYP with ASC differ significantly depending on the context of the assessment. However, it is important to note that the researchers selected the ‘motivating toys’ for the children who took part and offered them 6 different toys to play with (e.g., dog, pig or elephant). Therefore, it is difficult to determine the motivational value of the toys for each individual in the study, as it is difficult to infer the extent to which the individual children found these selected toys motivating. Nevertheless, this study illustrates the importance of taking into account contextual factors when studying the development of ToM in individuals with ASD. Thus, traditional ways of presenting the task may be most difficult for children with ASC due to the fact that the mode of presentation does not take into account the children’s needs and preferred way of communicating that response, rather than due to a deficit in their ToM ability.

Findings from such studies suggest the significance of contextual factors, relevance to real life and known needs, interests and engagement in FB tasks for CYP with ASC. Materials, which are matched most closely to the CYP’s interests and areas of need, could be most beneficial to their success on a FB task. The majority of ToM research draws conclusions from findings involving group based study designs, which makes it difficult to examine the factors that might contribute to the performance of children with ASC who do display a ToM in these studies. This issue is especially pertinent given the fact that ASC represents a heterogeneous group. Findings from the

majority of these FB tasks are problematic in that they only report general effect sizes and do not provide information on those individuals with ASC who had especially adequate performance. Thus, it is difficult to understand other contributing factors to FB performance and subsequently ToM ability. Research methods, which involve more relevant social contexts and relate to the strengths/interests of the young person, may facilitate understanding about social-cognitive skills in children with ASC and how these relate to the development of ToM.

5.2 Rationale for the Present Research

An ongoing debate continues to exist within the literature surrounding the development of ToM and the extent to which it exists in individuals with ASC. Inconsistent findings from exploring the validity and reliability of such FB tasks have led to researchers questioning whether the task itself is masking those young people's ToM ability during such tasks. The most prominent criticisms include the task's lack of applicability to real life settings (e.g., Frith et al., 1994; Peterson, Slaughter & Paynter, 2007; Travis, Sigman & Ruskin, 2001). Despite the controversy surrounding ToM and ASC, little attempt has been made to examine these factors in relation to a person's unique strengths, interests and areas of need. Arguably, in order to understand effectively and make associations with a person's ToM, the false-belief task should be considered with adaptations that will take into account these unique strengths, interests and areas of need. The nature and presentation of ASC are varied, therefore it would be interesting to explore whether the type of support that is required for the pupil to perform best during a task impacts on his/her performance when carrying out FB tasks.

5.3 Relevance of Present Research to Educational Psychologists

The current research is of key theoretical importance to psychologists, particularly educational psychologists (EPs), as ToM development is regarded as central to an individual's social-cognitive development and skills. A person's ToM ability (or the skills/abilities associated with it) is important for engaging in everyday social situations and interactions (e.g., Adolphs, 2001). ToM has implications for how an individual understands and interprets the beliefs of another person, thus, ToM inevitably influences how he/she perceives the world, and ultimately, his/her own behaviour. An example of the skills that an individual with ToM may display includes the ability to differentiate between whether an individual is communicating true or false information, for example, they may be communicating genuine information or misleading information through a joke, irony or sarcasm (Howlin, Baron-Cohen & Hadwin, 1999).

The results of further studies into ToM in CYP with ASC, which aim to take into account the difficulties discussed in relation to the current ToM research, would have both methodological and theoretical implications at a number of different levels in terms of the assessment and intervention approaches used by EPs with individuals with ASC. Explorations into whether a more individualised approach facilitates the understanding and interpretation of FBs in young people with ASC would be useful. These explorations would have particular implications for how EPs could contribute to the assessment of young people with ASC, as well as how they deliver support, guidance and training to others involved in supporting young people with ASC.

The need to develop understanding and effective support for pupils with ASC is becoming increasingly apparent. Buescher, Cidav, Knapp and Mandell (2014) found that the average cost of supporting an individual with an ASD but no other intellectual

disability for life was £0.92 million in the United Kingdom. Further, one of the greatest expenditures was within special education services. These figures highlight the growing need to increase understanding of ASC within educational psychology in order to provide the most effective support and employ resources most efficiently and successfully. Advances in understanding appropriate ways of supporting social communication may also alleviate some of the unhelpful stereotypes that are often reported about individuals with ASC, such as that they have ‘no feelings’ (e.g., Draaisma, 2009). EPs could be key professionals in advocating and providing reliable information to counteract such stereotypes.

EPs are also specially trained to develop such specialized research methods, which could facilitate the inclusion of CYP with ASC (Farrell, 2004). Therefore, EPs are well positioned to communicate and disseminate research findings to increase understanding about the needs of, and possible pathways to support, CYP people with ASC. Making further reference to Farrell (2004), EPs’ knowledge of working with systems, organizations and groups makes them key stakeholders for promoting evidence-based educational practice, which could influence education policies at a local and even national level.

5.4 Research Aims and Hypotheses

The current research aims to explore the performance of primary school pupils with ASC on a standard FB task and an adapted task, which has been tailored to the pupils’ strengths and interests. This research will attempt to add to the body of literature exploring ToM in CYP with ASC. The following question will be explored through qualitative information collected about the CYP themselves in the real world (in the form of a pupil template completed by someone working with the pupil) and analysed

through quantitative methods (statistical analysis of the pupils scores from the standard and adapted tasks):

Do CYP with ASC perform better at a false belief (FB) task that has been adapted to their unique strengths, interests and areas of support, compared to a standard false belief (FB) task?

If CYP perform better, measured by them gaining more correct responses in the adapted FB task than the standard FB task, then this may provide additional evidence that individuals with ASC have a ToM. Without acknowledging the individual's interests and areas of need in order to engage him/her appropriately in the individual task, his/her ability to demonstrate ToM may be masked. If there is no difference in performance between the standard and adapted tasks, then this may suggest that such adaptations to the task do not facilitate an individual with ASC's ability to understand and interpret the mental states of another person, and therefore allow him/her to demonstrate ToM.

6. References

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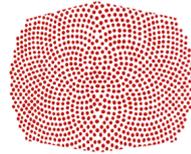
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Part 2: Empirical Study



School of Psychology

1. Abstract

Research investigating children and young people's (CYP's) performance in standard False Belief (FB) tasks, such as 'The Sally Anne Task' has highlighted that CYP with autistic spectrum condition (ASC) have difficulties in passing the task and demonstrating Theory of Mind (ToM), in comparison to CYP with 'neurotypical' development. This finding has led to the suggestion that individuals with ASC may have deficits in their ToM (Baron-Cohen, Leslie & Frith, 1985). The present research aimed to explore whether there were differences in the performance of pupils with ASC on 'The Sally-Anne Task' compared to an adapted task, which was tailored to the individual's strengths, interests and areas of need (via information from a template about the pupil supplied by helpers).

Nineteen pupils with a diagnosis of 'autistic spectrum disorder' between the ages of 6 and 10 years (mean = 8.47 years, standard deviation = 1.12 years) were recruited from mainstream classrooms or specialist resource bases attached to mainstream classrooms in three Welsh and five English primary schools. A pragmatic research framework employed a within subjects design; each pupil took part in the two (counterbalanced) tasks. A McNemar's Exact test revealed a significant difference between the pass rates of pupils in the standard and adapted tasks ($p = .008$). Pupils in the adapted tasks were almost twice as likely to pass the tasks ($M = .89, SD = .31$) as those in the standard tasks ($M = .47, SD = .51$). Implications for understanding ToM in pupils with ASC are discussed and suggestions for developing support, which focuses on the individual's strengths and interests, are proposed.

2. Introduction

2.1 Defining and Diagnosing Autistic Spectrum Conditions

Autistic Spectrum Condition (ASC) is defined as a lifelong neurodevelopmental condition, which is categorized by “persistent deficits in social communication and interaction” as well as “restricted, repetitive patterns of behaviour, interests, or activities across multiple contexts” (American Psychiatric Association, [APA], 2013, p. 50). However, the presentation of both the strengths and areas in need of support are highly heterogeneous and can vary considerably between each individual with ASC (Weitlauf, Gotham, Vehorn & Warren, 2014).

According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-V; APA, 2013), for an individual to be diagnosed with ASD, he/she must display persistent deficits in social communication and social interaction skills across multiple contexts, for example, deficits in social reciprocity and non-verbal communication and deficits in developing, maintaining and understanding relationships. In addition, an individual must show evidence of restricted, repetitive patterns of behaviour, interests, or activities, such as stereotyped or repetitive motor movements, insistence on sameness or highly restricted, fixated interests that are abnormal in intensity or focus.

2.2 Prevalence of Autistic Spectrum Conditions

Prevalence studies estimate that the number of individuals diagnosed with ASC in the United Kingdom (UK) is rising. About 1.1% of the population in the UK have a diagnosis of ASC (Baird et al., 2006, Brugha et al., 2009; Brugha et al., 2012).

Another systematic review of epidemiological surveys examining the global

prevalence of ASC has estimated a global prevalence at 17 per 10,000 (Elsabbagh et al., 2012).

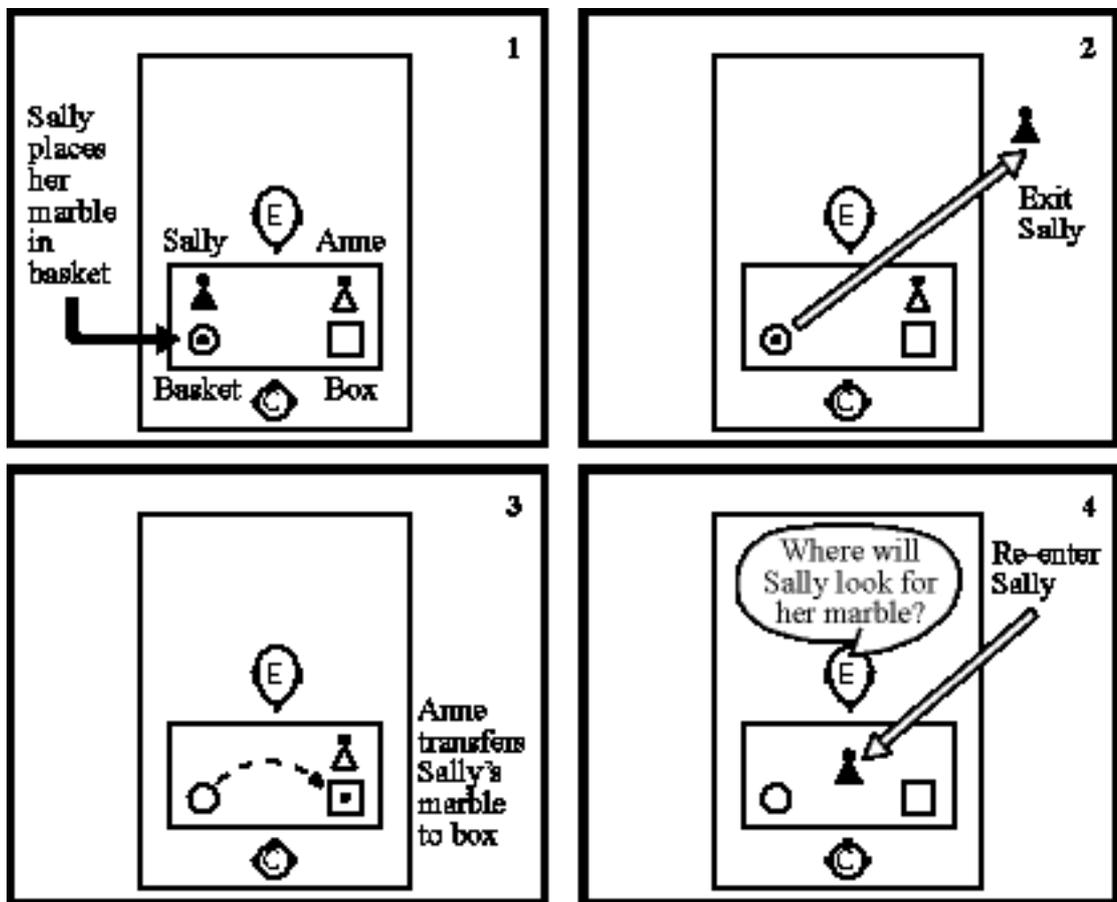
2.3 Theory of Mind

The term ‘Theory of Mind (ToM)’ was developed by child psychologists to describe a transition in child development, which results in a child’s ability to understand another person’s thoughts and feelings and successfully predict the intentions of that other person (Leslie, 1987). Modern definitions of ToM ability similarly focus on describing the skills required for one person to understand the desires, beliefs, intentions, and inner experiences of another person (e.g., Wellman, Cross & Watson, 2001).

In an attempt to further understand the development of ToM, researchers have developed ‘False Belief’ (FB) tasks (e.g., Baron-Cohen, Leslie & Frith, 1985; Premack, 2010; Wellman et al., 2001), which have aimed to explore and make sense of how children and young people (CYP) reason about the desires, emotions, beliefs and intentions of others. In one of the most commonly used FB tasks (Sally-Anne task, see figure 2 below; Baron-Cohen et al., 1985), individuals are shown or told a story involving two characters. Typically, the individual is shown two dolls, Sally and Anne. Sally has a basket and Anne has a box. In addition, Sally has a marble. Sally places the marble in her basket, prior to leaving the room. Whilst Sally is not present in the room, Anne removes the marble from the basket and places it in the box. Sally is then brought back into the room and the individual is asked where he/she thinks Sally will look for the marble. An individual is considered to have passed the task if he or she states that Sally will look in the basket where she placed the marble before leaving the room. In contrast to this, an individual who fails the task will answer that Sally will look in the box, where the individual knows the marble has been hidden. However, it

is not possible that Sally would know this, since she did not observe it being placed there. Researchers investigating the reliability and validity of the The Sally Anne FB task have found high internal validity of 77% (Grant, Grayson & Butcher, 2001) and strong internal consistency within the test (Hughes, Adlam, Happé, Jackson, Taylor, & Caspi, 2000; Hughes & Cutting, 1999; Hughes & Dunn, 1998).

Figure 2: Diagram of the ‘Sally-Anne’ False belief task



2.4 Theory of Mind and Autistic Spectrum Conditions

A commonly offered explanation for the apparent difficulties in social communication and interactions experienced by individuals with ASC is based on the ‘Theory of Mind’ (ToM) theory (Baron-Cohen et al., 1985). A wealth of studies investigating

children's performance in FB tasks has highlighted that children with ASC have difficulties in passing the test, in comparison to children who display 'neurotypical' development (e.g., Baron-Cohen et al., 1985; Begeer, Bernstein, van Wijhe, Scheeren, & Koot, 2012; Charman & Baron-Cohen, 1992; Cohen & German, 2010; Happé, 1995; Leekam & Perner, 1991). Additional research has also suggested that children with ASC have specific difficulties in FB tasks, which exceed those of CYP with other additional needs, such as Down's syndrome (Baron-Cohen et al., 1985), Attention Hyperactivity Disorder (Kain & Perner, 2003), William's syndrome (Karmiloff-Smith, Klima, Bellugi, Grant & Baron-Cohen, 1995) and also, Fragile X syndrome (FXS), a monogenic X-linked syndrome (Losh, Martin, Klusek, Hogan-Brown & Sideris, 2012). Despite being an influential theory of ASC, there is an ongoing debate within the literature surrounding the development of ToM and the extent to which it is associated with social communication difficulties in individuals with ASC (e.g., Bloom & German, 2000; Carlson & Moses, 2001).

A common theme which appears within the main theoretical explanations for the weaker performance trends for CYP with ASC, as compared to 'neurotypical' CYP on FB tasks, is that they each rely on skills which are already understood to be primary areas of need for CYP with ASC, such as, social communication (e.g., Senju, Southgate, White, & Frith, 2009), language (e.g., Paynter & Peterson, 2010; Pellicano, 2010) and executive functioning skills (e.g., Russell, Saltmarsh & Hill, 1999). Further, these theoretical explanations are often tested in contexts which lack relevance to real life settings, compared to where they may be executed, for example, education settings.

