HOW DO PEOPLE WITH AUTISTIC SPECTRUM DISORDER EXPERIENCE THEIR RELATIONSHIPS WITH OTHERS?

AND

CAN ADULTS WITH ASPERGER'S SYNDROME LEARN ABOUT POSITIVE ATTACHMENT BEHAVIOURS BETWEEN PARENTS AND YOUNG BABIES THROUGH THE USE OF A DVD?

by

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VOLUME I

Research Component

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OVERVIEW

This thesis comprises two volumes. Volume I is the research component and contains three papers consisting of a literature review, empirical paper and public dissemination document. Volume II is the clinical component and contains five papers which are all Clinical Practice Reports. These have been completed whilst on placement during the course.

Volume I - Research Component

The first paper is a literature review which explores how people with Autistic Spectrum Disorder (ASD) experience their relationships with others. In order to answer this, two sub-questions were explored: 1. How do people with ASD perceive the quality of their relationships with others? and 2. What facilitates or inhibits ability to develop relationships with others in people with ASD? A systematic search of papers was carried out using synonyms of ASD and interpersonal relationships. 13 papers were identified which were evaluated for quality. The results showed that compared with the general population, children and adolescents perceive their friendship quality to be lower. Preliminary results suggested that adults perceive their marital and parent-child relationships to be the same. The results also suggested that people with ASD appear to use a number of strategies to facilitate the development of relationships, and other people also use strategies for this reason. Furthermore, people with ASD report a number of personal qualities that serve to both facilitate or inhibit the development of relationships. The results are discussed in the context of limitations to the review, implications for clinical work, and implications for future research.

The second paper is an empirical paper which explores how much people with Asperger's syndrome understand about positive attachment behaviours and whether this knowledge

can be increased through the use of a DVD. Trait emotional intelligence, as well as IQ and level of autistic symptomatology were explored as possible predicting factors. Twenty eight adults with Asperger's syndrome took part in four experimental conditions: Baseline, pre-intervention, post-intervention and follow-up. The intervention involved participants watching a DVD and receiving a booklet summarising its contents. Participants were asked seven questions about attachment in all four conditions. Measures of trait emotional intelligence, IQ and autistic symptomatology were taken at baseline. Results showed a significant increase in knowledge of positive attachment behaviours at post-intervention. This was maintained at follow-up. This significant increase in knowledge occurred for the total knowledge score as well as for four out of the seven attachment questions. There was no significant correlation between pre-intervention knowledge or increase in knowledge for trait emotional intelligence, IQ or autistic symptomatology. It was concluded that knowledge of positive attachment behaviours can be improved through the use of the DVD. This improvement in knowledge was not affected by trait emotional intelligence, IQ or autistic symptomatology.

The third paper is a public dissemination document which provides an overview of the literature review and empirical paper for dissemination to the general public.

Volume II - Clinical Component

The first Clinical Practice Report (Psychological Models) presents the case of a 12 year old boy who was referred to a Child and Adolescent Mental Health Service (CAMHS) for help with anxiety difficulties. The assessment of these difficulties are described, and are formulated using a cognitive-behavioural approach and a psychodynamic approach.

The second Clinical Practice Report (Service Evaluation) describes the implementation of a 'Wellbeing in Diabetes Questionnaire' within a Paediatric Diabetes Team by monitoring

completion rates, and by evaluating the process by asking the thoughts and opinions of staff. Recommendations are made for the service based on these findings.

The third Clinical Practice Report (Single Case Experimental Design) presents the case of an 18 year old female with a diagnosis of Asperger's syndrome who was referred to a psychiatric liaison team within a hospital after presenting at A&E with suicidal thoughts. A single case experimental design was employed to evaluate the effectiveness of psychological work focusing on her self-harm behaviour.

The fourth Clinical Practice Report (Case Study) presents the case of a 51 year old male with a mild learning disability and a diagnosis of Cerebral Palsy who was referred to psychology within a Community Learning Disability Service for help with low mood. A cognitive-behavioural assessment, formulation and intervention are presented.

The fifth Clinical Practice Report (Case Study) was initially an oral presentation and is summarised. This presents the case of a 73 year old female with a diagnosis of Parkinson's Disease who was referred to Mental Health Services for Older People (MHSOP) for help with anxiety. A cognitive-behavioural assessment, formulation and intervention are presented.

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LITERATURE REVIEW

HOW DO PEOPLE WITH AUTISTIC SPECTRUM DISORDER EXPERIENCE THEIR RELATIONSHIPS WITH OTHERS?

1. ABSTRACT

Objective: This literature review explores how people with Autistic Spectrum Disorder (ASD) experience their relationships with others. Two sub-questions were explored: 1. How do people with ASD perceive the quality of their relationships with others? and 2. What facilitates or inhibits ability to develop relationships with others in people with ASD? **Method:** A systematic search of papers was carried out using synonyms of ASD and interpersonal relationships. Thirteen papers were identified which were evaluated for quality. All papers achieved a quality rating of 0.72 or over. **Results:** The results showed that compared with the general population, children and adolescents perceive their friendship quality to be lower and adults with ASD perceive their marital and parent-child relationships to be the same. A number of strategies are used by people with ASD to facilitate the development of relationships and other people also use strategies for this reason. Furthermore, people with ASD report a number of personal qualities that serve to either facilitate or inhibit the development of relationships. **Conclusions:** The results are discussed in the context of the limitations of the current review, implications for clinical work, and implications for future research.

2. INTRODUCTION

2.1. Autistic Spectrum Disorder

Autistic Spectrum Disorder (ASD) is a developmental condition that is marked by difficulties with social communication, social interaction, and social imagination. This means that people with ASD have difficulties in understanding verbal and non-verbal language, recognising and understanding other people's emotions, expressing their own emotions, and understanding and predicting other people's behaviour. People with ASD may also show repetitive and stereotyped behaviours, a preference for routine, sensory sensitivity, may have special interests, and may have learning disabilities (The National Autistic Society, 2015). The term ASD has traditionally been used an umbrella term for autism and Asperger's syndrome. Asperger's syndrome previously referred to a form of autism in those who were considered at the high-functioning end of the autistic spectrum, usually displaying fewer difficulties with speech and average or above average intelligence. Recently, autism and Asperger's syndrome have been merged into one diagnostic category (DSM-5, 2013, American Psychiatric Association) and the current review includes both.

2.2. ASD and Relationships

The term autism was created by Kanner (1943), whose main description of the condition was a deficit in social and communication skills in people who were of normal intelligence and language development. Following this, Asperger (1944/1991), who had observed similar characteristics, coined the term Asperger's syndrome. In his descriptions, Asperger (1944) noted specifically that children with Asperger's syndrome had little interest in what

was going on around them, concluding that they experienced social relationships as a source of conflict.

Much of the research on ASD and relationships has focussed on the perspective of those around the person with ASD. For example, there has been a large body of research on the behaviour of children with ASD at school. This usually involves the researcher observing the child and asking teachers to fill in questionnaires. Research in this area has generally found children with ASD to initiate fewer interactions, be less responsive to others trying to engage them, and to show more non-social behaviours (Koegel, Koegel, Frea, & Fredeen, 2001; Sigman & Ruskin, 1999).