A growing body of research suggests that impairments of children with ASC in socio-cognitive skills are less evident in settings when the tasks include

preferred/choice items (e.g., Lough, Rice & Lough, 2012; Keen & Pennell, 2015), individualised materials (e.g., Kamps, Leonard, Dugan, Boland & Greenwood, 1991) and are student directed (e.g., Dykstra Steinbrenner & Watson, 2015). In examining the effects of more interesting/engaging contexts on ToM skills, a recent study by Kristen, Vuori and Sodian (2015) compared children's ToM skills across three different contexts. These contexts included a narrative context (using a picture sequencing task), a motivating context (technical toy), and elicited interactive context (picture book task). Findings suggested that, overall, children with ASC produced significantly more internal state language (e.g., terms which included volition terms (e.g., want, must), ability terms (e.g., master, hard (to do)) and emotion/affect terms (e.g., sad, happy)) during the motivating context than during the elicited interactive and narrative context.

2.4.1 The Importance of Theory of Mind and Autistic Spectrum Conditions in an Education Context

ASC has been highlighted as the most prevalent condition amongst pupils who have statements of Special Educational Needs/ Educational and Health Care Plans (SEN/EHCs) in Wales and England respectively (Department for Education (DfE); 2014; Welsh Government Statistics for Wales, 2015). Further, the number of those pupils who have a statement of SEN/EHC Plan and also have a diagnosis of ASC appears to be increasing (Department for Education [DfE] 2014; Welsh Government Statistics for Wales, 2015). Nearly three quarters of these pupils who have a diagnosis of ASC, are educated in mainstream classrooms (DfE, 2014). Core challenges for pupils with ASC in terms of their social communication and interactions are believed to be the same reasons for their need for support in school (Eaves & Ho, 2008).

Effective support for social communication and interaction skills appears to positively impact on academic and school related outcomes (Cotugno, 2009; Laugeson, 2013). This suggests the importance of targeting these key areas of support for pupils with ASC in education settings, to enable them to develop their social communication and interaction skills.

2.5 Research Aims and Hypotheses

The research will seek to explore the performance of individuals with ASC during a standard FB task compared to an adapted task, which has been tailored to the strengths and interests of the individuals taking part.

2.5.1 Research Question

The following question will be explored through quantitative methods, but the study design will be informed by qualitative information collected about the individuals themselves in the real world (via a pupil template completed with the pupil by someone who works with her/him):

Do CYP with ASC perform better at a false belief (FB) task that has been adapted to their unique strengths, interests and areas of support, compared to a standard false belief (FB) task?

If individuals perform better, measured by gaining more correct responses in the adapted FB task than the standard FB task, then this may provide evidence that individuals with ASC have a ToM. If there is no difference in performance between the tasks, then this may suggest that such adaptations to the task do not facilitate an

individual with ASC's ability to understand and interpret the mental states of another person, and therefore demonstrate ToM.

3. Methodology

3.1 Research Paradigm

The theoretical framework, which informed and determined the Ontology, Epistemology, methodology and research methods, was pragmatic in nature. Traditionally researchers have been viewed as belonging to one of the two main paradigms, a positivist (quantitative) or constructivist (qualitative) paradigm (Doyle, Brady & Byrne, 2009). Positivists tend to assume that there is only one, single reality and as a result aim to examine relationships between different variables through objective and scientific methods, which often involve quantitative methods to test hypotheses (Firestone, 1987). On the other hand, constructivists argue that there are multiple realities and therefore, different interpretations may result from the specific situations/contexts, which the research aims to investigate. Constructivist researchers tend to employ qualitative or a combination of quantitative and qualitative methods to investigate research questions through obtaining detailed descriptions of the experiences of individuals (Mertens, 2015). The pragmatist paradigm is a more recent research paradigm to have emerged within psychology (Menand, 2001). Unlike positivists, who are concerned with examining what is measurable through objective measures and constructivists, who are interested in an individual's unique experiences, understanding and meaning of situations/contexts, a pragmatist views reality as the practical effect of ideas. Therefore, in terms of ontology, the truth is believed to be the practical effect of ideas and is what is useful in that particular context (Fishman, 1999).

In terms of its epistemology, a pragmatic paradigm assumes that any method of thinking/doing (quantitative, qualitative or a combination of both these methods) leads to pragmatic solutions. Thus, a pragmatist acknowledges the specific context in which the research takes place and is most concerned with the differences that a theory makes for practice, rather than aiming to discover whether the theory is supported or rejected (e.g., Fishman, 1999; Onwuegbuzie & Leech, 2005). Creswell (2013) notes that a strength of pragmatism is that it is not committed to a single system of philosophy or reality. Thus, researchers are able to choose from a variety of methods, techniques and procedures that best meet their needs and purposes (Doyle, Brady & Byrne, 2009). Conversely, Mertens (2003) has criticised pragmatism and argues that, due to its focus on the research process, it fails to address who the paradigm might be practical for and to what extent it might be practical for them. In spite of such criticisms, the pragmatic paradigm informed the methodology of this research, which employed quantitative methods, informed by qualitative information collected in the real context of the participants. The pragmatic paradigm seemed most appropriate for the current study as the research involved investigating a practical task, within a specific context of a FB task and aimed to investigate the most appropriate ‘solution’ to a ‘problem’ in an individual context/situation. However, ASC is a highly heterogeneous condition and an individual’s presentation in terms of both the strengths and areas of need he/she may have can vary considerably. Previous standard FB research, which has mostly employed positivist research paradigms and includes quantitative methods, does little to take these individual differences into account. By contrast, studying ToM through standard FB tasks through a constructivist paradigm could also be difficult to investigate, as the standard design of the task is based on a closed question. Therefore, it would be difficult for the researcher(s) to interpret and understand detailed thinking

and reasoning behind participants' responses. Constructivist paradigms have also been criticised for being ambiguous due to researchers only being able to explain findings through their own subjective interpretations (Gordon, 2009).

3.2 Participant Sample

Nineteen pupils (17 males and 2 females) between the ages of six and ten years of age ($M = 8.47$ years, $SD = 1.12$ years) took part in the research (2 of these 19 participants were removed from the sample as they were perceived by the researcher to display body language or communicate that they were no longer comfortable with taking part in the research). Each pupil had a diagnosis of 'autistic spectrum disorder' (ASD) determined by a multi-disciplinary assessment, with no other diagnosis which could affect their task performance such as Attention Deficit Hyperactivity Disorder (ADHD). The pupils spoke English as their first language and attended a mainstream primary school or specialist base attached to a mainstream school. This inclusion/exclusion criterion was created to ensure that all pupils had a level of ability to appropriately access the task and to minimise the possibility of task performance being due to other additional needs/learning difficulties. The pupils were recruited from eight different primary schools in two different Local Authorities (five in England and three in Wales). Ethical approval for the study was obtained from Cardiff University's School of Psychology Ethics Committee.

3.3. Materials

3.3.1 Pupil Template

A pupil word-processed template (see appendix 1) was designed for completion by a person who best knew the pupil in his/her school or home setting (for example, a member of staff or parent). The template was designed to collect information about what may help the pupil to understand and communicate during the tasks/research most effectively. The person completing the template was instructed through written instruction to spend time in a quiet and comfortable place with the pupil to complete the template. In addition to use methods which they felt were most beneficial to the pupil in order to gather information about him/her. The template (see appendix 1) asked a series of nine open-ended questions, (e.g., “What does the pupil feel they need help with in order to communicate?” and “What does the pupil enjoy (e.g., interests, activities, how they like to spend their time)?”).

3.3.2 Standard False Belief Task

Pupils were shown the following scenario based on the original ‘Sally Anne Task’ by Baron-Cohen et al. (1985). The scenario involved two dolls, Sally and Anne:

Before Sally leaves for lunch, she hides her ball in the bag. While she was away eating, her big sister Anne plays a trick on her and moves her ball from the basket to the box.

Following the scenario, pupils were asked to interpret the scenario and answer the following question:

When Sally returns, where will she look for her ball?

3.3.3 Adapted False Belief Task

Pupils were shown a version of the above scenario. However, the presentation of the scenario was adapted in line with their strengths, interests and areas of need gathered from the pupil template, prior to taking part in the research. The following is an example of an adapted FB task using, using a pupil's interest in reading and the book 'Harry Potter'.

This is Harry [Potter]. This is Hermione. [Role-played with Playmobil classroom set and characters].

Harry is reading his book [at his desk]. He puts the book in his book box and leaves the room.

Hermione then takes the book out of the box and puts it under a tray
Then Harry comes back.

When Harry returns, where will he look for his book?

All the adapted tasks were novel and tailored to the individual's strengths and interests and took into account strategies known to have helped support the pupil to communicate effectively. The order of the standard and adapted tasks was counterbalanced across participants.

3.4 Procedure

The procedure for the present research took place according to the following series of events:

- Gatekeeper information and consent forms (see Appendix 4) were sent to the principal EPs to provide them with the necessary details about the study and seek their consent to contact head teachers of schools within the Local Authority (LA).

- The researcher contacted head teachers of schools within the approved LAs through telephone calls or email.
- The researcher asked head teachers whether they had any pupils with a diagnosis of ASD who might be suitable for inclusion and would agree to take part in the research. Head Teachers were told that the aim of the research project was to investigate how pupils with ASC may be best supported to demonstrate their understanding of the thoughts, feelings, ideas and the intentions of others.
- Head teachers who agreed to be provided with more information about the research were provided with the relevant information and consent forms (see Appendix 5) by the researcher either in person, via post or email.
- Initially, head teachers were asked by the researcher in person or via email to ask any suitable pupils whether they would like to take part in the research. Head teachers were asked to verbally inform the pupils that the project would involve a member of staff/parent completing a pupil template, which would be used to involve pupils in two similar story activities.
- If the pupils stated that they wished to take part, then letters, which included parental information and consent forms (see Appendix 6), were sent out from the head teachers to their parents/carers in the pupils school bags. The consent forms also asked for parents/carers to state the preferred person (parent or member of staff) that he/she wished to complete the pupil template.
- Once the pupil consent forms were returned to the head teacher, the head teacher gave the template to the person nominated by the pupil's parents.

- The nominated person was provided with a copy of the information and a consent form (see Appendix 7) by the Head Teacher and asked to sign and return the consent form if he/she agreed to take part in the research.
- The nominated person was also provided with instructions (see Appendix 1) on how to complete a template with the pupil and provide information on his/her strengths, interests and those things, which were considered to be important for helping to support the pupil to engage with another person.
- Once the pupil template was complete, the researcher arranged to collect the pupil templates, pupil consent forms, staff consent forms and parent/carer consent forms for prospective participants with the head teacher via email.
- After the completed templates were collected from the school, the researcher designed the adapted task for each pupil by including key information that was highlighted as important to that pupil.
- Once an adapted task had been designed for a pupil, the researcher arranged an appropriate date/time to visit the school and meet with the pupil via a telephone or email conversation with the head teacher.
- Before meeting the pupils, the researcher verbally requested that the head teacher asked the pupils (using any appropriate communication tools) again if they would like to meet with the researcher and take part in the research. The head teacher was also verbally asked to remind each of the pupils that they would be asked by the researcher to complete two story activities and that it was her/his choice if s/he wished to take part.
- Prior to conducting the activities with the pupil, the researcher verbally requested that a familiar member of staff read out the pupil consent form (see Appendix 8) to her/him (before the researcher arrived) using the pupil's most

preferred method of communication (as stated in the pupil's template). At this stage, the information and consent forms were intended to gain initial consent from the pupil via a person whom they were familiar with and could be most attuned to their needs and responses. This also served to minimise any potential power imbalance, whereby the CYP might have felt pressured to provide consent when they might have preferred to 'opt out' of the research

- The researcher met and engaged with the pupils individually in a small, separate and quiet room outside of his/her classroom.
- Prior to carrying out the tasks, the researcher spent time building rapport with each pupil (an average of approximately ten minutes). Each pupil was then asked to engage in two story activities.
- Each of the two FB tasks (standard and individually adapted tasks) were carried out in counterbalanced order with each pupil.
- The research process was designed to be as flexible as possible when pupils engaged in the adapted tasks. For example, if a pupil displayed more interest in other materials during the rapport-building phase than the materials pre-selected by the researcher to use with him/her during the adapted task, then this interest was incorporated into their adapted task.
- Pupils were informed of how they could state that they wanted to stop participating in the research at any time and were provided with some examples of how they could express this (e.g., they could express that they wanted to "do something else", "go back to class" or "stop the task").
- Following each task, the pupils were initially asked where they thought the character in the story would look for their object. In addition to this question, pupils were also asked four control questions which they had to answer

correctly for their responses to be analysed and included in the study's findings. Pupils were asked the following:

1. Who is Sally?
 2. Who is Anne?
 3. Where was the ball first?
 4. Where is the ball now?
- The researcher then recorded the pupils' answers via pen and paper.
 - Finally, debrief forms (See Appendix 9) were then provided to all individuals (pupils, and their parents/carers, support staff and head Teachers) who took part in the research.

3.5 Design

The research employed a within subjects design, where pupils took part in two different tasks (the 'Sally Anne' FB task and an individual adapted FB task), following staff/parent completion of a pupil template. Each pupil's performance was scored as a pass/fail in each of the two different conditions. A within subjects design was considered important to recognise the significant heterogeneity between a group of individuals with ASC and control for this. This design was considered to be most suitable to compare pupil's individual performance on two different tasks (standard vs. adapted task). The order of task presentation was counterbalanced across the pupils. Pupil performance (measured by correct or incorrect answer) during the standard FB tasks was compared to performance on the adapted FB task.

3.6 Results

Analysis of the participants' results was carried out to compare their pass/fail rates on the standard FB and individually adapted tasks (see figures 3 and 4 below). This analysis examined the experimental hypothesis that individuals will perform better during the adapted FB task than the standard FB task. Nine pupils passed the standard task (47.37% of the sample), compared to seventeen pupils (89.47% of the sample) who passed the adapted task. The nine pupils, who passed the standard task, also passed the adapted task. Eight pupils failed the standard task, but passed the adapted task, whereas no pupils failed the adapted and passed the standard task. Finally, two pupils failed both the standard and adapted tasks (see Figures 2 and 3 below).

Figure 3: Frequency of Passes and Fails on Standard and Adapted False Belief Tasks

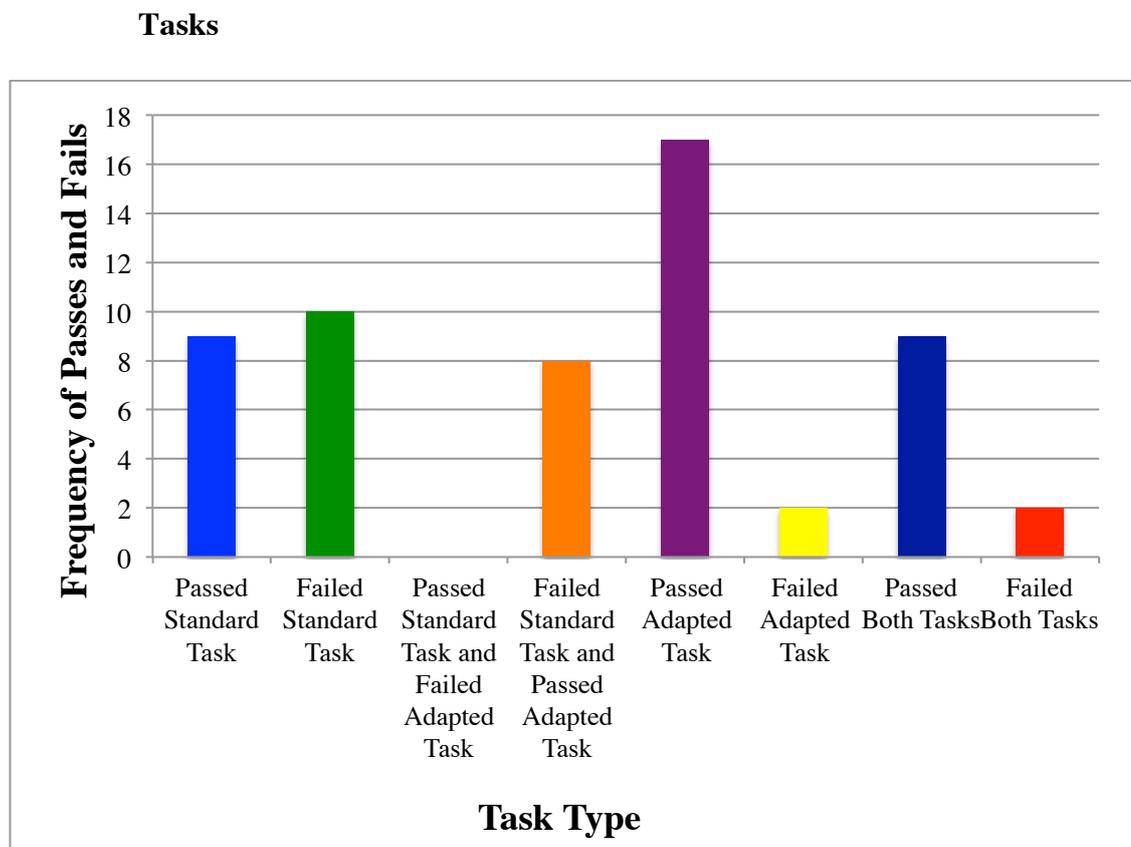
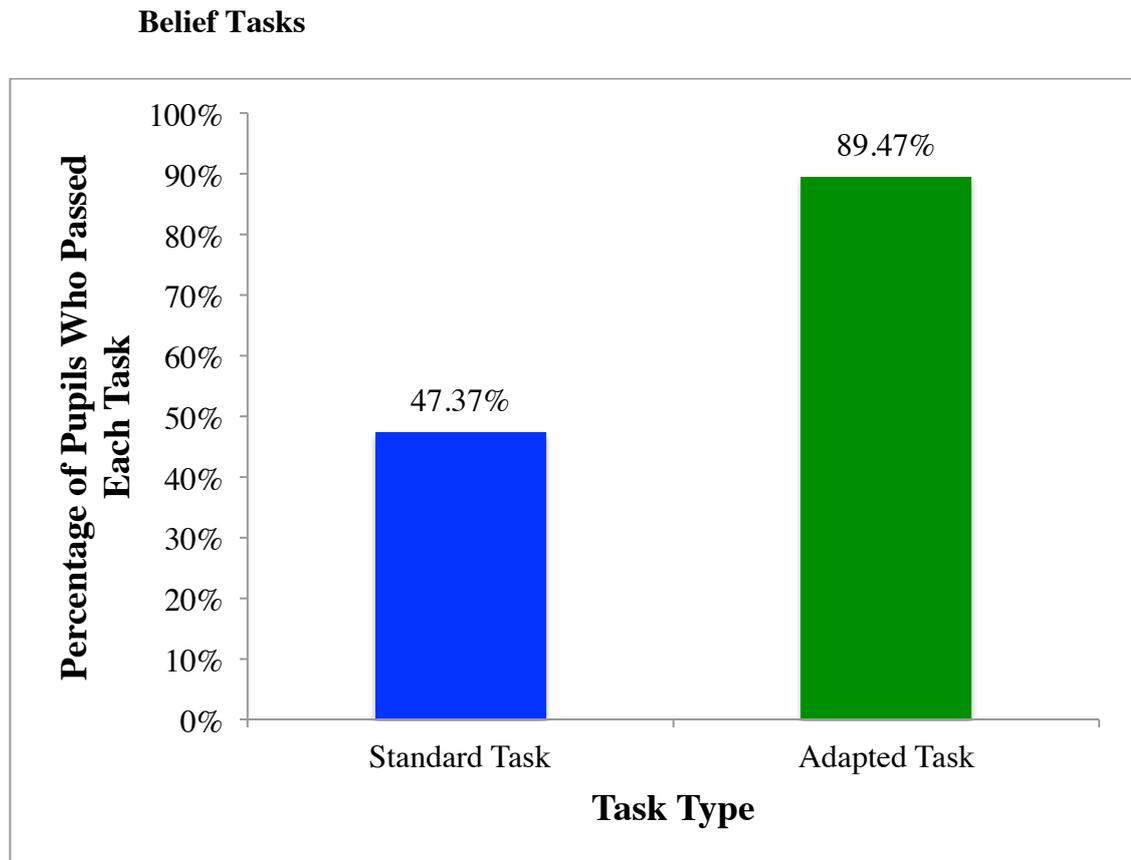


Figure 4: Percentage of Pupils Who Passed the Standard and Adapted False



Means and standard deviations of the pass rates for participants in each condition were calculated (see Table 1 below). This allowed for a comparison between the average pass score of those pupils in the standard FB task, with those in the adapted task. Mean pass rate scores were greater for those participants carrying out the adapted tasks ($M = .89$, $SD = .32$) compared to those in the standard task ($M = .47$, $SD = .51$). To analyse for any statistically significant difference in pass rates between the two groups, a McNemar's Exact test was carried out using an SPSS Version 20 computer programme. A statistically significant difference in the proportion of correct answers between standardized and adapted tasks was revealed, $p = .008$ ($p = <.05$, 2 tailed test).

Table 1

Means and Standard Deviations of False Belief Scores in the Standard and Adapted Task.

Task Type	Mean Score (where 0=fail, 1=Pass)	Standard Deviation of Score
Standard Task	.47	.51
Adapted Task	.89	.32

The pupils' FB scores according to the type of task and order that it was presented were calculated (see Table 2 below). The current sample was considered too small to carry out any further statistical analysis of the effect of task order on pupils score. However, the tabulated scores did not appear to display any significant differences in terms of the order that the task was presented and the likelihood that a pupil would pass or fail the task. Five pupils passed the standard task, if the standard task was presented first. Similarly, four pupils passed the standard task, if the adapted task was presented first. In addition, the number of pupils who passed the adapted task depending on the type of task presented first did not appear to be significantly different. Eight pupils passed the adapted task, if presented with the adapted task first. Comparably, nine pupils passed the adapted task, if presented with the standard task first.

Table 2*Pupils' Scores According to Task Order and Task Type*

		Frequency of Passes and Fails			
		Passed Standard Task	Failed Standard Task	Passed Adapted Task	Failed Adapted Task
Order of False Belief Tasks	Standard Task Presented First (n=9)	5	4	9	0
	Adapted Task Presented First (n=10)	4	6	8	2

The present results confirmed the experimental hypothesis that CYP with ASC performed better in a FB task that was adapted to their unique strengths, interests and areas of support, compared to a standard FB task (the ‘Sally Anne’ task). Thus, the null hypothesis that those pupils with ASC do not differ in their performance of a standard FB task and a task adapted to their unique areas of strengths, interests and areas of support can be rejected. Instead the results provided some evidence to suggest that adapting FB tasks to take into account the strengths, interests and areas of support needed for CYP with ASC to engage in a FB task can potentially help CYP with ASC to demonstrate ToM. Without acknowledging CYP with ASC’s interests and areas of support, which need to be used to adapt standard tasks to allow them to appropriately engage in the task, their ability to do well at a FB task and consequently demonstrate ToM abilities may be masked.

3.7 Discussion

3.7.1 Summary of Present Research Findings

Results suggest that primary school aged pupils with ASC aged six to ten years in the present sample perform better at a FB task that has been adapted to their unique strengths, interests and areas of need, in comparison to a standard FB task (the Sally Anne task). Analysis of the pass scores of pupils between each condition (standard FB task vs. adapted FB task) found that the number of pupils who passed the adapted FB task compared to those who passed the standard FB task was significantly higher ($p = .008, p < .05$, two tailed test).

Almost half the pupils in the present sample (9 out of 19 pupils) passed the standard FB task. In addition, the majority of the sample (17 out of 19 pupils) passed the adapted task. Inspection of the mean pass/fail scores from the sample employed indicated that pupils were almost twice as likely to pass the adapted FB task than the standard FB task. Present results suggest, firstly, that nearly half of the pupils with ASC in the current sample passed a standard FB task and demonstrated some ToM ability. Secondly, that these pupils were more likely to demonstrate such ToM abilities when the FB tasks were adapted to their strengths, interests and areas of support, which was needed to enable them to appropriately engage in the task. Thirdly, that within the current sample of nineteen pupils aged six to ten years with ASC, ToM ability may be underestimated during standard FB tasks due to their difficulty in accessing tasks, which require those skills, which are known to exert challenges for them, for example, social communication and interaction skills. Therefore, present findings reveal some conflict with the assumptions of the ToM theory of ASC (Baron-

Cohen et al., 1985), which suggest that individuals with ASC have significant impairments in their performance during FB tasks, and subsequently ToM skills, in comparison to ‘neurotypical’ peers.

3.7.2 Exploration of Present Research Findings in Relation to Past Research

Present findings support the significance of taking into account contextual factors, such as the areas of need/support, strengths and interests, to promote engagement of CYP with ASC during FB tasks (e.g., Begeer, Malle, Nieuwland & Keysar, 2010; Loyd, 2015). Secondly, findings suggest that children in the current sample aged six to ten years with ASC are more able to demonstrate skills associated with ToM, within an individualized context, which may be more accessible and relevant for engaging CYP with ASC. These current findings differ from previous studies, which have focused on domain specific investigations of CYP with ASC, such as social communication skills (e.g., Senju et al., 2009), language skills (e.g., Paynter & Peterson, 2010; Pellicano, 2010) and executive functioning skills (e.g., Russell, Saltmarsh & Hill, 1999) and their influence on ToM development. Present results resonate more closely with those of Iao and Leekam (2014) who concluded that it might be more useful to explain an individual’s understanding of FB in relation to a general underlying conceptual capacity, rather than a domain specific account such as ToM.

Another important point for discussion is that nearly half of the present sample also passed the standard ‘Sally Anne’ FB task (47.36%). Arguably the current sample is too small to complete any further analysis on any effect (e.g., practice or evidence of

transferred learning), which the task type/order might have had on the pupil's success. The current sample of 19 participants would be considered too small for any further group comparisons to be made and for any statistical tests to be carried out accurately. On examining the pass rates of pupils according to task type and order, there did not appear to be any considerable differences between the order of the task and the score, which participants went on to achieve (see Table 2 above). Thus, in the current sample the type of FB task, which the participants completed first (standard or adapted) did not seem to influence whether they were more likely to pass/fail their next task. Further research with much larger samples of pupils would be useful to investigate this more thoroughly.

In exploring possibilities for the higher pass rates of CYP with ASC in the current sample than previous studies (e.g., Baron-Cohen et al., 1985), it could be that the higher mean chronological age of the present sample (8.47 years) meant participants may have been more likely to pass the tasks, as they may have also been more likely to have higher mental ages. Previous research has linked higher mental ages of children with ASC with greater success at FB tasks (e.g., Begeer, Koot, Rieffe, Meerum Terwogt & Stegge, 2008). Another possibility is that the present results reflect the highly heterogeneous nature of ASC; the current sample of pupils may have included those who were 'higher functioning' and thus more able to understand and perform well at the task. Research with a much larger sample, with a greater age range and variety of pupils, recruited from multiple and different settings would be interesting to explore these possibilities further.

Present findings also support previous research which has demonstrated that a CYP's ability to demonstrate ToM can be dependent upon the task employed (e.g., Van Buijsen et al., 2011), particularly how motivating/engaging those tasks are

perceived to be by the participant (e.g., Kristen, Vuori & Sodian, 2015). Materials, which are more closely matched to the CYP's strengths, interests and areas for support, appear to be important to the pupil's success during their adapted FB task. Also, present findings suggest that the use of engaging materials contributes to a CYP with ASC's success at a FB task. Thus, a CYP with ASC may not necessarily have a deficit in ToM, but require support related to their strengths, interests and areas of need to help him/her effectively demonstrate their ToM abilities.

3.7.3 Pragmatism as an Approach to Educational Psychology Research

A key strength of the present study included its novel and pragmatic research design to studying FB tasks in CYP with ASC. Previous literature is limited in that it has primarily investigated quantitative responses from forced choice questions. These quantitative designs present as challenging when trying to understand and develop theories behind FB performance in CYP with ASC. Such quantitative designs do not allow researchers to explore the thinking and reasoning behind the responses which the research participants provided. Qualitative information would be of benefit when investigating the validity of ToM further. However, a quantitative design was selected for the present research as it sought to examine the validity of a popular existing quantitative FB task through creating adaptations that were individual to the needs of the CYP participants. In addition, previous studies have most often compared samples of CYP with ASC with 'neurotypical' CYP who are matched in terms of their mental age or verbal ability. However, the suitability of these matched sample designs for individuals with ASC is questionable, as these individuals with ASC are recognised as a highly heterogeneous group, in terms of both their strengths and areas for

development. The present research design is strengthened by CYP with ASC acting as their own controls, which is arguably a more suitable comparison, as the unique nature of CYP with ASC's individual needs could result in difficulties when trying to find and select other suitable participants with whom to compare FB task performance with.

Although the individualised design of the adapted FB tasks offer strengths, it is important to discuss present challenges relating to difficulty, in terms of standardization of the adapted conditions. The adapted tasks differed according to the interests and needs of each pupil. Inevitably, each adapted condition had differences in its design and the amount of rapport building the pupils received from the researcher, prior to engaging in the tasks, which would be difficult to analyse in a standardized way and to allow robust statistical comparisons. A future study could assess whether the findings of the current study can be replicated with a much larger sample and more complex statistical analysis. However, within the current pragmatist research approach, it could be argued that any potential criticisms in this area could be counteracted by the present research's increased ecological validity.

Despite the current research employing only a small sample of participants, it is of the current author's opinion that it was carried out using an approach and context similar to those which an EP might use for his/her assessment of a young person within a real life context. Fishman (2002) suggests that high external validity is a central strength of practice based research methods, because studies are conducted in their actual contexts.. Further, Anderson, Herriot and Hodgkinson (2001) argue that Pragmatic Science is high in both practical relevance and scientific rigour. These authors argue that a pragmatist approach considers knowledge as a result of context. The origin of the problem intended for research is therefore more likely to be

discovered through investigating real life situations and experiences of those individuals/settings, which it involves. Therefore, solutions to the problem are best investigated by addressing a broad and diverse range of theories and the outcomes of several interventions. A pragmatist approach has unique strengths for educational psychology research, which differs from traditional positivist approaches that are dominant in the psychology literature (Hayes, 2000). Positivist approaches aim to address a research question directly; however, they tend to have reduced ecological validity and therefore do not allow for findings to be sufficiently generalized to real life settings. Again, future research seeking to replicate the current findings with a larger research sample would be useful.

3.7.4 Key Discussions and Suggestions in Relation to the Present Research Sample

Despite the present sample being a small pilot study, it provides interesting findings to prompt further related research. Small samples are problematic as they can limit the statistical power of the analysis of the findings. Although it may be difficult to generalise these findings to a larger sample, the current sample is strengthened by its inclusion of participants from both an English and a Welsh Authority, which could, arguably, increase its representativeness of a population of CYP with ASC as it includes pupils from two different countries and a number of local authorities. However, a much larger sample of pupils would further increase this representativeness.