This body of research also includes studies on the social networks of children and adolescents with ASD, usually measured as the frequency of nominations that a student receives from peers (Cairns et al., 1988). This has shown that children and adolescents with ASD have significantly lower social network salience, fewer friendship nominations, poorer quality friendships, and fewer reciprocal friendships, compared with typically developing children (Kasari, Locke, Gulsrud & Rotheram-Fuller, 2011; Locke et al., 2013).

Research has also focussed on the impact on others of living with someone with ASD. For example, a recent meta-analysis carried out by Hayes & Watson (2013) showed that parents of children with ASD experience more parenting stress than those of children who are typically developing or are diagnosed with another disability. In addition, there is a wealth of literature in the form of self-help books that provide advice and guidance to spouses who have a partner with Asperger's syndrome (Aston, 2014; Jacobs, 2006; Marshack, 2009; Moreno, 2011; Simone, 2009; Weston, 2011), suggesting that this experience can be difficult for some. Indeed, a survey of couples where the male partner

had a diagnosis of Asperger's syndrome showed that their partners reported a deterioration in their mental health due to the relationship, and described feeling emotionally neglected and physically exhausted (Aston, 2003).

Attwood (2004) suggests that it is the developmental delay of 'theory of mind' (defined as the ability to impute mental states to oneself and others, Premack & Woodruff, 1978a) abilities that prevent people with Asperger's syndrome developing many relationships skills, including empathy, trust, ability to repair someone's emotions, and ability to share thoughts and responsibilities. In addition, Attwood (2006) highlights that people with Asperger's syndrome have difficulties initiating, maintaining and ending a conversation, show a lack of reciprocity or conversational balance, and have a tendency to be pedantic with excessive and tedious detail. Furthermore, Frith and Happé (1999) report that self-understanding and self-reflection is difficult for people with Asperger's syndrome.

People with ASD are therefore at risk of having difficulties in their social relationships and the people around them may be negatively affected by this. However, despite this people with ASD do desire social relationships, including friendships, sexual relationships and marriage (Hendrickx, 2008; Hobson, 1992; Newport & Newport, 2002). This desire is also evident in self-help books, which provide guidance to people with ASD on how to manage social relationships, and are often written by people with ASD themselves (Bentley, 2007; Slater-Walker & Slater-Walker, 2002).

Social skills training programmes have been created to help people with ASD to learn how to develop and manage social relationships. Research has shown this to be largely effective in its many forms, including social skills groups and video modelling (Cappadocia & Weiss, 2011; Reichow & Volkmar, 2010; Shukla-Mehta, Miller & Callahan, 2010; Wang & Spillane, 2009). The importance of this work is indicated by research findings on the

negative consequences of not having good quality social relationships. These include problems with self-esteem (Moore & Schultz, 1983), delayed social skill development and poor school performance (Rubin, Dwyer & Booth-LaForce, 2004), alienation and social anxiety (Sandstrom & Zakriski, 2004), and depression, aggression and paranoia (Diamont & Windholt, 1981).

2.3. Aim of the Current Literature Review

Research on ASD and relationships has tended to focus on the perspectives of others. This has included observations of children with ASD and gathering information from parents and partners about their experience of living with someone with ASD. Research has shown that the absence of social relationships can have negative consequences for people with ASD and that social skills training programmes can help to prevent this. However, what is less clear is what the research literature can tell us about how people with ASD experience relationships with others from their own perspective. In order to address this, the current literature review will explore the following sub-questions:

1. How do people with ASD perceive the quality of their relationships with others?
2. What facilitates or inhibits ability to develop relationships with others in people with ASD?

3. METHOD

3.1. Search Criteria

3.1.1. Search Strategy

The search strategy is presented in Figure 1. Three databases were searched using synonyms for autism or Asperger's syndrome and interpersonal relationships (including marital, sibling, family, and friendship). Searches were limited to papers in the English language published in peer-reviewed journals in the last 15 years (1999-2014). Articles identified from all three databases were combined which yielded 4,657 articles. Duplicates were removed, resulting in 3,582 articles. Relevant papers to the topic were then searched for by hand. Inclusion and exclusion criteria were as follows:

Inclusion Criteria:

- Main focus on how people with ASD experience relationships
- Main focus on the perspective of the person with ASD
- ASD diagnosis

Exclusion Criteria:

- Reviews
- Conference Abstracts
- Editorials
- Papers which focused on experience of relationships combined with other variables, e.g. academic experiences

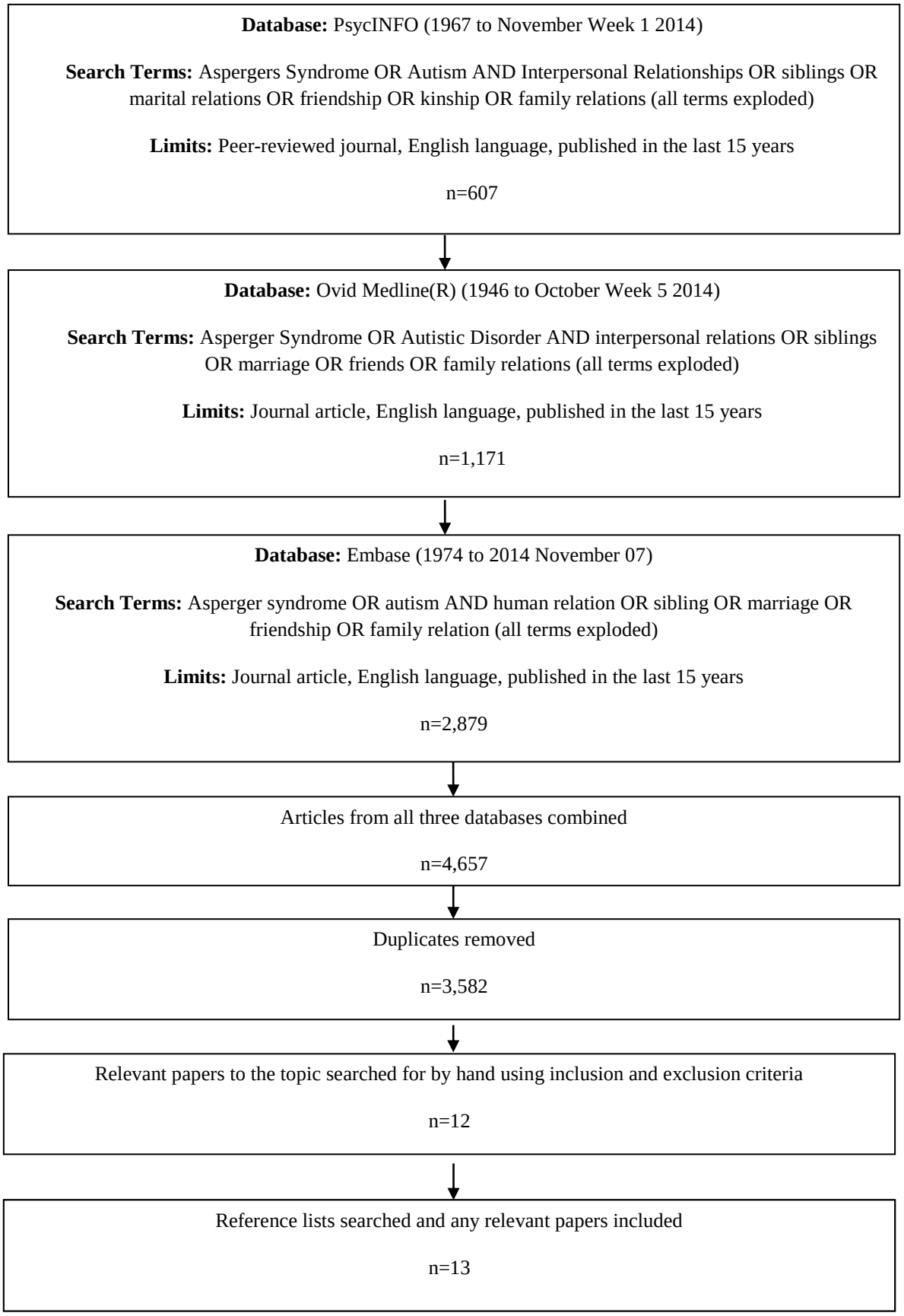

Figure 1: Search strategy used to identify papers

- Papers where the main focus was not on the person with ASD's perspective, e.g. family/carer/teacher report/observation

The hand search identified 12 relevant papers. The reference lists of these papers were examined, and one further relevant article was found, resulting in a total of 13 papers.

Of the 13 papers, five were quantitative and cross-sectional studies. Seven papers employed a qualitative methodology. One of these was an N=1 case study and one was a multiple case study. If quantitative papers had a qualitative element to them, they were only considered a mixed-method study if the qualitative data was formally analysed. One study was considered a mixed-method study according to this selection criterion.

3.1.2. Data Extraction

A data extraction table was created to provide a summary of each paper (see Table 1). This includes each paper's epistemological position, sample demographics, method of data collection, method of data analysis, and main findings.

Table 1: Data extraction table. Papers are presented in alphabetical order.

Paper no.	Paper	Epistemological Position	Sample demographics	Method of Data Collection	Method of Data Analysis	Main Findings
1	Bauminger, N., & Kasari, C. (2000). Loneliness and friendship in high-functioning children with Autism. *Child Development, 71(2),* 447-456.	Quantitative (Cross-sectional study)	22 children with high-functioning autism (7-14 years old) (21 males, 1 female). 19 typically developing children (7-14 years old) (18 males, 1 female).	2x self-report questionnaires: The Loneliness Rating Scale (Asher, Hymel, & Renshaw, 1984) The Friendship Qualities Scale (Bukowski, Boivin, & Hoza, 1994). Mother report on their child's number of friends, types of activities child engaged in when playing with friends and how often they had scheduled play dates.	Analysis of variance (ANOVA) Chi-square statistics Multivariate analysis of variance (MANOVA) Paired t-test	Children with autism lonelier and had less understanding of loneliness. Children with autism had poorer quality of friendships. Children with autism showed fewer associations between loneliness and friendship.
2	Bauminger, N., Shulman, C., & Agam, G. (2004). The link between perceptions of self and of social relationships in high-functioning children with autism. *Journal of Developmental and Physical Disabilities, 16(2),* 193-214.	Quantitative (Cross-sectional study)	16 children and adolescents with high-functioning autism (8-17 years old) (15 males, 1 female). 16 typically developing children and adolescents (8-	1x projective test: The Friendship Picture Recognition Interview 3x self-report questionnaires: Friendship Qualities Scale (Bukowski, Boivin, & Hoza, 1994) The Loneliness Rating Scale (Asher, Hymel, & Renshaw, 1984) The Self-Perception Profile for Children (Harter, 1985)	Pearson Correlation Multivariate analysis of variance (MANOVA) Analysis of variance (ANOVA)	Children with autism perceived their friendship to be as close as typically developing children. For children with autism, friendship correlated positively with

Paper no.	Paper	Epistemological Position	Sample demographics	Method of Data Collection	Method of Data Analysis	Main Findings
			16 years old) (15 male, 1 female).			cognitive competencies and self-worth, and negatively with loneliness. Children with autism perceived their social and athletic competencies as lower than typically developing children.
3	Carrington, S., Templeton, E., & Papinczak, T. (2003). Adolescents with Asperger Syndrome and perceptions of friendship. *Focus on Autism and Other Developmental Disabilities, 18(4),* 211-218.	Qualitative (Multiple Case Study)	5 adolescents with Asperger Syndrome (14-17 years old) (4 males, 1 female).	Semi-structured interviews: in-depth interviewing (Minichiello, Aroni, Timewell, & Alexander, 1995)	Phenomena coded and classified using QSR NUD*IST (Richards & Richards, 1994), with comparison across categories and previous research findings.	Participants found it difficult to describe their own understanding of friendship. Participants were able to describe the characteristics of someone who is not a friend. Participants were able to describe what friends are, with a focus on having similar interests, but overall found this difficult to

Paper no.	Paper	Epistemological Position	Sample demographics	Method of Data Collection	Method of Data Analysis	Main Findings
						explain. Participants were able to describe what an acquaintance is, which was described in unemotional terms. Participants used 'masquerading' to cope with social deficits.
4	Causton-Theoharis, J., Ashby, C., & Cosier, M. (2009). Islands of loneliness: Exploring social interaction through the autobiographies of individuals with autism. *Intellectual and Developmental Disabilities, 47(2)*, 84-96.	Qualitative	7 individuals with autism (no age specified) (4 males, 3 females).	Published autobiographies	Data analysed and coded using deductive and inductive analyses (Strauss & Corbin, 1998). Identified potential codes through collapsing, combining and refining.	Participants had a desire for connections. Participants appreciated predictability and a willingness of others to enter into the interaction. Participants experienced difficulty with communication, and many were successfully using alternative means to talking, e.g. typing.

Paper no.	Paper	Epistemological Position	Sample demographics	Method of Data Collection	Method of Data Analysis	Main Findings
						Participants described unconventional responses to social sensory information. Participants described intense interests which differed from others. Participants described using imagination as a substitute for friendship.
5	Daniel, L. S., & Billingsley, B. S. (2010). What boys with an autism spectrum disorder say about establishing and maintaining friendships. *Focus on Autism and Other Developmental Disabilities, 25(4),* 220-229.	Qualitative	7 boys with autism and Asperger Syndrome (10-14 years old).	Semi-structured interviews with: Boys Parents School-affiliated adults Field Notes Document Reviews	Interview transcripts imported into software program HyperResearch (ResearchWare, 2005) for reading, labelling, developing themes, writing and participant validation. Tentative theories explored and hypotheses generated and revised.	All participants had friends. Participants described establishing friends as difficult due to: the desire not to be the one who initiated contact; avoiding violating the social hierarchy of the school; concerns about being exploited or being a nuisance.

Paper no.	Paper	Epistemological Position	Sample demographics	Method of Data Collection	Method of Data Analysis	Main Findings
					Thematic profiles developed.	Participants described shared interests as critical to maintaining friendships.
6	Howard, B., Cohn, E., & Orsmond, G. I. (2006). Understanding and negotiating friendships: Perspectives from an adolescent with Asperger Syndrome. *Autism, 10(6)*, 619-627.	Qualitative (N=1 Case Study)	1 adolescent boy with Asperger's syndrome (12 years old).	Two semi-structured interviews with boy and his mother.	Grounded Theory	The participant enjoyed having friends, was interested in pursuing friendships and had a basic understanding of characteristics of friendships. The participant described negotiating his own and friend's focused interests. Family members played an important role in helping the participant to establish and maintain friends.
7	Jones, R. S. P., & Meldal, T. O. (2001). Social relationships and Asperger's syndrome: A qualitative analysis of first-hand accounts. *Journal of*	Qualitative	5 individuals with Asperger's syndrome.	Internet personal home pages	Grounded Theory	Participants had an awareness of the difficulties in communication and comprehension.