The majority of the participants in the present study were male (17 out of a total of 19 participants). However, this is perhaps to be expected due to the recognition

within the literature that the ratio of male CYP diagnosed with ASC is much greater than those who are female (Taylor, Jick & MacLaughlin, 2013). Nevertheless, recent research has found differences in presentation of social communication and interaction needs between females and males (Sedgewick, Hill, Yates, Pickering & Pellicano 2015). Thus, it would be useful to carry out research with a larger sample, which includes more females.

Another important point for further discussion is that the sample included primary school age pupils from six to ten years of age with a diagnosis of ASD. Therefore, it is difficult to generalise the current findings to a sample of younger or older children. Each of the pupils who took part in the study was also from a mainstream school, or attended a mainstream school which had a specialist social communication base attached to it. This was to ensure that the CYP had a level of cognitive ability which would ensure that they would be able to access the task in the first instance and that any differences in their performance between the tasks were not due to any learning difficulties. However, this meant that the current sample of participants included CYP with ASC with a higher level of cognitive functioning. This is a challenge given the highly heterogeneous nature of abilities that exist amongst CYP with ASC, which McConachie (2002) suggests can “vary tremendously as individuals” (p.196). A much larger sample of CYP with ASC with various levels of cognitive ability is required to investigate the validity of the current research findings further.

The present sample only reflects a small proportion of CYP with ASC. Like many of the previous studies in the literature, the present research included those CYP with higher functioning ASC, as those with more complex needs attend more specialist settings. The inclusion of participants from a variety of settings would be an

interesting area for future research. One way of achieving a larger sample size could be to develop research that includes several independent teams of researchers who work collaboratively to carry out the same research across different settings/geographical areas (Kasari, 2002).

3.7.5 Additional Key Suggestions for Future Research Investigating False Belief Tasks

Future research may look to include a greater variety and number of FB tasks with a larger sample of CYP with ASC, including those with more complex needs. In the present study, it was only possible to explore comparisons between pupils' performance on one type of standardized FB task ('The Sally Anne' Task) and a similar adapted task. Constraints on time and resources in the present study made it impossible to include a battery of ToM tests. Also, the use of several different FB tests in one session was deemed too demanding for pupils with ASCs. Future research which includes a greater range of social cognition assessments over a longer period of time, could help to explore the reliability and robustness of the present research findings further. In addition, it would be useful to explore whether an individual's success at an adapted task is associated with increased success at a following standard task, or even if it is generalizable to an activity which involves ToM in the classroom. Any increased success could reflect learning through adapted tasks, which take into account the individual needs of the pupil with ASC.

The adapted tasks in the current study were designed by selecting the information which was mentioned most often in the pupil template. For example, if the pupil's interest (e.g., 'cars') was mentioned more often in comparison to other interests,

then this was chosen as a focus for the task design. Yet it is useful to consider that there are alternative ways of selecting information to include in the task, which may affect the likelihood that a CYP would successfully engage in it. The extent to which the researcher was able to build rapport with the pupils, prior to them engaging in the tasks might have influenced their engagement and consequently their performance throughout them. Future research could try to incorporate further forms of methodological triangulation, where templates are completed by a number of individuals who are familiar with the CYP to validate the information collected. Another option for future research could be to conduct a pilot study using the individualised materials selected by the researcher for the CYP to ensure that the materials suitably engage them, before employing them in the research activities with the CYP.

3.7.6 Key Implications of Present findings for Educational Psychology Practice

Despite this study including only a small sample of pupils with ASC, the present findings provide an interesting insight into how EPs and professionals may be able to support individuals with ASC to understand the thoughts, desires and intentions of others. The current research focused upon ToM in CYP with ASC. ToM development is considered an important contributor to an individual's social-cognitive development and skills. An individual's ToM ability is regarded as an important precursor for engaging in everyday social situations and interactions (e.g., Adolphs, 2001; Hughes & Devine, 2015). For example, ToM has implications for how an individual understands and interprets the beliefs of another person. Further, adequate ToM development is

considered to enable the individual to accurately perceive the world and his/her own behaviour. An individual's ToM development is positively associated with abilities, such as being able to distinguish whether an individual is being truthful or conversely, whether they are communicating inaccurate information, such as telling a joke, being ironic or sarcastic (Howlin, Baron-Cohen & Hadwin, 1999).

The present findings warrant further research as the results have implications for both assessment of and interventions with pupils with ASC. The current findings provide some evidence to investigate further whether EPs and education professionals should tailor both assessments and support to focus on a pupil's strengths and interests, including materials, which best help to engage him/her in a task and communicate his/her responses during the task.

There are a number of existing interventions which aim to develop ToM skills in CYP with ASC, for example, Comic Strip Conversations (Gray, 1994), Thought Bubbles (Paynter & Peterson, 2013) and Social Thinking (Garcia-Winner, 2007). However, the maintenance and generalizability of such interventions appear to be limited. A review carried out by Fletcher-Watson, McConnell, Manola and McConachie (2014) of the efficacy of ToM interventions indicated that although there is some evidence that ToM can be taught in individuals with ASC, evidence that these ToM skills can be maintained over time or generalised to other settings outside of the one(s) where ToM was originally taught, is limited. Arguably, interventions which involve a more individualised approach and take into account the CYP's strengths and interests could be required. It would be interesting to explore whether greater individualization of these current and future interventions could increase positive social communication outcomes for CYP with ASC.

Individualised approaches to supporting CYP with additional needs are becoming increasingly more recognised in EP literature and educational policies. For example, The Special Educational Needs and Disability Code of Practice (DfE, 2014) emphasises how individuals should be at the centre of decisions made about them and professionals should employ individualised, person centred approaches to ensure this. Recent researchers have suggested that EPs should aim to develop their practice-based evidence, as opposed to research-based evidence (e.g., Fox, 2003). Such practice-based approaches are considered to be more effective for the scientific study of people as their behaviour is highly complex and individualised. Conversely, a large group of individuals is unlikely to benefit from a ‘one size fits all’ approach, which aims to approach all individuals in the same, standardized way. Replication of the present research should be carried out to investigate the current alternative explanation to the ToM theory of ASC, which the results of the current study suggest. This alternative explanation proposes that some CYP with ASC are able to demonstrate ToM, when assessment tools to assess ToM, for example FB tasks, are made more accessible by incorporating the individual strengths, interests and areas of development for the CYP.

3.8 Conclusion

The present study employed a novel, pragmatic approach to investigate FB performance and ToM in a sample of 19 pupils, aged 6 to 10 years with ASC, through using qualitative information from a pupil template, to adapt the FB tasks to the individual’s strengths, interests and areas of need. Results from the present study indicated some conflicting findings in relation to previous research in this area (e.g., Baron-Cohen et al., 1985). Present findings revealed that that over half the sample of

pupils (n=9) with ASC passed the FB task and thus, were able to demonstrate some ToM skills. In addition, nearly twice this many pupils (n=17) were able to pass the adapted FB task. This research suggests that further research should be carried out to investigate whether adapting FB tasks to pupils' areas of strengths, interests and support needs increases their ability to demonstrate some FB skills. Further research could also look to explore more individualised approaches to ASC assessment, support and intervention in direct EP work. If similar results are gained from additional and larger scale studies, EPs could be key in promoting such approaches through systemic work, such as training/workshops with school staff and education professionals; additionally, using such research findings to contribute to and develop policies and practices for working with CYP with ASC.

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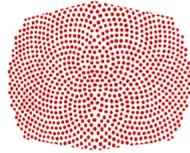
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Part 3: Reflective Summary



School of Psychology

1. Introduction

This reflective summary will explore and reflect critically upon the research process from the perspective of both a trainee educational psychologist (TEP) and researcher. The aim of this summary is to give an overview of the research process, the research design, the methods employed and critical reflections on the key findings.

In part A, reflections upon the unique contribution towards the development of the Theory of Mind (ToM) and autistic spectrum condition (ASC) literature will be addressed. Specifically, reflections surrounding the research topic, the literature review and decisions about the research methodology and implications about the findings and conclusions from the present research will be discussed. For instance, the suggestion that a focus on children and young people (CYP) with ASC's individual strengths has a positive impact on their interpretation of another person's (character's) thoughts, intentions and belief's (skills associated with ToM).

In part B, decisions, challenges and reflections throughout the research process will be discussed from the researcher's perspective. This section will include reflections on issues such as the ethical implications, which can arise as a result of carrying out research with CYP with additional needs and discussions on the design of the current study. The section will end with critical reflections on the positive implications of the present findings in contributing towards practice-based evidence in educational psychology.

2. Contribution to Knowledge

2.1 Reflections on Decisions about the Research Topic

My ideas for the present research initially emerged from my own special interest and work experiences with CYP with ASC, prior to and during my studies and fieldwork on the DEdPsy course. Whilst undertaking my undergraduate degree in Psychology, I took the opportunity to train and work as an Intensive Interaction (Nind & Hewett, 1994) facilitator with CYP with ASC, who were electively home educated. My interest in this approach prompted me to investigate it further during a Master's course in Research Methods in Psychology. During this course, I read extensively about theories and evidence-based interventions for supporting CYP with ASC and critically reflected upon them in my academic assignments and research. I was struck by the positive, developmental and child-led approach of Intensive Interaction, which appeared to contrast with more behavioural-based approaches such as Applied Behavioural Analysis (ABA) e.g., Lovaas (1987) that appeared to dominate the ASC literature.

Through my reading as part of my Master's degree, I discovered that one of most influential theories of ASC, which appeared prevalent in the literature, was the 'Theory of Mind' (ToM) (Baron-Cohen et al., 1985). The assumptions of this theory suggested that CYP with ASC's social communication and interaction difficulties are primarily due to a deficit in their ToM and, as a consequence, CYP with ASC are unable to predict the thoughts, ideas and intentions of another person (Baron-Cohen et al., 1985). The theory had been predominantly developed through assessing CYP's ToM on a false belief (FB) task. FB tasks require children to predict the actions or

thoughts of protagonists who hold false beliefs that the children themselves do not hold (Baron-Cohen et al., 1985, Premack, 2010; Wellman et al., 2001).

One of the most commonly used FB tasks is the ‘Sally-Anne’ false belief task (Baron-Choen et al., 1895). During this task CYP are shown a scenario with two characters. To demonstrate that they had a ToM, CYP had to correctly interpret and predict the future actions of the protagonist in the scenario. I became curious about the ToM theory of ASC and the standard Sally Anne task, which was used to assess a CYP’s ToM. Performance on this task was being used as evidence to suggest that CYP with ASC lacked a ToM, yet I believed that the CYP with ASC that I had worked with had demonstrated ToM in their own, individual ways. However, I recognised that the way in which these CYP had demonstrated ToM to me were dissimilar to the contexts in which the standardized FB tasks were created. These CYP would demonstrate ToM through activities such as role-play led by themselves or creating or talking about stories involving their favourite characters. Further, I might not have realised that these CYP might have this ability, if I had not worked using child-led and person centred approaches, such as Intensive Interaction.

I felt that through being supported through child led and person-centred approaches, the CYP with ASC who I worked with were able to demonstrate ToM using their preferred ways of communicating, as they determined their own interactions and the support, which they received from me. I felt this child-led and strengths-based approach, which I had found successful in supporting the needs of individuals with ASC, contrasted with the teacher-led deficits based approach, which appeared to exist in most of the ToM literature. I wanted to challenge and explore whether ToM assessment tasks could be masking the abilities of CYP with ASC, as they did not take into account their individual strengths, interests and needs. Further, I wanted to

discover whether CYP with ASC would achieve more positive outcomes in ToM assessments if a more individualised approach was employed. This investigation would be of importance for developing educational psychologists' (EPs' practice in terms of individual assessment and interventions of CYP with ASC in addition to developing understanding and raising awareness of aspects of ASC, which could contribute to improving educational outcomes for these CYP combating negative stereotypes. For example, stereotypes such as individuals with ASC have brains which are "like supercomputers" may create the myth that they cannot be social or that they do not have "feelings" (Draaisma, 2009, p. 1479).

2.2 Exploring the Research Literature

My early hypothesis that CYP with ASC may perform differently on a FB task that was adapted to their individual strengths and areas of interest initiated my literature search process. I was keen to explore what previous research had been carried out that had made adaptations to FB tasks, and the findings from this research. I felt that this would be a unique area of exploration, which could be of value to the EP profession as it could shape how EPs assess and support CYP with ASC.

There appeared to be an extensive proportion of the ASC literature, which had taken place over 30 years, dedicated to research into both ToM and FB tasks. A review by Bloom and German (2000) was key to narrowing down some of the criticisms of the ToM theory of ASC identified from previous studies. The review suggests that the use of a standard FB task to assess ToM is flawed for two major reasons. Firstly, CYP require other abilities to pass FB task. Secondly, one score from a FB task cannot represent an individual's overall ToM. Therefore, the authors suggested that FB tasks

should be assessed within the context which ToM is most likely to be familiar.

Additionally, the measurement of only one aspect of ToM (through a FB task) should not be considered as a complete assessment of an individual's ToM.

At this point in my literature review I noticed how previous studies, which had attempted to explore the impact of different adaptations of the FB task, seemed to focus on skills which were known to be areas of challenge for CYP with ASC. These areas included social communication skills (e.g., Senju, Southgate, White & Frith, 2009), language skills (e.g., Paynter & Peterson, 2010; Pellicano, 2010) and executive functioning skills (e.g., Russell, Saltmarsh & Hill, 1999). There was a gap in the literature in terms of exploring FB tasks that were more relevant and meaningful to the individuals who completed them. However, some of the more recent studies that I found suggested some promising findings for the performance of individuals with ASC. For example, Van Buijsen, Hendriks, Ketelaars, and Verhoeven (2011) demonstrated the idea that ToM performance can be dependent upon the task employed and the level of language skills required to complete it. Specifically, that those CYP with ASC who were involved in a task using a toy that was judged to be more motivating produced better FB scores

In examining these more recent studies, I wondered whether this was evidence to show that design of the standardized FB task might mask any potential ToM abilities of CYP with ASC. So far, there was no evidence of a FB task that had been especially adapted to the individual needs of each CYP with ASC. Therefore, I felt that this was something that needed to be investigated further in order to investigate the ToM theory of ASC and help to further understand the social communication needs of individuals with ASC.

2.3 Reflections on the Pragmatic Research Design

A critical decision prior to carrying out the present research related to the type of philosophical position/research framework which would be adopted to guide the process. Specifically, I needed to clarify my ontology, or particular theory about the nature of being or the kinds of things that have existence, and epistemology, theory about knowledge, which would guide the choice of research methods. Fox (2003) has argued that all EPs are either positivists or constructivists. Traditionally, scientific research has been considered positivist in nature. Positivism insists that only that which can be directly observed and measured counts as knowledge (Hayes, 2000). Conversely, educational psychology research appears to be dominated by the constructivist research paradigm (Fox, 2003). In contrast to positivist approaches, constructivists assume that reality is constructed through human activity. Thus, there is no meaning in the world until we construct it (Kukla, 2000).

Pragmatists believe that there are both singular and multiple realities that can be studied empirically and that the ‘truest’ ideas are those that help an individual adapt to, and succeed, within a particular context (Menand, 2001). Thus, pragmatists are most concerned with solving practical problems in the context in which they exist (Creswell & Plano Clark, 2007; Dewey, 1925; Rorty, 1999). It appears that pragmatism allows for a “balance between the philosophical stances of post positivism and constructivism” (Creswell & Plano Clark, 2007, p. 27). Anderson, Herriot and Hodgkinson (2001) argue that pragmatic methods are required by psychologists to develop techniques and methods which more effectively place CYP at the centre of the research process:

“The implication is clear: if we are to pay attention to our environment in order to discover how we might survive in it, we have to review it as it is, and as it is becoming, not as we would want it to be. Hence, arguments about academic independence are important in their own right, but not at this juncture.” (p. 401).

I felt that adopting a pragmatic framework would allow me, as a researcher, to focus on some of the social communication challenges which ASC pupils experience within their individual contexts. Through my work experiences with CYP and reading about ASC, I was struck by the highly heterogeneous nature of social communication needs that CYP with ASC can present with. This led me to question how appropriate these positivist/scientific methods that dominate the ASC intervention literature are for investigating groups of individuals with such varying needs. I felt that adopting a pragmatic approach would better take into account the individual needs of research participants with ASC.

Whilst reading further about the topic of ASC and ToM, I realised that the majority of the previous research studies included group comparison designs of ASC CYP and ‘neurotypical’ CYP, and included mostly quantitative findings. I felt that there was a gap in the research in terms of studies which included the individual contexts, strengths and needs of the young people in ToM studies, which if taken into account might influence their ability to demonstrate ToM.

2.4 Reflections on the Findings: A Strengths and Needs Based Approach to Understanding Theory of Mind

The findings of the present study suggest that consideration of CYP with ASC’s individual strengths, interests and areas for support is important for success at a FB task. Thus, CYP with ASC may not necessarily have a deficit in ToM, but require

support related to their strengths, interests and areas of need to help them effectively demonstrate their ToM abilities. The current research suggests that a focus on CYP with ASC's individual strengths has a positive impact on their ability to interpret another person's (toy character's) thoughts, intentions and beliefs (skills associated with ToM). This strengths-based approach to understanding ASC and ToM differs from the majority of the related literature, which appears to focus on deficits (e.g., in ToM) associated with the condition (Brooks & Goldstein, 2012). I felt that the present findings echo the recent ideas highlighted by Silberman (2015), who proposes that current understanding of ASC may be hindered due to a lack of research which focus on the unique strengths and possibilities for young people with ASC, as opposed to their challenges.

A number of scholars within the ASC literature suggest the perceptions of both individuals with and without ASC is mainly shaped by the nature of society and the majority of the ideas, which society socially constructs (e.g., Chown, 2014; Gallager, 2004; Silberman, 2015). The 'double empathy problem' described by Milton (2012) suggests that the ToM theory of ASC is flawed as 'neurotypical' individuals appear to have equivalent problems in understanding the minds of individuals with ASC. Further, that are many individuals with ASC who appear better able to understand the minds of 'neurotypical' individuals, than 'neurotypical' individuals who can understand the minds of individuals with ASC. Chown (2014) recognises that this 'double empathy problem' is complicated by the fact that the prevalence of 'autism' is about 1% in the population; as a consequence our society is composed of a social construction of 'autism' developed by the non-autistic 99% of society. Therefore, previous research methodology and ideas of ASC derived without sufficient

involvement of individuals with ASC may be limiting our potential understanding of their ToM.

Reflecting on the above criticisms, I feel that the present findings were interesting as they highlight how research which includes the individual at the centre of the research process and focuses on an individual's strengths and interests, could be fundamental in advancing understanding of ASC and ToM. Present findings suggest that EPs' and other professionals' thinking could be advanced by taking into account the unique strengths and possibilities for young people with ASC.

2.5 Reflections on Future Assessment Approaches for Children and Young People with Social Communication and Interaction Needs

The current research findings suggest that there are interesting implications to consider, not only in terms of ToM standardized assessments, but for standardized assessment procedures as a whole. I felt that the present findings might echo three of the major criticisms of standardized tests that are already evident in the literature (e.g., Kaplan & Saccuzzo, 2012; Linn, Baker & Dunbar, 1991). Firstly, that standardized tests are problematic because they have to be generalised to the entire population. For CYP with ASC, this may lead to an unfair reflection of their abilities, as they are expected to employ skills independently which they may be known to require support to display, for example, social communication skills. Secondly, standardized methods of assessment, or those that inform interventions for CYP with ASC may not generalise to real life settings, as they may be assessing skills, using materials which do not appear engaging/meaningful to the individual in that setting. Further, materials, which are employed in standardized tests, may not support CYP according to their

individual needs, for example, to assist them to communicate verbally or non-verbally. Thirdly, standardized methods may not allow practitioners to assess an individual's motivation, engagement or higher-level thinking skills employed during tests, which could impact on their performance.

Results of the present study echo earlier findings from Koegel, Koegel and Smith (1997). The authors found that motivation and attention in children with ASC influenced test performance and interpretation in standardized tests of receptive vocabulary, language, verbal and nonverbal intelligence. During Koegel and colleagues' research each child was observed and each child's parents were interviewed about behaviors that were likely to impact on the child's performance, which were then incorporated into the motivation/attention condition. Koegel et al. found that five out of the six children received higher testing scores on the 44 separate testing sessions in the motivation/attention condition compared to the standardized conditions.

In the light of my findings, I felt it was interesting to reflect on the benefit of using dynamic assessment methods for CYP with ASC (and arguably all CYP), compared to standardized methods. Dynamic assessment methods are based on theories developed by Vygotsky (1978) and Feuerstein, Rand, Reimer, Kaniel, & Tzuriel (1987). Contrary to standardized assessments, dynamic assessment involves interactive tasks, which include deliberate and planned mediational teaching, followed by an assessment of the effects of those teaching phases. Dynamic assessment therefore takes into account potential obstacles that could mask a person's ability, for example, motivation, self-concept as learners and engagement. Therefore, an individual can better demonstrate his/her abilities when these obstacles are removed (Haywood, Tzuriel, & Vaught, 1992). Such dynamic assessments have been found to

be advantageous in considering the strengths and areas of development of individuals with ASC or complex needs (Nigam, 2001; Snell, 2002). Without support, CYP with complex social communication and interaction needs may have difficulty demonstrating their skills and abilities in specific areas, such as social-cognition (and ToM). On reflection, future researchers could look towards developing more dynamic research that takes into account the strengths, interests, needs and context of individuals involved in FB tasks.

3. Critical Account of Research Practitioner

3.1 Reflections from the Researcher on Ethical Issues within the Present Research

As a TEP and researcher, I felt that the ethical implications, which can arise as a result of carrying out research with CYP with additional needs, required special and considerable reflection. I felt that the issue of seeking informed consent was especially challenging when carrying out research with CYP with additional needs, such as ASC. CYP with additional needs often require assistance to express their views, which has led to on-going ethical debates with regards to the extent to which a CYP with additional needs is able to consent to engage in research. There are obvious ethical challenges for carrying out research with CYP with ASC, as for instance, most require support to communicate (verbally and/or non-verbally). Thus, the ability to which CYP with ASC are able to both comprehend and communicate their full informed consent has been questioned (e.g., Knight, Clark, Petrie & Statham, 2006).

Initially to try to counteract some of the potential ethical dilemmas with regards to informed consent from the pupils who took part in the research, information and consent forms were provided to a member of school staff 'who knew them best'. The information and consent forms were intended to gain initial consent from the pupil via a person whom they were familiar with and could be most attuned to their needs and responses. Also, to minimise any potential power imbalance, which meant the CYP might have felt pressured to provide consent when they might have preferred to 'opt out' of the research. If the CYP preferred not to have taken part, it was expected that that he/she would have been more likely to express this to a staff member who was more familiar to him/her. Similarly, that this staff member would have been better able to judge any verbal/non-verbal signs that he/she might use to display that he/she were

unsure, or did not want to take part in the study. The forms were presented again to the pupils by the researcher prior to carrying out the research. This second occasion was, firstly, an attempt to clarify consent prior to the FB research tasks immediately taking place and secondly, another opportunity to ‘opt out’ of the research if pupils wished to do so. I felt that it was also important for the pupils to be asked if they recognised the forms before they began and, also, if they could remember anything about what was in the forms. Pupils reported that they recognised the consent forms. In addition, many stated their knowledge of the reasons behind the visit, for example “You are from the university” and “No one else will see my answers”.

In line with legislation, such as the recently implemented Special Educational Needs and Disability Code of Practice (Department for Education [DfE] 2014), I felt that it was important to ensure that every effort was made to place the pupil at the centre of the research and to treat them as an “active” participant in the research. Specifically, I acknowledged that the perceived level of engagement that the young person displayed towards the researcher during the initial meeting could be a good secondary indicator of consent (Preece & Jordan, 2010). I felt this pupil centred approach would also help to ensure ‘assent’ from the pupil. Assent is a term used to express willingness to participate in research by persons who are not considered able to give informed consent. Assent has been recognised as useful for ensuring that consent is treated as a continuous process (Marchant, Jones, Julyan & Giles, 1999; Scott, Wishart & Bowyer, 2006).

The pupils were also informed of how they could state that they wanted to stop participating in the research at any time and were provided with some examples of how they could express this (e.g., they could express that they wanted to “do something else”, “go back to class” or “stop the task”). I felt these clear statements

were important as previous research has found that CYP often report that they are unsure about how they can withdraw from a study/research that they no longer wish to participate in (Alderson, 2004; Bruzzese & Fisher, 2003). I also asked the pupils if they still agreed for their answers to be used after they had taken part in the FB tasks. The pupils were reminded that their answers would be used to help people working with schools to understand how pupils could be further helped to understand activities, like the ones that they were carrying out. To advance research in the future, it could be interesting to explore delivering these reminders via an interactive iPad app, where similar visual cues could remain on the screen and be available to the pupil throughout her/his session. They could then press the appropriate visual cue to signal any preference to take a break or stop participating in the research.

3.2 Reflections from the Researcher on the Present Research Design

In terms of the research design, I feel that it is interesting to discuss how the template might have impacted on the design of the adapted task and the findings as a whole. The templates were designed to be completed by “a person who knows the young person well”, with the pupils themselves. I feel that it is important to note that every parent/carer of the pupils involved in the study chose for their templates to be completed by a member of staff, as opposed to themselves or another parent/carer. Reflecting on where there might have been differences in what was included in the templates if the pupils themselves or their parent/carer completed them is worthwhile. For example, parent/carers may have provided more specific/detailed information which might have been of further help in designing the adapted FB tasks and as a consequence further facilitate pupils’ ability to demonstrate ToM. To try to explore

this issue further, I noticed that when reviewing the information provided on the templates for each individual that the writing styles, language choices and the quality and quantity of information which each member of staff chose to provide, varied. A number of staff members seemed to include very detailed information, which was framed positively, whereas others provided less information and focused mainly on what they felt were the areas of development for the CYP. Thus, some members of staff may have been clearer about the purpose of the templates, or the nature of the task, than others, which could have influenced the type of information that they included in them. Some members of staff may have had more skills in understanding and supporting the needs of the CYP, which, in turn could have led to the adapted tasks being more accurately designed in relation to an individual's needs.

The template method was employed in the study due to time constraints. However, the templates might have been completed with more accuracy and as a consequence the task designs might have been more appropriate for the pupils' needs if I had met with the staff member filling out the template beforehand. I could have ensured that they understood how to fill out the template and the importance of completing this with the pupil. Alternatively, if I had an even greater length of time to complete the research, I could have completed the template with the young person, the staff member and parents myself, although this method would have resulted in an additional risk of there being researcher bias in terms of what information was collected. On the other hand, it could be argued that this is not dissimilar to the role that an EP would take in the assessment of a CYP with social communication difficulties, and thus could be useful for informing their future practice.

To try to overcome some of these challenges with the template design, I tried to ensure that the research process was as flexible as possible. For example, if the

participant revealed a greater interest in another object/activity in the rapport-building phase and he/she appeared to be highly engaged in discussions with me, I incorporated this interest into his/her adapted tasks. Yet it also remains possible that the extent to which I was able to build rapport with the CYP influenced his/her engagement and impacted on his/her performance. Nevertheless, the positive benefits of rapport building, which have been highlighted in the literature for minimizing any power imbalance between the researcher and CYP were felt to justify this approach (Miller & Glassner, 1997). This flexible procedure appeared important on a number of occasions to facilitate the CYP's success on the adapted task. Although the flexible approach I used in the research required some degree of subjective interpretation, I feel that it is somewhat reflective of the professional judgement and skills that I have employed in my experiences as a TEP.

3.3 Reflections from the Researcher on the Data Collection Process

I felt that it was important that the research process was designed to be as flexible as possible. I believed that it was vital that the research methods were dynamic and flexible enough to enable pupils both to access the questions in the first instance and then to allow them to respond in their preferred ways of communication. This flexible type of research approach is cited in the literature to be successful for engaging CYP and producing useful research (e.g., Clark & Moss, 2001; Murphy 1998). Therefore, pupils were encouraged to take the lead in the research process, for example, if they became engaged with a certain object/activity, then they were allowed to continue engaging with it for five to 10 minutes, before being introduced to the research tasks by the researcher. Also, the pupil's preferred methods of communication noted on their template were treated as key to their engagement. For example, for some pupils it was

noted that they preferred to communicate verbally, whereas, for others the importance of using visual tools or approaches was described. Some pupils also required additional strategies, such as, repetition and ‘checks’ to ensure understanding and so this was included whilst carrying out the research. When a pupil seemed to display hesitation or confusion, for example, through his/her facial expressions or body language, I repeated statements or asked questions to ensure his/her understanding at particular points in the research process, for example:

“Where is [character’s name] now?”

During the adapted tasks, I allowed time for pupils to respond to my questions, for example, a pause for a few seconds or reassurance such as, “That is okay” or “Just try your best”. I felt that preparing for processing time was important due to previous research findings which have highlighted that some pupils with ASC may have trouble processing information at the usual conversational rate (Jordan, 2005). Similarly, long pauses to encourage a response from young people with communication needs have been reported as effective (Lewis, 2001). I also tried to use language that was employed by the pupil, for example, when describing the characters and objects used in the adapted tasks. I aimed to use language that would be more personally relevant and meaningful to the CYP involved. One anecdotal example of this is when I used a toy “flower” as the object to be hidden in the adapted task. Later on in the task, the pupil called it a “petal” instead of a “flower”; therefore, I adopted the term “petal” to try to speak the pupil in a way that made sense to him/her.

Many of the pupils responded verbally on the adapted tasks which provided further evidence that they understood the task and what was required of them during it,

and as a consequence could interpret false beliefs. Some examples of this language included, “Because it was there last time, but she moved it”, “Because the boy wanted to trick her” and “He’s been tricked...he must stay away from Rex because he is trying to trick”. In this way, a number of the pupils provided answers which supported the idea that they were able to demonstrate ToM during the adapted FB tasks.

The present sample was deemed too small for further analysis of these answers to be carried out but this anecdotal information provides qualitative insight into a pupil’s ability to demonstrate ToM. On reflection, it would be interesting to develop research methods to further explore such insight. The factors that were most important in supporting the CYP to complete the adapted FB task were hard to identify, for example, whether it was incorporating their interests, strengths, or areas of need. A personal opinion is that it may have been a combination of all of these factors within the specific context; this also reflects the assumptions of the pragmatic approach research framework employed.

3.4 Reflections from the Researcher on Implications for Educational Psychology Practice

The present findings have encouraged me to reflect on some important implications for interventions that aim to develop ToM in CYP with ASC. These interventions all focus on skills, such as recognizing other individuals’ intentions and emotions, placing oneself in the thoughts and feelings of others, understanding deception and using imagination (e.g., Begeer et al., 2011). However, previous ToM studies have generally involved lab-based experiments and therefore research findings which cannot be reliably generalised to real life contexts (Hoogenhout & Malcolm-Smith, 2014). The present findings suggest that professionals should employ CYP centred practices with CYP with social communication needs to help them to learn new skills, rather than aim

to teach them through adult led interventions, imposed on them. This is something which I will continue to try to embed in my practice post qualification.