Paper no.	Paper	Epistemological Position	Sample demographics	Method of Data Collection	Method of Data Analysis	Main Findings
	Learning Disabilities, 5(1), 35-41.					Participants described attempts to 'fit in' by trying to role-play not being autistic. Participants described an awareness of other people with Asperger's syndrome as a supportive community. Participants described an awareness of the benefits of the internet as a means to develop and maintain social relationships.
8	Lasgaard, M., Nielsen, A., Eriksen, M. E., & Goossens, L. (2010). Loneliness and social support in adolescent boys with autism spectrum disorders. *Journal of Autism and Developmental Disorders, 40*, 218-226.	Quantitative (Cross-sectional study)	39 boys with Autism Spectrum Disorder (13-17 years old). 199 typically developing boys (13-16 years old).	2x self-report questionnaires: UCLA Loneliness Scale (Danish Version) (Lasgaard 2007; Russell, 1996) Social Support Scale for Children (SSSC) (Harter, 1985). 2x single-item measures (Likert Scales): How often participants in contact with peers outside of school	Logistic Regression Analysis Univariate Analysis of variance (ANOVA)	ASD was strongly associated with often or always feeling lonely, and a higher degree of loneliness. Perceived social support from

Paper no.	Paper	Epistemological Position	Sample demographics	Method of Data Collection	Method of Data Analysis	Main Findings
				Difficulty in making friends		classmates, parents and a close friend correlated negatively with loneliness in ASD.
9	Lau, W. & Peterson, C. C. (2011). Adults and children with Asperger Syndrome: Exploring adult attachment style, marital satisfaction and satisfaction with parenthood. *Research in Autism Spectrum Disorders, 5*, 392-399.	Quantitative (Cross-sectional study)	Clinical Group (total 82 adults): 22 adults (29-71 years old) (7 fathers, 15 mothers) with a child with Asperger's syndrome and Asperger's syndrome themselves. 11 adults (29-71 years old) (1 father, 10 mothers) with a spouse and child with Asperger's syndrome. 49 parents (29-71 years old) (13 fathers, 36 mothers) with a child with Asperger's syndrome.	Vignette Instrument (Hazan & Shaver, 1987) to measure participant attachment style. 2x self-report questionnaires: Quality of Marriage Index (QMI) (Norton, 1983) Measure of parenting satisfaction and efficacy (Johnston & Mash, 1989)	Analysis of variance (ANOVA	Marital satisfaction was high in all four groups. Participants with Asperger's syndrome were predominantly insecurely avoidant in romantic attachment. Having a child with Asperger's syndrome reduced parental satisfaction but own or spouse diagnosis of Asperger's syndrome did not contribute to this.

Paper no.	Paper	Epistemological Position	Sample demographics	Method of Data Collection	Method of Data Analysis	Main Findings
			Control Group: 75 typically developing adults (29-71 years old) (16 fathers, 59 mothers) with typically developing children.			
10	Locke, J., Ishijima, E. H., Kasari, C. & London, N. (2010). Loneliness, friendship quality and the social networks of adolescents with high-functioning autism in an inclusive school setting. *Journal of Research in Special Educational Needs, 10(2),* 74-81.	Quantitative & Qualitative (Cross-sectional study)	7 adolescents with autism (mean age 14.71) (4 male, 3 female). 13 typically developing adolescents (mean age 14.20) (no gender specified).	2x self-report questionnaires: The Loneliness Rating Scale (Asher, Hymel, & Renshaw, 1984) The Friendship Qualities Scale (Bukowski, Boivin, & Hoza, 1994). Friendship survey: Free recall of friends they do and do not like to 'hang out' with Identify best friend Identification of social networks 1x open-ended questionnaire: Designed to elicit discussion on the topic of friendship.	Univariate general linear models Open-ended questionnaire: Data coded for common themes	Participants with autism experienced significantly more loneliness, poorer friendship quality, and had significantly lower social network status.
11	Robledo, J. A., & Donnellan, A. M. (2008). Properties of supportive relationships from the perspective of academically successful individuals with Autism. *Intellectual and Developmental Disabilities, 46(4),* 299-310.	Qualitative	5 adults with autism (20-32 years old) (3 males, 2 females).	Semi-structured interviews. Documents and other materials collected to be used as data. Observation of participant with someone whom they had a supportive relationship with.	Constant comparative method (Glaser & Strauss, 1967): Initial/opening coding Selective/focused coding Codes put into	Six properties of successful supportive relationships: Trust Intimacy Presumption of competence Understanding

Paper no.	Paper	Epistemological Position	Sample demographics	Method of Data Collection	Method of Data Analysis	Main Findings
					categories through comparison of similarities and differences.	Shared vision of independence Good communication
12	Sperry, L. A., & Mesibov, G. B. (2005). Perceptions of social challenges of adults with autism spectrum disorder. *Autism, 9(4),* 362-376.	Qualitative	18 adults with autism spectrum disorder (22-49 years old (no gender specified).	Participant generated social questions and challenges were discussed at a Social Group Meeting.	Content Analysis	Social challenges identified: Relationships at work Developing and maintaining personal relationships Appropriate behaviours around members of the opposite sex
13	Whitehouse, A. J. O., Durkin, K., Jaquet, E., & Ziatas, K. (2009). Friendship, loneliness and depression in adolescents with Asperger's Syndrome. *Journal of Adolescence, 32,* 309-322.	Quantitative (Cross-sectional study)	35 adolescents with Asperger's syndrome (mean age 14) (28 males, 7 females). 35 typically developing adolescents (mean age 14) (29 males, 6 females).	4x self-report questionnaires: Friendship Quality Questionnaire (FQQ) (Parker & Asher, 1993) Friendship Motivation Questionnaire (FMQ) (Richard & Schneider, 2005) De Jong-Gierveld Loneliness Scale (De Jong-Gierveld & Kamphuis, 1985) Centre for Epidemiological Studies Depression Scale - Children's Version (CES-DC) (Weissman, Orvaschel, & Padian, 1980)	Multivariate analysis of variance (MANOVA) Independent samples t-test One-tailed correlations Regression Analyses	Participants with Asperger's syndrome reported poorer quality of best-friendship and less motivation to develop friendships. Participants with Asperger's syndrome displayed higher levels of loneliness and depressive symptoms, with loneliness being

Paper no.	Paper	Epistemological Position	Sample demographics	Method of Data Collection	Method of Data Analysis	Main Findings
						negatively correlated with the quality of their best friendship. Increased levels of loneliness and depressive symptoms were predicted by the extent to which their best friendships were characterised by high levels of conflict/betrayal.

3.2.3. Examination of Quality

To assess the quality of the thirteen research papers included, a quality criteria framework was used, suitable for both qualitative and quantitative papers (Kmet, Lee & Cook, 2004). This checklist was also chosen because it accommodates for cross-sectional studies by having a 'not applicable' option for criteria referring to intervention studies. The checklist has shown good inter-rater agreement for both the quantitative checklist (91.73%) and for the qualitative checklist (78%).