With the above in mind, I feel that the future effectiveness of ToM interventions may be improved by focusing on what is known about the individual CYP, in terms of his/her strengths, interest and needs. The present results highlight the need for future research to contribute towards practice-based evidence to minimize the gap between research and educational practice (Barkham & Mellor-Clark, 2003). Notably, much of the previous research has aimed to develop ‘evidence-based research’ through striving to use research methods such as randomized controlled trials (RCTs), which have been considered a ‘gold standard’ for research (Kratochwill et al., 2013). Despite striving for RCTs in research, there are several evident limitations of RCTs, particular to educational research. A number of educational researchers have questioned the applicability of RCTs to education, as they were initially developed for clinical research (e.g., Eva, 2009; Regehr, 2010). Some specific criticisms of RCTs within educational research include the difficulties in including complex and multiple variables and blinding participants to particular conditions. These methods are often problematic for both practical and ethical reasons; researchers cannot risk interventions having a more adverse effect on participants than another in different condition, or on the contrary, withholding interventions that have a positive effect (Prideaux, 2002).

I feel the current research findings reflect the ideas of McConachie and Fletcher-Watson (2015) who describe how measuring outcomes for young people with ASC appears to be especially challenging due to the significant number of variables that could interact together, whilst trying to measure a singular outcome. The authors provide the example that the need to support one area of development for young people with ASC, such as a sensory need, may lead to avoiding activities that include

such sensitivities. Thus, such sensory difficulties would need to be accounted for in order to appropriately measure the outcome(s) the researcher is intending to measure. Therefore, there is significant need for outcome measures to address the possibility that individual areas of functioning may change over time and collate these outcome measures together to develop more holistic assessment methods.

The current findings further highlight the importance of person centered approaches that take into account the pupil's specific strengths and interests that are important/required to engage her/him in research and tasks. Beresford, Tozer, Rabiee and Sloper (2004) describe the following strengths of practice-based research approaches with CYP with ASC. Through the use of practice-based research, researchers are able to document the process by which methodological lessons are learnt, which is especially important when working with young people with complex needs.

3.5 The Impact of the Present Findings on my own Professional Practice

The current pilot study research findings provide some evidence that children with ASC may be more able to demonstrate ToM when assessments focus on a CYP's individual needs, strengths and interests, rather than deficits. Further research needs to be carried out with larger samples, with a greater age range of CYP from a variety of different backgrounds and education settings.

The current research findings have also led me to reflect on how they may help educational professionals to best assess and support CYP with ASC. I feel that the strengths-based and solution focused approach, which was used via the pupil template and similar methods are of further exploration, as these approaches could provide

interesting and useful ways of supporting CYP with ASC. This strengths-based and solution focused approach is also one which strikes me as useful more generally in the assessment of CYP with ASC and to support their needs. This approach also differs from traditional forms of assessment, which tend to focus on the deficits and challenges associated with ASC, for example, in their social communication skills and tell us more about CYP's difficulties than perhaps the approaches which could lead to practical and emotional support.

Using such approaches may lead to greater engagement and involvement of children with ASC and thus more appropriate assessment of their needs and support. Further, these approaches may lead to the greater inclusion of all CYP in education, as the focus is not upon what the CYP cannot do, but what they can do or could do with support. Similarly, a greater focus on the individual needs of a CYP, rather than perceptions of the ASC label and diagnostic criteria associated with this label, may permit more useful approaches to support for individuals. This is a debate which is already evidence in the literature, for example in Timimi, Gardner and Cabe (2011) who argue that the label 'autism' is more of an obstacle than a help.

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5. Appendices

5.1 Appendix 1: Pupil Template



Dear helper,

Thank you for agreeing to help a pupil participate in my research. Prior to them taking part in my study, I would like to collect some information about what may help the pupil understand and communicate during the tasks most effectively.

Please could you complete the template with as much information as possible highlighting those things that the pupil feels are most important to them.

Finally, if you are happy to do so, please could you also provide contact details should the researcher feel they would like to gain additional or more specific information from the template?

What does the pupil enjoy (e.g., interests, activities, how they like to spend their time)?

What does the pupil most look forward to at home?

What does the pupil most look forward to at school?

What does the pupil feel they need help with in order to communicate?

What does the pupil feel they need help with in order to understand others?

What does the pupil feel they are good at?

What makes the pupil feel happy?

Is there anything that helps the pupil engage or become interested in a task?

Is there anything else others can do to help the pupil?

Pupil number:
Contact number:
Contact number:
Contact email:

5.2 Appendix 2: Participant Scripts for Individually Adapted Templates

Standard Task Script (given to all participants)

This is Sally. This is Ann.

Sally has a bag and Ann has a box.

Sally puts a ball inside her bag.

Sally then leaves the room so that she can no longer see bag.

While Sally is away, Anne takes the ball and puts it in her box.

Then Sally comes back inside.

Where will Sally look for the ball?

Participant 1

Clarification of characters was sought from the pupil before beginning.
This is witch doctor. This is goblin tinker.

Witch Dr has a cauldron and Goblin Tinker has a work bench.

Witch Dr puts his Tikki man under his cauldron.

Witch Dr then leaves to get some wood to cut.

While Witch Dr is away, Goblin Tinker takes the armour and puts it under his workbench.

Then Witch Dr comes back inside.

Q.1 Where will Witch Dr look for the armour? (Why)

Participant 2

Characters from the computer game Terraria were used. The pupil was asked, which object (piece of armour) he would like to use in story.

Checked for clarification of characters to start.

This is witch doctor. This is goblin tinker.

Witch Dr has a cauldron and Goblin Tinker has a workbench.

Witch Dr puts his spikeball under his cauldron.

Witch Dr then leaves to get some wood to cut.

While Witch Dr is away, Goblin Tinker takes the spikeball and puts it under his workbench.

Then Witch Dr comes back inside

Q.1 Where will Witch Dr look for the armour?

Participant 3

A Classroom was made out of Playmobil-this FB task was created with the pupil and was perceived by the researcher to be more engaging to them, at the time.

This is a boy. This is a girl. They are in a classroom.

The boy has a book and the girl has a chair.

The boy puts the pen under the book.

The girl then goes behind the board.

While the girl is away, the boy takes the pen and puts it under the chair.

Then the girl comes back.

Q.1 Where will the girl look for the ball? (Why?)

Participant 4

This is a boy and this is his mum.

The boy has a jeep and his mum has a wheelbarrow in the garden.

The boy puts a flower in his jeep.

The boy's mum then leaves the garden so she is in the shed.

While the boy's mum is away, he takes the flower and puts it under her wheelbarrow.

Then his mum comes back outside to the garden.

Q.1 Where will the boy look for the flower now? (Why?)

Participant 5

Pupil was asked for dinosaur names to start (pupil gave the names of the dinosaurs Rex and Triceratops)

This is Rex. This is Triceratops.

Rex is by a rock and Triceratops is by a tree.

Rex puts a flower under his rock.

Rex then leaves to find lunch.

While Rex is away, Triceratops takes the egg and puts it behind the tree.

Then Rex comes back from trying to find lunch.

Q.1 Where will Rex look for the flower? (Why?)

Participant 6

Here is a boy and here is a girl, they are drawing together in their classroom.

The boy has a piece of drawing paper and the girl is by the bin.

The boy puts the pen under the drawing paper.

The girl then leaves the classroom.

While the boy is away, then takes the pen and hides it in the bin.

Then the girl comes back into the class.

Q.1 Where will the girl look for the pen? (Why?)

Participant 7

This is quick cricket player 1. This is quick cricket player 2. They are playing quick cricket outside.

Cricket player 1 has a cricket ball and cricket player 2 has a cricket bag.

Cricket player 1 puts the cricket ball in the bin.

Cricket player 1 then goes to the cricket shed.

While player 1 is away, player 2 takes the cricket ball and puts it by the side of the shed.

Then player 1 comes back outside.

Q.1 Where will player 1 look for the ball? (Why?)

Participant 8

This is football player 1. This is football player 2. They are playing a game of football.

Football player 1 has a football cone, he takes the cone and puts it in the bin, whilst football player 2 is watching.

Football player 1 then leaves where they are play and goes behind the football stand.

While football player 1 is away, football player 2 takes the ball and puts it by the side of the football stand.

Football player 1 comes back outside.

Q.1 Where will football player 1 look for the ball? (Why?)

PARTICIPANT 9 EXCLUDED FROM RESEARCH SAMPLE FOR ETHICAL REASONS

Participant 10

This is (name of pupil). This is (name of pupil's) dad.

They are fixing cars in the garage

(name of pupil) has a red car and Dad has a white car.

(Name of pupil) puts a tool in his white car.

(Name of pupil) then leaves the garage to get a drink in the house.

While (Name of pupil is away), Dad takes the tool and puts it in his white car.

Then (name of pupil) comes back to the garage.

Q.1 Where will (name of pupil) look for the tool? (Why?)

PARTICIPANT 11 EXCLUDED FROM RESEARCH SAMPLE FOR ETHICAL REASONS

Participant 12

This is Mejia. This is Jake. (Pupil provided names of characters).

They are in a classroom doing maths.

Majia is sitting at the table with her maths book and Jake is next to the bin.

Majia needs the toilet, so puts the maths book under the table.

While Majia is away, Jake takes the maths and puts it in the bin.

Then Majia comes back inside.

Q.1 Where will Majia look for the maths book? (Why?)

Participant 13

This is Lucy . This is Jane. (Pupil was asked to give names).

Jane is brushing her pony, she then puts the brush down for a rest and goes to get a snack.

Whilst she is away. Lucy tidies up and puts the brush on the rack in the stable.

Then Jane comes back to the pony to finish brushing her.

Q.1 When Jane comes back, where will she look for brush? (Why?)

Participant 14

This is Mr Brown (Army man). This is Mr Green (Army Man)-(Pupil gave the Army men names).

(Pupil was asked what they felt the Army men were doing and they replied having a war).

Mr Brown and Mr Green are having a war.

Mr Green has a secret weapon in the war.

Mr Green then goes off to find some food and drink to help him recover, so he puts the weapon behind a rock.

While Mr Green is away, Mr Brown finds the secret weapon, takes it and puts it behind a tree.

Then Mr Green comes back.

Q.1 Where will Mr Green look for the weapon? (Why?)

Participant 15

This is the Witchdoctor (Terarria). This is Squirby (Goblin Tinker Terraria character, which the pupil named).

The Witchdoctor has a cauldron and Squirby has a cabinet.

The Witchdoctor has a TNT (name given by pupil). He puts the TNT behind the cauldron and then leaves his workshop.

While the Witchdoctor is away, Squirby finds the TNT, takes it and puts it behind the cabinet.

Then the Witchdoctor comes back.

Q.1 Where will the Witchdoctor look for the TNT? (Why?)

Participant 16

This is Sophie (pupil gave character their own names). This is Jack.

Sophie is reading a book in her classroom. She has been reading her book for some time now, so decides to leave the classroom for a snack. Sophie puts her book in her classroom box.

Jack then takes the book out of the box and puts it in his tray.

Then Sophie comes back.

Q.1 Where will Sophie look for reading book? (Why?)

Participant 17

This is Tom (pupil gave character their own names). This is Sally.

Tom is reading a book- 'The Three Little Pigs' in his classroom. He then decides to leave the classroom for a snack.

Tom puts his book in the classroom box.

Sally then takes the book out of the box and puts it in his tray.

Then Tom comes back.

Q.1 Where will Tom look for reading book? (Why?)

Participant 18

This is a shop lady. This is a shop man.

The shop man has a tub. He puts a sweet into the tub and leaves the shop.

The shop lady then takes the sweet out of the box and puts it under the till.

Then the shop man comes back.

Q.1 Where will the shop man look for sweet? (Why?)

Participant 19

This is Harry [Potter]. This is Hermione.

Harry is reading his book [at a desk]. He puts the book in his book box and leaves the room.

Hermione then takes the book out of the box and puts it under a tray.

Then Harry comes back.

Q.1 Where will Harry look for the book? (Why?)

Participant 20

This is a shop lady. This is a shop man.

The shop man has a tub. He puts a sweet into the tub and leaves the shop.

The shop lady then takes the sweet out of the box and puts it under the till.

Then the shop man comes back.

Q.1 Where will the shop man look for sweet? (Why)

Participant 21

This is Tat (pupil gave characters their own names). This is Paul.

They are playing a game of football (pupil is shown through role-play with characters).

Tat puts the ball behind the box. Then he leaves to get a drink.
Paul then takes the ball and puts it under the football stand.

Then Tat comes back.

Q.1 Where will Tat look for ball?

5.3 Appendix 3: Photograph Examples of Standard and Adapted Tasks

Standard Task Photograph Example



Adapted Tasks Photograph Examples

Participant 13

This is Lucy . This is Jane. (Pupil was asked to give names).

Jane is brushing her pony, she then puts the brush down for a rest and goes to get a snack.

Whilst she is away. Lucy tidies up and puts the brush on the rack in the stable.

Then Jane comes back to the pony to finish brushing her.

Q.1 When Jane comes back, where will she look for brush? (Why?)



Participant 19

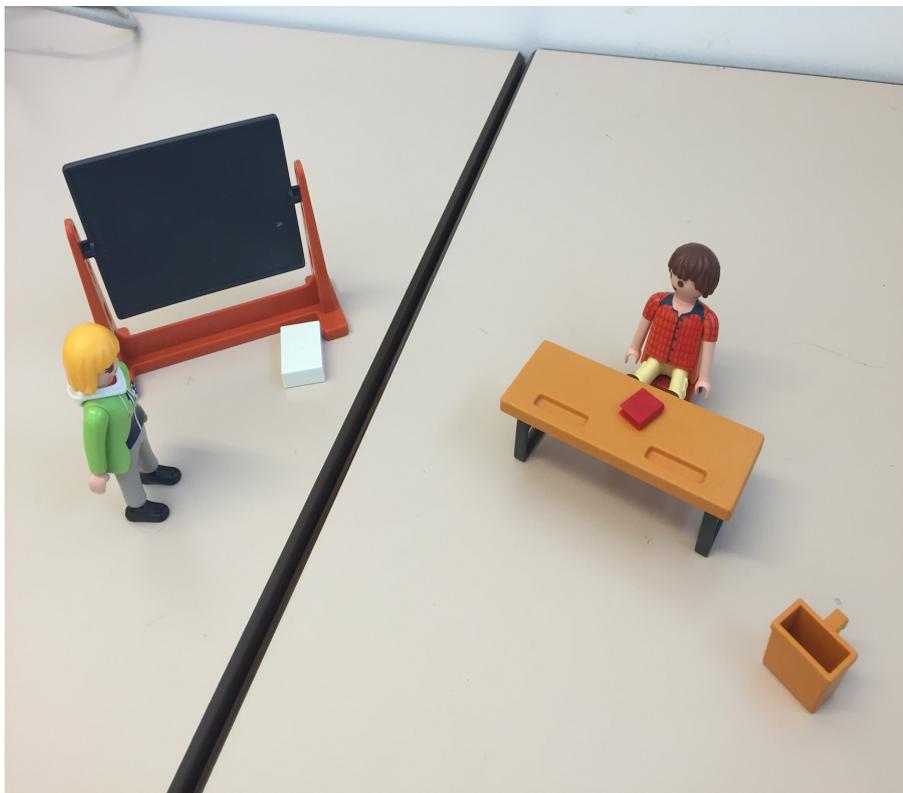
This is Harry [Potter]. This is Hermione.

Harry is reading his book [at a desk]. He puts the book in his book box and leaves the room.

Hermione then takes the book out of the box and puts it under a tray.

Then Harry comes back.

Q.1 Where will Harry look for the book? (Why?)



5.4 Appendix 4: Gatekeeper Information Form and Consent Form for Local Authority Principal Educational Psychologists



Gatekeeper Information Form

Who am I?