Whilst the checklist provides separate quality criteria for both types of studies, the same scoring system is used for both. The quantitative checklist includes 14 criteria whilst the qualitative checklist includes 10. Each criterion can be scored yes (2 points), partial (1 point) or no (0 points). Definitions about how these scores are derived at are provided by Kmet, Lee & Cook (2004) and are presented in Appendix 1. The summary score is calculated by dividing the total score by the possible sum score. Where the option of 'not applicable' is chosen, the total possible sum score is adjusted accordingly. The lowest summary score achievable is 0, and the highest is 1.

Table's 2 and 3 show the scores for each paper. Kmet, Lee & Cook (2004) do not provide official cut-off scores for article inclusion in literature reviews, however do speculate that a conservative cut-off point could be around 75% (0.75), whilst a liberal cut-off point could be around 55% (0.55). All but one paper (paper 9) scored above 0.75. This exception had both a quantitative and qualitative element to it, scoring 0.73 for the quantitative criteria and 0.8 for the qualitative criteria. It was decided all papers would be included in the literature review but that paper 9's quantitative results would be interpreted with caution.

During scoring it was observed that papers tended to lose points for the same criteria. For example, for quantitative studies, five out of six papers lost points for having an inappropriate sample size, and three out of six lost points for not adequately reporting estimate of variance in their results. Therefore, the interpretations of the results of these papers could be misleading and will need to be interpreted with caution.

For qualitative papers, four out of eight papers did not show any evidence of reflexivity. For these papers, the risk of influence on the data has not been addressed, potentially influencing the results. Therefore, the results of these papers will also have to be interpreted with caution.

Table 2: Quality criteria for quantitative studies

Paper no.	**Criteria**															
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**Total Sum / Total Possible Sum**	**Summary Score**
1	2	2	2	2	n/a	n/a	n/a	2	1	2	1	2	2	2	20 / 22	0.91
2	2	2	2	2	n/a	n/a	n/a	2	1	2	1	2	2	2	20 / 22	0.91
8	2	2	2	2	n/a	n/a	n/a	2	1	2	2	0	2	2	20 / 22	0.91
9	2	2	2	2	n/a	n/a	n/a	2	2	2	1	2	2	2	21 / 22	0.96
10	2	2	1	0	n/a	n/a	n/a	2	1	2	1	1	2	2	16 / 22	0.73
13	2	2	2	2	n/a	n/a	n/a	2	1	2	2	2	2	2	21 / 22	0.95
Summary Score	**1**	**1**	**0.93**	**0.86**	**n/a**	**n/a**	**n/a**	**1**	**0.64**	**1**	**0.64**	**0.69**	**1**	**1**		

1. Question / objective sufficiently described?
2. Study design evident and appropriate?
3. Method of subject/comparison group selection or source of information/input variables described and appropriate?
4. Subject (and comparison group, if applicable) characteristics sufficiently described?
5. If interventional and random allocation was possible, was it described?
6. If interventional and blinding of investigators was possible, was it reported?
7. If interventional and blinding of subjects was possible, was it reported?
8. Outcome and (if applicable) exposure measure(s) well defined and robust to measurement / misclassification bias? Means of assessment reported?
9. Sample size appropriate?
10. Analytic methods described/justified and appropriate?
11. Some estimate of variance is reported in the main results?
12. Controlled for confounding?
13. Results reported in sufficient detail?
14. Conclusions supported by the results?

2 = Yes 1 = Partial 0 = No n/a = Not Applicable

Table 3: Quality criteria for qualitative studies

Paper no.	**Criteria**											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Total Sum / Total Possible Sum**	**Summary Score**
3	2	2	2	2	2	2	2	2	2	0	18 / 20	0.9
4	2	2	2	1	1	2	2	2	2	0	16 / 20	0.8
5	2	2	2	2	2	2	2	2	2	2	20 / 20	1
6	2	2	2	2	0	2	1	2	2	2	16 / 20	0.8
7	2	2	2	2	2	2	2	0	2	0	16 / 20	0.8
10	2	2	2	2	1	2	1	2	2	0	16 / 20	0.8
11	2	2	2	2	2	2	2	2	2	2	20 / 20	1
12	2	2	2	2	2	2	2	2	2	2	20 / 20	1
Summary Score	**1**	**1**	**1**	**0.94**	**0.75**	**1**	**0.88**	**0.88**	**1**	**0.5**		

1. Question / objective sufficiently described?
2. Study design evident and appropriate?
3. Context for the study clear?
4. Connection to a theoretical framework / wider body of knowledge?
5. Sampling strategy described, relevant and justified?
6. Data collection methods clearly described and systematic?
7. Data analysis clearly described and systematic?
8. Use of verification procedure(s) to establish credibility?
9. Conclusions supported by the results?
10. Reflexivity of the account?

2 = Yes 1 = Partial 0 = No n/a = Not Applicable

4. RESULTS

In order to answer the overall question of how people with ASD experience their relationships with others, two sub-questions will be explored in this section:

- How do people with ASD perceive the quality of their relationships with others?
- What facilitates or inhibits ability to develop relationships with others in people with ASD?

4.1. How do people with ASD perceive the quality of their relationships with others?

Of the 13 papers identified from the search, four explored quality of friendships and one explored quality of marital relationships and parent-child relationships.

4.1.1. Quality of Friendships

Of the four papers that explored how people with ASD perceive the quality of their friendships, four used a quantitative design (papers 1, 2, 10 and 13).

All four papers found participants with ASD to have overall poorer quality friendships compared with typically developing participants. More specifically, the three papers using the FQS, reported significantly lower scores for the ASD groups compared to controls on the subscales companionship (papers 1, 2 and 10), security/intimacy and trust (papers 1 and 2), and help (papers 1, 2 and 10). No significant differences were found for closeness or conflict. Paper 13 found poorer quality friendship across all subscales of the FQQ.

In terms of quality ratings, papers 1, 2 and 13 showed good quality (0.91, 0.91, 0.95 respectively). Paper 10 showed a lower quality rating of 0.73 for its quantitative element. This was mainly due to a lack of information regarding the demographics of participants in both the ASD and typically developing groups, suggesting a potential for confounding variables. Also, the sample size was particularly low (7 adolescents with ASD and 12

typically developing adolescents). However, paper 10 replicated the results of papers 1 and 2.

In summary, four papers explored how people with ASD perceive the quality of their friendships. The findings suggest that people with ASD perceive specific aspects of their friendship quality to be poorer than the general population. For the papers using the FQS, these aspects are companionship, security/intimacy and trust, and help. Paper 13, which used the FQQ, found similar aspects of friendship to be poorer in quality: companionship/recreation, intimate exchange, and help/guidance.

Paper 13 also found other aspects of friendship to be poorer in quality, including validation/caring and conflict resolution, as well as conflict/betrayal, despite the other papers finding no significant difference for conflict on the FQS.