I am a Trainee Educational Psychologist who is about to undergo a placement within the Local Authority (commencing September 2015-June 2016). As part of my doctoral studies at Cardiff University, I am interested in conducting some research that investigates how children with autistic spectrum condition may be best supported to understand the thoughts, feelings, ideas and the intentions of others.

I would like to ask your permission to contact primary schools within the Local Authority in order to help to contribute towards my recruitment of a sample of approximately 20 pupils with autistic spectrum condition.

What will the research involve?

The research will involve a study in which primary school pupils diagnosed with autistic spectrum condition will take part in two short tasks. Each task will involve a story describing a scenario between two different characters. Following the presentation of a scenario the pupils will be asked a small number of questions about what happened in the story.

Prior to taking part in the tasks, I would like to ask someone who knows the pupil well, for example, their parent/carer or a member of staff, such as a Teaching Assistant to complete a template with the pupil. The template will be ask about the pupil's strengths, interests and those things, which are important for supporting them. The template will also be used as a prompt to collect some information about what may help the pupil understand and communicate during the tasks most effectively. For example, the template will ask questions about the strengths and interests of the pupil such as, "what does the pupil most look forward to at school?" and "what makes the pupil feel happy?" If you, the pupil's Head Teacher, the pupil's parent/carer/member of support staff and the pupil agree to take part in the study, the pupil's parent or a preferred member of staff will be asked if they can complete the template prior to the research taking place. The parent or the Learning Support Assistant will be able to complete the template with the pupil using methods, which they feel are most beneficial to them in order to gather information about what may support their communication and learning.

Once the appropriate consent forms and the template is complete, I would then like to meet with the pupils at their school, at a time, which is convenient for them. After meeting with the pupil, I will ask them if they would like to take part in the tasks involving two stories with me. I want to try and make this as fun as possible, using communication methods and approaches (stated in the template) most suitable for the pupil. He/she will also be able to withdraw from the study, at any point if he/she wishes. I will then record the answers the pupil gives me when questioned about the scenarios. The pupils' performance during their individualised adapted scenario (based on the templates) will then be compared to a standard scenario, which will be the same for all the children taking part. The pupils will be able to choose not to answer any questions or stop taking part at any time. I would like to emphasise that all the information that the pupil's give will be anonymous. They will be given participant numbers in place of their names so they will not be able to be identified in the study and their answers will remain

confidential. Nobody else, apart from the researcher will be able to know that they took part in the study.

What will happen if I agree to the research?

The information about the pupils and answers that the pupils give whilst taking part in the study will be used as part of a doctoral research project in educational psychology for Cardiff University. A summary of the findings from the research project will be available to all those involved in the research following its completion. The data collected from the pupils who take part in the study will be stored in a safe and lockable place. The data will not be shared with anybody else.

What are the perceived benefits for the Local Authority?

The proposed project will seek to explore the performance of individuals with autistic spectrum condition during a standard false belief task compared to an adapted task, which is tailored to the individual strengths and interests of the young people taking part. Specifically, it is hoped that it could develop understanding about how best educational professionals can support children with autistic spectrum condition to understand and develop social-cognitive skills, such as the ability to understand, the beliefs, intentions and ideas of others. It is also anticipated that the findings of the research may be disseminated to initiatives, such as the Local Authority's Autistic Spectrum Support Service and Additional Learning Needs Coordinator forums to help develop awareness and training for those working with young people with ASD.

What do I need to do next, if I consent to the research?

I have enclosed the information and consent forms that both the pupils and their parents/carers/Head Teachers/members of staff will receive prior to taking part in the study.

If you would like to ask any more questions about this research then please feel free to contact me using the email below. I will endeavour to answer any queries or questions to the best of my ability. If you are willing to give permission for me to recruit pupils to be involved, I would greatly appreciate it if you please could sign and return the consent form attached. Thank you for taking the time to read about this study, it is very much appreciated.

Best wishes,

Abigail Tee
Trainee Educational Psychologist, Cardiff University.
teeac@cardiff.ac.uk

For any complaints regarding this research, the individuals listed below should be contacted:
Dr. Kyla Honey (University Research Supervisor and Professional Director)
University email address: HoneyK1@cardiff.ac.uk
University telephone number: 029 2087 0366
Dr. Simon Claridge (University Professional Tutor and Research Director)
ClaridgeS@Cardiff.ac.uk
University telephone number: 02920 876497
Cardiff University School of Psychology Ethics Committee:
Chair: Michael Lewis
Ethics Secretary: Natalie Moran Email: psychethics@cardiff.ac.uk Telephone number: +44 (0)29 2087 0360



Gatekeeper Consent Form

I have been given enough information about this project

Yes No

It has been explained to me how the information I give will be used

Yes No

I am happy for Abigail to contact schools in the local authority to recruit a sample of children to take part in her research

Yes No

SignatureDate

5.5 Appendix 5: Information Form and Consent Form for Head Teachers



Head Teacher Information Form

Dear Head Teacher,

I am a Trainee Educational Psychologist who is currently undergoing a placement in the Local Authority. As part of my doctoral studies at Cardiff University I am interested in conducting some research that investigates how children with autistic spectrum condition may be best supported to understand the thoughts, feelings, ideas and the intentions of others.

I would like to ask your permission to recruit children with autistic spectrum condition from your school that may be suitable and wish to take part in my study. It is anticipated that the study will contribute towards the body of knowledge, which will explore how best to support children with autistic spectrum in understanding interpreting and correctly predicting the mental states of other individuals.

The study will involve the children taking part in two short tasks, which will involve a story describing a scenario between two characters. Following the presentation of a scenario the children will be asked a small number of questions about what happened in the story.

Prior to taking part in the tasks, I would like to ask someone who knows the pupil well, for example their parent or a member of staff to complete a template with the pupil where they will be asked about their strengths, interests and those things, which are important for supporting them. The template will be an information sheet that will be used as a prompt to collect some information about what may help the pupil understand and communicate during the tasks most effectively. For example, it will ask questions about the strengths and interests of the young person, such as, "what does the pupil most look forward to at school?" and "What makes the pupil feel happy?" If you, the pupil's parent/carer and the pupil agree to take part in the study, the pupil's parent or Learning Support Assistant will be asked if they complete the template prior to the research taking place. The person who completes the template will be able to do this using the methods, which they feel are most beneficial to the pupil in order to gather information about what may support their communication and learning. The template will then be used in order to design the presentation of one of the scenarios and to explore whether it is more effective in helping him/her to understand and interpret the beliefs of the characters.

I would then like to meet with the pupils at their school, at a time, which is convenient for them. After meeting with the pupil, I will ask them if they would like to take part in the tasks involving two stories with me. I want to try and make this as fun as possible, using communication methods and approaches most

suitable for the pupil. He/she will also be able to withdraw from the study, at any point if he/she wishes. I will then record the answers the pupil gives me when questioned about the scenarios. The pupils' performance during the adapted scenario will be compared to a standard scenario, which will be the same for all the pupils taking part.

The pupils will be able to choose not to answer any questions or stop taking part at any time. I would like to emphasise that all the information that the pupils give will be anonymous. They will be given participant numbers in place of their names so they will not be able to be identified in the study and their answers will remain confidential. Nobody else, apart from the researcher will be able to know that they took part in the study.

What will happen if I agree to the research?

The answers that the children give will be used as part of a doctoral research project in educational psychology for Cardiff University. A summary of the findings from the research project will be available to all those involved in the research following its completion.

The data collected from the pupils who take part in the study will be stored in a safe and lockable place. The data will not be shared with anybody else.

I would like to emphasise that it will be the pupil's choice whether they want to take part in the research. They can withdraw from the research at any time and will not have to give a reason for this. You will be asked to provide a copy of the information sheet and consent form to the pupils to take home to their parent. The consent form will ask parents to consent to their child taking part in the study by signing and returning the form. My contact details are also included on the information form, should parents wish to contact me to find out any more information about the research project. I have enclosed the information and consent forms that both the pupils and their parents/carers will receive prior to taking part in the study.

If you would like to ask any more questions about this research then please feel free to contact me using the email below. I will endeavour to answer any queries or questions to the best of my ability. If you are willing to give permission for me to recruit pupils to be involved, I would greatly appreciate it if you please could sign and return the consent form attached. Thank you for taking the time to read about this study, it is very much appreciated. Please do not hesitate to contact me through the contact details below, should you wish to find out any more about the research project.

Abigail Tee
Trainee Educational Psychologist
Cardiff University
Email: teeac@cardiff.ac.uk
Telephone number: 07800899871

For any queries or complaints regarding this research, the individuals listed below should be contacted:

Dr. Kyla Honey (University Research Supervisor and Professional Director)
University email address: HoneyK1@cardiff.ac.uk
University telephone number: 029 2087 0366

Dr. Simon Claridge (University Professional Tutor and Research Director)
ClaridgeS@Cardiff.ac.uk
University telephone number: 02920 876497



Head Teacher Consent Form

I have been given enough information about this project

Yes No

It has been explained to me how the information I give will be used

Yes No

I am happy for Abigail to recruit pupils from my school to take part in her study.

Yes No

I am happy to contact parents to seek consent for their children to take part in her
research

Yes No

I give permission for Abigail to speak to parents and staff and visit the school to
conduct the research should any children and their parents wish to participate

Yes No

SignatureDate

5.6 Appendix 6: Information Form and Consent Form for Parents/Carers



Parent/Carer Information Form

Dear parent/carers,

I am a Trainee Educational Psychologist who is currently on a work placement with the Local Authority. As part of my doctoral studies at Cardiff University I am interested in conducting some research that investigates how children with autistic spectrum condition may be best supported to understand the thoughts, feelings, ideas and the intentions of others.

I would like to ask your permission for your child to participate in my study. It is anticipated that the study will contribute towards the body of knowledge, which will explore how best to support pupils with autistic spectrum in understanding interpreting and correctly predicting the mental states of other individuals.

If your child chooses to take part in the study it will involve them taking part in two short tasks, which will involve a scenario between two characters. Your child will be asked a small number of questions about what happened in the story.

Prior to taking part in the tasks, I would like to ask someone who knows your child well, for example yourself or a member of staff to complete a template with your child. The template will be used to ask your child about their strengths, interests and those things, which are important for supporting them. The template will be an information sheet that will be used as a prompt to collect some information about what may help your child understand and communicate during the tasks most effectively. For example, it will ask questions about the strengths and interests of the young person, such as, "what does the pupil most look forward to at school?" and "What makes the pupil feel happy?" If you and your child agree to take part in the study, you or a Learning Support Assistant who knows your child well will be asked to complete the template prior to the research taking place. You or the Learning Support Assistant will complete this using the methods, which are felt most beneficial to your child. The template will be used in order to design the presentation of one of the scenarios and to explore whether it is more effective in helping your child to understand and interpret the beliefs of the characters.

I would then like to meet with your child at their school, at a time, which is convenient for them. After meeting with your child at the school, I will ask them if they would like to take part in the tasks involving two stories with me. I want to try and make this as fun as possible, using communication methods and approaches most suitable for your child. Your child will also be able to withdraw from the study, at any point if he/she wishes. I will then record the answers your child gives me when questioned about the scenarios. Your child's performance during the adapted scenario will then be compared to a standard scenario, which will be the same for all the pupils taking part.

Your child will be able to choose not to answer any questions or stop taking part at any time. I would like to emphasise that all the information that your child gives me will be anonymous. Your child will be given a participant number in place of their name so they will not be able to be identified in the study and their answers will remain confidential. Nobody else, apart from the researcher will be able to know that they took part in the study.

What will happen if I agree to the research?

The answers that the children give will be used as part of a doctoral research project in educational psychology for Cardiff University. A summary of the findings from the research project will be available to all those involved in the research following its completion.

The data collected from the pupils who take part in the study will be stored in a safe and lockable place. The data will not be shared with anybody else.

I would like to emphasise that it will be your child's choice whether they want to take part in the research. They can withdraw from the research at any time and will not have to give a reason for this. Each child and his/her parent/carer will be provided with their own information and consent forms detailing information about the study and asking their permission to take part. I have enclosed these with this information.

If you would like to ask any more questions about this research then please feel free to contact me using the email below. I will endeavour to answer any queries or questions to the best of my ability. If you are willing to ask your child if they would like to be involved, I would greatly appreciate it if you please could sign and return the consent form attached.

Thank you for taking the time to read about this study, it is very much appreciated. Please do not hesitate to contact me through the contact details below, should you wish to find out any more about the research project.

Abigail Tee
Trainee Educational Psychologist
Cardiff University
Email: teeac@cardiff.ac.uk
Telephone number: 07800899871

For any queries or complaints regarding this research, the individuals listed below should be contacted:

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University telephone number: 029 2087 0366

Dr. Simon Claridge (University Professional Tutor and Research Director)
ClaridgeS@Cardiff.ac.uk University telephone number: 02920 87649



Parent/carer consent form

I have been given enough information about this project.
Yes No

It has been explained to me how the information I give will be used
Yes No

I am happy for Abigail to talk to my child and ask them to participate in her research.
Yes No

I am giving permission for Abigail to record the answers, which my child gives her in her research.
Yes No

I have been made aware that my child can stop the interview with Abigail at any time and can choose not to answer any questions that he/she would prefer not to.
Yes No

I understand that my child's name will not be included in any notes or reports related to the study, so that all information will be completely confidential and anonymous.
Yes No

I would like.....to be the person who will complete the pupil template with my child, prior to my child taking part in the project.

SignatureDate

5.7 Appendix 7: Information Form and Consent Form for Support Staff



Support Staff Information form

Dear Learning Support Assistant,

I am a Trainee Educational Psychologist who is currently on a work placement with the Local Authority. As part of my doctoral studies at Cardiff University I am interested in conducting some research that investigates how children with autistic spectrum condition may be best supported to understand the thoughts, feelings, ideas and the intentions of others.

I would like to ask your permission for you to participate alongside a pupil you support in my study. It is anticipated that the study will contribute towards the body of knowledge, which will explore how best to support pupils with autistic spectrum in understanding interpreting and correctly predicting the mental states of other individuals. If the pupil you support chooses to take part in the study it will involve them taking part in two short tasks, which will involve a scenario between two characters. The pupil will be asked a small number of questions about what happened in the story.

Prior to taking part in the tasks, I would like to ask if you could complete a template to gather information about the pupil's strengths, interests and those things which are important for supporting them. The template will be an information sheet that will be used as a prompt to collect some information about what may help the pupil understand and communicate during the tasks most effectively. For example, it will ask questions about the strengths and interests of the young person, such as, "what does the pupil most look forward to at school?" and "What makes the pupil feel happy?" If you agree to take part in the study, then you will be asked to complete the template prior to the research taking place. You will be able to complete the template using the methods, which you feel are most beneficial to the pupil in order to gather information about what may support their communication and learning. The template will be used in order to design the presentation of one of the scenarios and to explore whether it is more effective in helping the pupil to understand and interpret the beliefs of the characters.

I would then like to meet with the pupil at their school, at a time, which is convenient for them. The pupil will also be given the option of you attending to support them during the tasks, so you may be asked to attend with them. After meeting with the pupil at the school, I will ask them if they would like to take part in the tasks involving two stories with me. I want to try and make this as fun as possible, using communication methods and approaches most suitable for the pupil. The pupil will also be able to withdraw from the study, at any point if he/she wishes. I will then record the answers the pupil gives me when questioned about the scenarios. The pupil's performance during the adapted

scenario will then be compared to a standard scenario, which will be the same for all the pupils taking part.

The pupil will be able to choose not to answer any questions or stop taking part at any time. I would like to emphasise that all the information that the pupils give will be anonymous. They will be given participant numbers in place of their names so they will not be able to be identified in the study and their answers will remain confidential. Nobody else, apart from the researcher will be able to know that they took part in the study.