4.1.2. Quality of Marital Relationships and Parent-Child Relationships

Paper 9 used a quantitative design and explored quality of marital relationships and parent-child relationships through the use of questionnaires. Participants were adults who were parents of a child with Asperger's syndrome. There were four separate groups of participants. In the first group the parent had Asperger's syndrome themselves. In the second group the parent was typically developing and had a spouse with Asperger's syndrome. In the third group the parent was typically developing. A control group of typically developing parents who had typically developing children was also included. Paper 9 showed a good quality rating, with a summary score of 0.96.

The Quality Marriage Index (QMI) (Norton, 1983) was used to assess quality of marriage relationships. No significant difference was found between groups one to three and the control group in QMI scores, and scores were not affected by whether the adults had a

child with Asperger's syndrome or not. This seems to suggest that adults with Asperger's syndrome are as satisfied with their marriage as adults without Asperger's syndrome.

A 9-item measure, devised by Johnston and Mash (1989), was used to assess parenthood satisfaction. The results showed that parents with Asperger's syndrome who had a child with Asperger's syndrome were equally satisfied with parenthood as parents who did not have Asperger's syndrome themselves but had a child with Asperger's syndrome. However, these two groups of parents were less satisfied with parenthood than the control group of parents who did not have a child with Asperger's syndrome. This seems to suggest that having a child with Asperger's syndrome affects the quality of the parent-child relationship, rather than the parent having Asperger's syndrome themselves.

In summary, the findings seem to suggest that adults with Asperger's syndrome are as satisfied with their marriage as adults without Asperger's syndrome. The findings also seem to suggest that adults with Asperger's syndrome who have a child with Asperger's syndrome perceive the quality of their parent-child relationship to be the same in quality as other parents who have a child with Asperger's syndrome. However, this is of lower quality than parents who do not have a child with Asperger's syndrome.

Although the findings of paper 9 provide helpful information about how people with ASD perceive the quality of their marital relationships and parent-child relationships, they should be interpreted with caution. Firstly, there is an absence of other research studies that could serve to verify and strengthen the results. The results should therefore be treated as preliminary. Secondly, the study included adults with Asperger's syndrome and it could therefore be argued that the results may not apply to adults with other ASD diagnoses. Thirdly, the adults with Asperger's syndrome used in this study all had children with Asperger's syndrome. Although this did not appear to affect the quality of marital

relationships results, the parent-child relationship results do not tell us much about the perceived quality of the parent-child relationship in adults with Asperger's syndrome who have a typically developing child.

4.1.3. Summary

In summary, four papers explored quality of friendships and one explored quality of marital relationships and parent-child relationships. The results suggest that children and adolescents with ASD perceive that they have poorer quality friendships compared with the typically developing population, and that the specific aspects of their friendships that they perceive to be poorer in quality are companionship, security/intimacy and trust, and help.

Preliminary results suggest that adults with Asperger's syndrome are equally satisfied with their marriage as adults without Asperger's syndrome and that adults with Asperger's syndrome who have a child with Asperger's syndrome perceive the quality of their parent-child relationship to be the same as other parents who have a child with Asperger's syndrome but do not have Asperger's syndrome themselves. However, for both parents with and without Asperger's syndrome themselves, this is of lower perceived quality than parents who do not have a child with Asperger's syndrome.

4.2. What facilitates or inhibits ability to develop relationships with others in people with ASD?

Of the 13 papers identified from the search, nine explored what facilitates or inhibits people with ASD developing relationships with others. Two were quantitative and seven

were qualitative. In order to explore this question, the literature was divided into three areas.

4.2.1. Strategies that People with ASD Use that Help Facilitate the Development of Relationships

Five papers identified strategies that people with ASD use that help facilitate the development of relationships (papers 3, 4, 5, 6 and 7). These were all qualitative papers which achieved good quality ratings, with scores of 0.8 or above. Paper 5 showed a particularly high rating, scoring the highest maximum summary score of 1.

Paper 3 explored perceptions of friendships in adolescents with Asperger's syndrome using semi-structured interviews. One of the themes identified was participants describing what a friend is. Within this, a number of participants described friends who had similar interests, and reported that talking about the same things made them feel comfortable with the other person. Paper 5 explored how children and adolescents with autism or Asperger's syndrome establish and maintain friendships through the use of semi-structured interviews. Interestingly, participants in this study also described shared interests as critical to maintaining friendships. Therefore, it can be suggested that people with ASD may seek out relationships with people who have similar interests to themselves as a strategy for developing relationships with others.

Paper 4 used written material in the form of Internet home pages to explore how people with autism described their experiences of social relationships. The findings suggest that many participants experienced difficulty with communication, for example using only a few spoken words, which was inhibiting their ability to develop relationships with others. Participants described the use of technology as a strategy for overcoming communication problems using the written rather than the spoken word. They reported that this strategy

enables them to communicate more effectively with others, thus facilitating their ability to develop relationships.

Paper 7 used written material in the form of published autobiographies written by people with Asperger's syndrome. Within this paper a theme was identified of participants trying to role-play not being autistic as a strategy to try to fit in with others. This strategy was identified by three different participants, who all reported that although it was something they had tried, it had not been successful.

Participants in paper 7 also identified the Internet as a means of developing and maintaining social relationships, although no further information was provided about this. Another theme identified by paper 7 was participants reporting that they had found a supportive community within the Asperger's syndrome population, and that being in contact with others with the same diagnosis had provided them with both social and emotional support. This suggests that people with ASD may use the strategy of seeking contact with other people who have ASD as a way of developing relationships. The findings of paper 7 suggest that role-playing not being autistic, using the Internet and seeking contact with other people with ASD appear to be strategies that people with ASD use to facilitate the development of relationships.

Paper 6 reports on a case study of one adolescent with Asperger's syndrome. Semi-structured interviews were used to explore his perceptions of friendship. One of the themes found was 'negotiating focused interests', in which the participant described being aware of his own focused interests, and actively trying to show interest in his friend's interests as a strategy for maintaining the friendship. This suggests that actively trying to show interest in other people's interests is another strategy that people with ASD may use to facilitate the development of relationships.

In summary, five papers identified strategies that people with ASD use to help facilitate and maintain relationships. These strategies include seeking relationships with those who have similar interests, using alternative means of communication, trying to role-play not being autistic, use of the Internet, seeking contact with other people who have ASD, and showing an interest in friends' interests.

4.2.2. What Other People Do that Facilitate the Development of Relationships

Four papers identified things that other people do that facilitate the development of relationships in people with ASD (papers 4, 6, 8 and 11). Papers 4, 6 and 11 were qualitative papers, and paper 8 was a quantitative paper. All papers showed a good quality rating, achieving a summary score of 0.8 or above. Papers 8 and 11 were of particularly good quality, with paper 8 scoring 0.91 and paper 11 scoring the highest maximum summary score of 1.

Paper 4 identified a theme of participants appreciating predictability in others, suggesting that this may facilitate the development of relationships.

Paper 6 identified a theme of family members playing an important role in helping the participant to establish and maintain friends. More specifically, the participant reported that his mother provided opportunities for him to meet people, as well as offering advice on maintaining existing friendships. This seems to suggest that family members may play a role in facilitating the development of relationships in people with ASD.

Paper 8 explored the relationship between loneliness and social support in adolescents with ASD. Results indicate that perceived social support correlates negatively with loneliness, suggesting that social support from others, including support from classmates, parents and close friends, results in a decrease in loneliness. This suggests that social support is

something that other people can provide that helps people with ASD to feel less lonely, perhaps because they feel supported in developing their relationships with others.

Paper 11 used semi-structured interviews to explore what adults with autism believe the properties of a supportive relationship are. Six properties were identified. Firstly, participants reported that they needed to be able to trust the person that supports them, and indicated that past violations of trust had resulted in feeling unable to trust future supporters. Secondly, participants reported that an intimate connection between themselves and their supporter was important, with a reciprocal and mutual element to the relationship. Thirdly, participants felt it was important that their supporter had a shared vision of their goal of independence, for example by allowing them to try things independently before offering support.

Another property of supportive relationships as described by adults with autism is the supporter presuming that they are competent and treating them as a typical person who may need some extra support. They also felt it is important that their supporter understands them as person, rather than as a person with autism. Lastly, participants felt it is important that their supporter recognises and believes in their ability to communicate with others, as well as support them with this. These findings suggest that those who support people with ASD can do many things to facilitate the development of their relationship with the person with ASD, which in turn may help the person with ASD to develop their relationships with others.

In summary, four papers identified what other people can do to facilitate the development of relationships in people with ASD, such as others being predictable and family members helping with the establishment and maintenance of relationships. More specifically in the case of what people who support those with ASD can do, this includes establishing trust

and an intimate connection, having a shared vision of independence, presuming competence in the person, showing an understanding of the person as an individual, and recognising the person's ability to communicate, as well as assist with this. The four papers used a mixture of adolescents and adults, as well as a mixture of diagnoses including autism, Asperger's syndrome and ASD.

4.2.3. Personal Qualities of People with ASD that Facilitate or Inhibit the Development of Relationships

Four papers identified personal qualities of people with ASD that facilitate or inhibit the development of relationships (papers 2, 4, 5 and 12). Paper 2 is a quantitative paper and papers 4, 5 and 12 are qualitative papers. All four papers achieved good quality ratings, with summary scores of 0.91, 0.8, 1 and 1 respectively.

Paper 2 examined the link between perceptions of self and of social relationships and found that for children with autism, scholastic competence was positively correlated with their scores on the companionship, closeness and helping subscales of the FQQ, as was athletic competence with scores on the companionship subscale, and self-worth with the companionship, closeness and security subscales. Higher scores for behavioural conduct were correlated with lower scores on the conflict subscale. Loneliness was found to be negatively correlated with scholastic competence, social acceptance, athletic competence and general self-worth.

These results suggest that people with ASD who have higher scholastic and athletic competence, higher self-worth, and better behavioural conduct feel they have friendships which are characterised by companionship, closeness, help and security. In addition, those who have higher scholastic and athletic competence and higher self-worth are less lonely. This suggests that these personal qualities (higher scholastic and athletic competence,

higher self-worth, better behavioural conduct) serve to facilitate the development of close and secure friendships.

Paper 4 identified a theme of participants having unconventional responses to sensory information, which they found inhibited the development of their relationships. In particular, participants described a difficulty with noise and also touch, which if not controlled or predictable could result in reactions that were misinterpreted by others. In addition, participants described how having uncommon, intense interests inhibited the development of their relationships. More specifically, they reported that this inhibits the ability to initiate conversations and sustain conversations about things that they are uninterested in. In summary, the results from paper 4 seem to suggest that difficulties with sensory information and uncommon intense interests may serve to inhibit the development of relationships in people with ASD.

Participants in paper 5 also described a number of reasons why they found it difficult to establish friends. This included a desire not to be the one who initiated contact, not wanting to violate the social hierarchy within school, and concerns related to being exploited or being a nuisance. Therefore, these specific concerns may also inhibit the development of relationships in children and adolescents with ASD.

Paper 12 explored the perceptions of social challenges in adults with ASD by asking participants to generate social questions and challenges, which were discussed at a social group meeting. The audio recording of the group discussion was transcribed and themes were identified. One dominant theme was being concerned about behaving appropriately around members of the opposite sex.

In summary, four papers identified personal qualities of people with ASD that facilitate or inhibit the development of relationships. Higher scholastic and athletic competence, higher

self-worth, and better behavioural conduct were perceived to facilitate relationships, although due to the correlational nature of the study which reported these findings, the results should be treated as preliminary. Difficulties with sensory information, uncommon intense interests, a desire not to be the one who initiates contact, wanting to avoid violating the social hierarchy within school, concerns related to being exploited or being a nuisance, and worries about appropriate behaviour around members of the opposite sex were all identified as factors that may inhibit the development of relationships in people with ASD.

5. DISCUSSION

The findings of the studies reviewed will be discussed in the context of the two questions posed before the literature review was carried out: How do people with ASD perceive the quality of their relationships with others? and: What facilitates or inhibits ability to develop relationships with others in people with ASD?

With regards to how people with ASD perceive the quality of their relationships with others, the results show that children and adolescents with ASD perceive that they have poorer quality friendships compared with the general population and that the specific aspects of their friendships that they perceive to be poorer in quality are companionship, security/intimacy and trust, and help. One paper which used the FQQ also found other aspects of friendship to be poorer in quality, including validation/caring and conflict resolution, as well as conflict/betrayal, despite the other papers finding no significant difference for conflict on the FQS. Therefore, it appears that more research is needed in this area, perhaps using the FQQ to further explore these conflicting findings. These studies investigated the views of children and adolescents and there is therefore a need for further research to explore how adults with ASD perceive the quality of their friendships.

Preliminary results suggest that adults with Asperger's syndrome are equally satisfied with their marriage as adults without Asperger's syndrome. Further research is needed to verify these results, and to explore how adults with other ASD diagnoses perceive the quality of their marital relationship. Future research could explore the quality of marital relationships in people with ASD who do not have children.

Preliminary results also suggest that adults with Asperger's syndrome who have a child with Asperger's syndrome perceive the quality of their parent-child relationship to be the same as other parents who have a child with Asperger's syndrome. Further research is

needed to explore how adults with Asperger's syndrome as well as with other ASD diagnoses perceive the quality of their parent-child relationship when they have a typically developing child. This section of the review identified that there appears to be an absence of research literature on how people with ASD experience the quality of other relationships, including how children with ASD perceive the quality of their relationships with their parents, and how people with ASD perceive the quality of their relationships with siblings or other family members.

With regards to what facilitates or inhibits the ability to develop relationships with others, three areas of literature were explored. The first area concerned the strategies that people with ASD use to help facilitate the development of relationships. Six strategies were identified, which appeared to cluster around three themes (see Table 4). Two of the strategies showed a theme of people with ASD seeking out relationships with people who were similar to them, evident in the strategy of seeking relationships with those who have similar interests to themselves, and seeking contact with other people who have ASD. Two of the strategies showed a theme of people with ASD using technology as a strategy for developing relationships with others, which included using alternative means of communication such as through the use of facilitated typing, and use of the internet.

Table 4: Strategies that people with ASD use to help facilitate the development of relationships, and themes identified from these

Strategies Identified	**Themes**
Seeking relationships with those who have similar interests to themselves	People with ASD seeking out relationships with people who were similar to them
Seeking contact with other people who have ASD	
Using alternative means of communication	People with ASD using technology as a strategy for developing relationships with others
Use of the internet	
Trying to role-play not being autistic	People with ASD trying to change themselves in some way in order to develop relationships with others
Showing an interest in friends' interests	

Finally, two of the strategies showed a theme of people with ASD attempting to change themselves in some way in order to develop relationships with others, which included trying to role-play not being autistic, and showing an interest in friends' interests.