What will happen if I agree to the research?

The answers that the children give will be used as part of a doctoral research project in educational psychology for Cardiff University. A summary of the findings from the research project will be available to all those involved in the research following its completion.

The data collected from the pupils who take part in the study will be stored in a safe and lockable place. The data will not be shared with anybody else.

I would like to emphasise that it will be both the pupil's and your own choice (following parental/carer consent) to take part in the research. The pupil will be able to withdraw from the research at any time and will not have to give a reason for this. Each pupil and his/her parent/carer will be provided with their own information and consent forms detailing information about the study and asking their permission to take part. I have enclosed these with this information.

If you would like to ask any more questions about this research then please feel free to contact me using the email below. I will endeavour to answer any queries or questions to the best of my ability. If you are willing to give permission to be involved, I would greatly appreciate it if you please could sign and return the consent form attached.

Thank you for taking the time to read about this study, it is very much appreciated. Please do not hesitate to contact me through the contact details below, should you wish to find out any more about the research project.

Abigail Tee
Trainee Educational Psychologist
Cardiff University
Email: teeac@cardiff.ac.uk
Telephone number: 07800899871

Abigail Tee
Trainee Educational Psychologist
Cardiff University

For any queries or complaints regarding this research, the individuals listed below should be contacted:

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University telephone number: 029 2087 0366

Dr. Simon Claridge (University Professional Tutor and Research Director)
ClaridgeS@Cardiff.ac.uk
University telephone number: 02920 876497

Cardiff University School of Psychology Ethics Committee:
Chair: Michael Lewis
Ethics Secretary: Natalie Moran
Email: psychethics@cardiff.ac.uk
Telephone number: +44 (0)29 2087 0360



Support Staff Consent Form

I have been given enough information about this project
Yes No

It has been explained to me how the information I give will be used
Yes No

I am happy for Abigail to talk to the pupil and ask them to participate in her
research
Yes No

I am giving permission for Abigail to record the answers, which the pupil gives
her in her research
Yes No

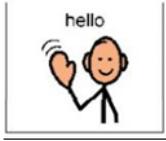
I have been made aware that the pupil can stop the interview with Abigail at
anytime and can choose not to answer any questions that he/she would prefer
not to
Yes No

I understand that the pupils name will not be included in any notes or reports
related to the study, so that all information will be completely confidential and
anonymous.
Yes No

SignatureDate

5.8 Appendix 8: Information Form and Consent Form for Pupils

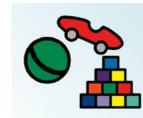
Pupil Information Form



Hello, my name is Abigail.



2



I would like you to do two activities.



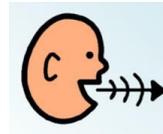
2 different



I would like to use two different characters



to tell you a story.



I would like to ask you some questions



about the story.



I would like



to hear

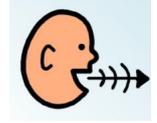


what

what



you



say



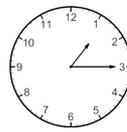
about the story.



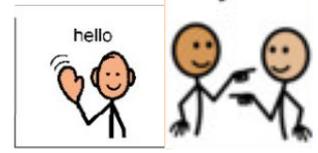
I would like



you



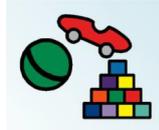
to have some time



to get to know me



before we do



the activities.



I would like to try



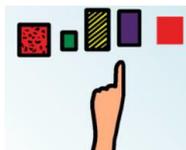
and make



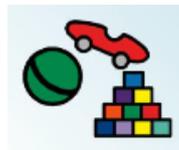
it as fun as possible.



but you



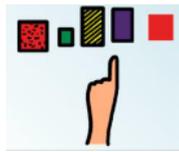
can choose



if you want to do the activities



You can



choose



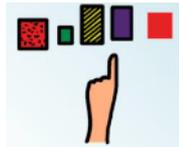
not to take part



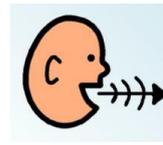
at any time.



You can



choose



to talk



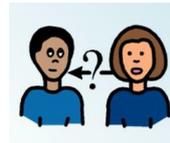
to me.



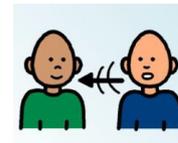
I will



write down



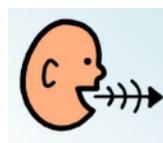
your answers



to the questions



I would like



to ask



you



about the story.



Only I will



see



your



answers



I will



not

write



your name down.



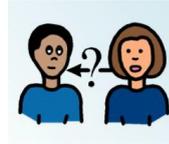
I would like to



look at



your answers



to see



what you



learnt



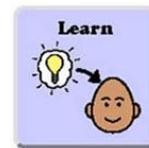
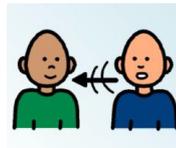
about the story



I would like to



use your answers



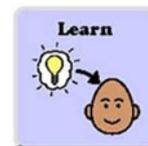
to learn



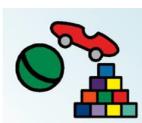
How to help



more children



learn

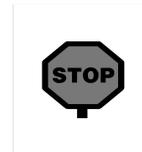
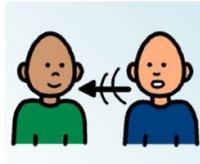


from these activities.

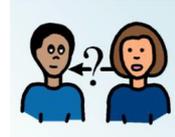
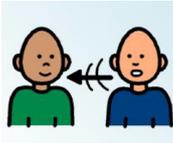




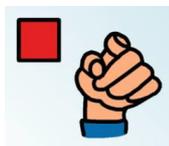
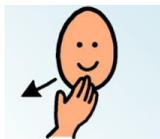
I would like to write a report about this.



You can tell me if you would like me to stop anytime.



Please ask me or your helper if you have any questions.



Thank you your help from Abigail.

Abigail Tee
Trainee Educational Psychologist
Cardiff University
Email: teeac@cardiff.ac.uk
Telephone number: 07800899871

In the case of any complaints, these should be directed to:



Dr Kyla Honey (University Research Supervisor and Professional Director)
University email address: HoneyK1@cardiff.ac.uk University telephone number: 029 2087 0366

Or
Dr. Simon Claridge (University Professional Tutor and Research Director)
University email address: ClaridgeS@cardiff.ac.uk
University telephone number: 02920 87649

Pupil Consent Form



I would



like



to help

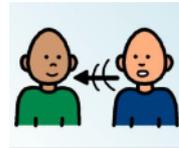


Abigail



with the activities

YES	NO
YES	NO



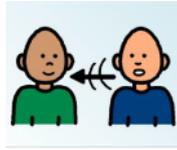
I am happy that I know how my answers will be used to write a report

YES NO

YES	NO



I am happy

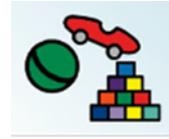


to talk



to Abigail

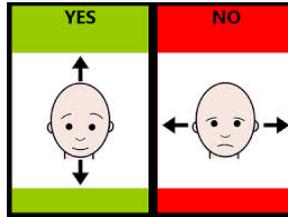
2



and do the two activities.

YES

NO



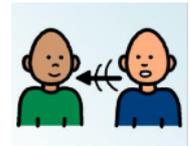
I am happy



for Abigail



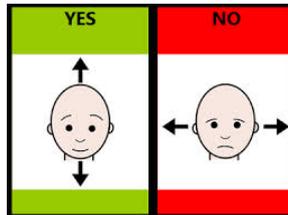
to write down



my answers

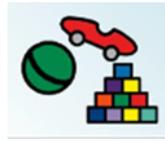
YES

NO





I know that I can stop



the tasks



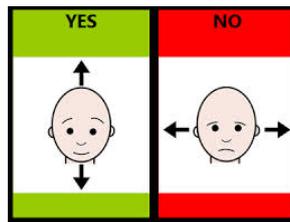
at any time



if I would like to

YES

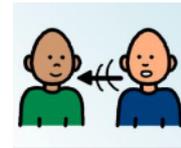
NO



I know that Abigail



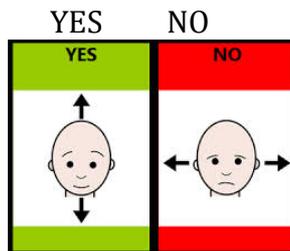
will not



tell anyone



my answers



Participant number:

Date:

5.9 Appendix 9: Debrief Forms for participants (Educational Psychologists/Head Teachers/Parents/Carers/Support Staff)



Debrief form for Gatekeepers, Head Teachers and Learning Support Assistants and Parents/Carers

Thank you for taking part

Thank you for allowing me to conduct my study. It is hoped that the answers that pupils provide will help lead to an understanding of how pupils with autistic spectrum condition understand thoughts, feelings, ideas and the intentions of others and employ these in order to successfully predict the intentions of another person. I am interested in exploring whether activities, which take into account the unique strengths, interests and areas of support for pupils with autistic spectrum condition help towards their understanding and communication of the intentions of others.

What will happen now?

The answers, which the pupils have given me, will be recorded and analysed along with the answers provided from other pupils who took part in the study. Nobody will be able to tell which pupils provided which answers during the study. All of the pupils' answers will be kept safe and stored securely in case of any future queries about the research.

If you would like to find out more about the research, then you will be able to ask me any questions now, or if you prefer you can contact my tutors at the university, or myself using the details below. You will also be able to ask for a summary of the research findings, once the research is complete. Thank you again, for your time and help.

Abigail Tee
Trainee Educational Psychologist
Cardiff University
Email: teeac@cardiff.ac.uk
Telephone number: 07800899871

For any queries or complaints regarding this research, the individuals listed below should be contacted:

Dr. Kyla Honey (University Research Supervisor and Professional Director)
University email address: HoneyK1@cardiff.ac.uk
University telephone number: 029 2087 0366

Dr. Simon Claridge (University Professional Tutor and Research Director)
ClaridgeS@Cardiff.ac.uk University telephone number: 02920 87649

Debrief Form for Parents/Carers

Thank you for allowing me to conduct my study with your child. It is hoped their answers will help lead to an understanding of how pupils with autistic spectrum condition understand thoughts, feelings, ideas and the intentions of others and employ these in order to successfully predict the intentions of another person. I am interested in exploring whether activities, which take into account the unique strengths, interests and areas of support for pupils with autistic spectrum condition help towards their understanding and communication of the intentions of others.

What will happen now?

The answers, which your child has given me, will be recorded and analysed along with the answers provided from other children who took part in the study. Nobody will be able to tell which answers your child gave during the study. Your child's answers will be kept safe and stored securely in case of any future queries about the research.

If you would like to find out more about the research then you will be able to ask me any questions now, or if you prefer you can contact me or my tutors at the university using the details below. You will also be able to ask for a summary of the research findings, once the research is complete.

Thank you again, for your time and help.
Abigail Tee
teeac@cardiff.ac.uk

For any queries or complaints regarding this research, the individuals listed below can be contacted:

Dr. Kyla Honey (University Research Supervisor and Professional Director)
University email address: HoneyK1@cardiff.ac.uk
University telephone number: 029 2087 0366

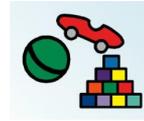
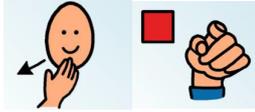
Dr. Simon Claridge (University Professional Tutor and Research Director)
ClaridgeS@Cardiff.ac.uk
University telephone number: 02920 876497

Cardiff University School of Psychology Ethics Committee:

Chair: Michael Lewis
Ethics Secretary: Natalie Moran
Email: psychethics@cardiff.ac.uk
Telephone number: +44 (0)29 2087 0360



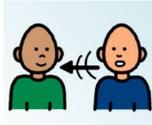
Debrief Form for Pupils



Thank you

for taking part

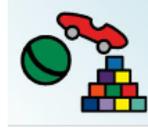
in the activities



Your answers

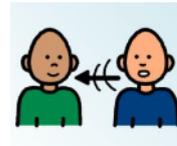
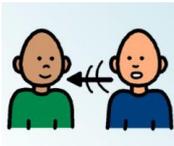
will be used to help me understand how

children



learn

during the activities.

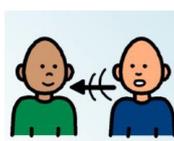
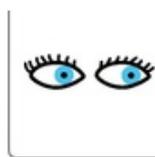


Your answers

will be written

with the answers

from other children.

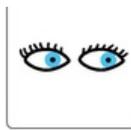


I will then

look at the

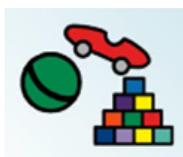
answers

from all children



to see

if there was anything,



which made the tasks

more

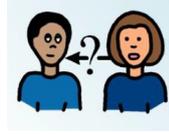
helpful to other children.



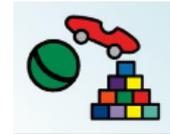
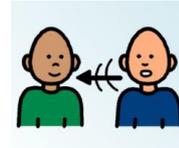
Only I will



see the



answers you gave me



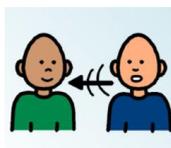
in the activities



Thank you



for your help



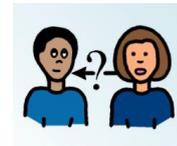
Please ask your



helper



or me if you



have any questions.

Abigail



Abigail Tee
Cardiff University
teeac@cardiff.ac.uk

For any queries or complaints regarding this research, the individuals listed below should be contacted:

Dr. Kyla Honey (University Research Supervisor and Professional Director)
University email address: HoneyK1@cardiff.ac.uk
University telephone number: 029 2087 0366

Dr. Simon Claridge (University Professional Tutor and Research Director)
ClaridgeS@Cardiff.ac.uk
University telephone number: 02920 876497

Cardiff University School of Psychology Ethics Committee:
Chair: Michael Lewis
Ethics Secretary: Natalie Moran
Email: psychethics@cardiff.ac.uk
Telephone number: +44 (0)29 2087 0360

5.10 Appendix 10: Table of Raw Data

P No	Gender	Age	L A	School No.	School Type	Task Completed First	Standard Response	Adapted Response
1	male	9	1	1	Base	Standard	1	1
2	male	9	1	1	Base	Adapted	1	1
3	male	9	1	1	Base	Standard	0	1
4	male	9	1	1	Base	Adapted	1	1
5	male	9	1	1	Base	Standard	1	1
6	male	9	1	1	Mainstream	Adapted	0	0
7	male	9	1	2	Mainstream	Standard	1	1
8	male	8	1	3	Mainstream	Adapted	0	0
10	male	6	1	1	Base	Adapted	0	1
12	male	7	1	4	Mainstream	Adapted	1	1
13	female	8	1	5	Mainstream	Standard	0	1
14	male	9	1	5	Mainstream	Adapted	1	1
15	male	7	2	6	Mainstream	Standard	0	1
16	female	10	2	7	Base	Adapted	0	1
17	male	7	2	7	Base	Standard	1	1
18	male	8	2	7	Base	Adapted	0	1
19	male	10	2	8	Base	Standard	1	1
20	male	10	2	8	Base	Adapted	0	1
21	males	8	2	8	Base	Standard	0	1
	mean				Total Score		9	17
	age	8.47			Correct			
	Standard				Mean Score			
	Deviation				Standard		0.47	0.89
	of Age	1.12			Deviation		0.51	0.32
					Percentage			
					Correct		47.36	89.47

5.11 Appendix 11: SPSS Output for McNemar's Test

McNemar Test

Crosstabs

standard task & adapted task

standard task	adapted task	
	incorrect answer	correct answer
incorrect answer	2	8
correct answer	0	9

Test Statistics^a

	standard task & adapted task
N	19
Exact Sig. (2-tailed)	.008 ^b

a. McNemar Test

b. Binomial distribution used.