Four of the five papers in this section concerned people with Asperger's syndrome, and therefore the majority of these findings are only relevant for this clinical group. Whilst the findings of papers 3, 5 and 6 investigated children or adolescents, papers 4 and 7 did not specify an age of their participants. Thus, there is an absence of literature on the strategies that adults with ASD use that help facilitate the development of relationships.

The second area of literature explored was what other people do that facilitates the development of relationships of people with ASD. Factors identified include others being predictable and family members helping with the establishment and maintenance of relationships. In the case of what people who support those with ASD do, facilitating factors include establishing trust and an intimate connection, having a shared vision of independence, presuming competence in the person, showing an understanding of the person as an individual, and recognising the person's ability to communicate, as well as assist with this.

Some of these themes link in with the previous findings about the aspects of friendship that people with ASD perceive to be poor in quality. For example, it makes sense that others being predictable, and establishing trust and an intimate connection is important for people who perceive security/intimacy and trust to be aspects of friendship that are usually poor in quality. Similarly, family members helping with the establishment and maintenance of relationships, and recognising the person's ability to communicate, as well as assisting with this, would be important for people who perceive help to be an aspect of friendship that is usually poor in quality.

This section of the review included adult studies only and there is an absence of literature on what children believe other people do that helps to facilitate the development of relationships. Therefore, further research is needed in this area.

The third area of literature explored was the personal qualities of people with ASD that facilitate or inhibit the development of relationships. Personal qualities that are said to facilitate relationships are higher scholastic and athletic competence, higher self-worth, and better behavioural conduct. However, due to the correlational nature of the data no causal relationships can be inferred and the results should be interpreted with caution. It could be that when friendships are higher in quality, these personal qualities improve.

Personal qualities that inhibit the development of relationships include difficulties with sensory information, uncommon intense interests, a desire not to be the one who initiates contact, wanting to avoid violating the social hierarchy within school, concerns related to being exploited or being a nuisance and worries about appropriate behaviour around members of the opposite sex. The finding that uncommon intense interests may inhibit the development of relationships links in with the previous finding that people with ASD may use the strategy of seeking relationships with those who have similar interests to themselves, or showing an interest in friends' interests as strategies for developing and maintaining relationships.

This section of the review identified papers which used a mixture of diagnoses (autism, Asperger's syndrome, ASD) as well as ages (children, adolescents, adults). Future research could focus on strengthening these results by exploring these topics further.

Limitations

One of the limitations of this literature review is that there are a relatively small number of papers included in each section, therefore reducing the generalisability of the findings. In addition, many papers employed qualitative methodologies which seek to explore the individual's experiences rather than produce generalisable findings. Therefore, the findings of this literature review should be viewed as information to consider when working with people with ASD, rather than providing definite guidelines.

Future research

A number of areas for future research have been identified by this literature review. With regards to how people with ASD perceive the quality of their relationships with others, further research is needed to explore:

- How adults with ASD perceive the quality of their friendships
- How adults with other ASD diagnoses perceive the quality of their marital relationship
- How adults perceive the quality of their marital relationship when they do not have children
- How adults with Asperger's syndrome as well as other ASD diagnoses perceive the quality of their parent-child relationship when they have a typically developing child
- How children with ASD perceive the quality of their relationships with their parents
- How people with ASD perceive the quality of their relationships with siblings or other family members

With regards to what facilitates or inhibits ability to develop relationships with others in people with ASD, further research is needed to explore:

- The strategies that adults as well as those with other ASD diagnoses use to help facilitate the development of relationships
- What children believe other people do that helps to facilitate the development of relationships

Where a paucity of research has been identified, in these cases further research could be carried out to verify and strengthen these results.

Clinical work

Despite the small number of studies identified according to the inclusion and exclusion criteria set (see page 7), this literature review has provided valuable information about how people with ASD experience their relationships with others from their own perspective. It has identified a number of areas where there is a potential for clinicians, teachers and parents to help children and adolescents with ASD achieve better quality friendships. Furthermore, it has identified factors that may facilitate or inhibit the development of relationships. These factors can be considered by individuals with ASD who are looking to develop their relationships, or by professionals who are working with them.

Overall conclusion

Overall, the body of literature reviewed here suggests that children as well as adults with ASD experience relationships in different ways from those described as typically developed and that they perceive there to be a number of personal and inter-personal factors that facilitate or inhibit the development of these relationships. A number of areas for future research have been identified, the results of which may provide a firmer

evidence base that can provide professionals as well as service users with ASD and their families and friends with guidelines on how to develop and maintain meaningful and positive relationships and thus improve or protect mental health and well-being.

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EMPIRICAL PAPER

CAN ADULTS WITH ASPERGER'S SYNDROME LEARN ABOUT POSITIVE ATTACHMENT BEHAVIOURS BETWEEN PARENTS AND YOUNG BABIES THROUGH THE USE OF A DVD?

1. ABSTRACT

Background: Whilst some self-help resources have been developed for parents who have Asperger's syndrome, there has been no research looking at whether there are any interventions that may be able to help with the development of the parent-child relationship. The main aim of the current study is to explore how much people with Asperger's syndrome understand about positive attachment behaviours and whether this knowledge can be increased through the use of a DVD. Trait emotional intelligence, as well as IQ and level of autistic symptomatology are explored as possible predicting factors.

Method: Adults with Asperger's syndrome who were not parents (N=28) took part in four experimental conditions: Baseline, pre-intervention, post-intervention and follow-up. The intervention involved participants watching a DVD and receiving a booklet summarising its contents. Participants were asked seven questions about attachment in all four conditions. Measures of trait emotional intelligence, IQ and autistic symptomatology were taken at baseline.

Results: A significant increase in knowledge of positive attachment behaviours was observed at post-intervention. This was maintained at follow-up. This significant increase in knowledge occurred for the total knowledge score as well as for four out of the seven attachment questions. Trait emotional intelligence, IQ and autistic symptomatology did not predict pre-intervention knowledge or increase in knowledge.

Conclusions: The knowledge of adults with Asperger's syndrome of positive attachment behaviours can be improved through the use of the DVD. This improvement in knowledge was not affected by trait emotional intelligence, IQ or autistic symptomatology.

2. INTRODUCTION

2.1. Asperger's Syndrome

Asperger's syndrome is a form of autism. The latter is characterised by problems with social communication, social interaction, and social imagination, often referred to as the 'triad of impairments' (The National Autistic Society, 2015) whereby people with autism struggle to express themselves socially and emotionally, may have difficulty initiating and sustaining social relationships, and may find it difficult to be imaginative and empathic, having difficulty interpreting other people's thoughts and actions.

Whilst people with Asperger's syndrome (sometimes referred to as high functioning autism; Autism Speaks, 2010) also experience this triad of impairments, they have fewer problems with verbal communication and do not usually have an accompanying learning disability. They are considered to be socially and intellectually more competent and are thus more likely to establish romantic relationships and go on to have families than people who have been labelled as having autism and learning disabilities.

2.2. Asperger's Syndrome and Parenting

Parenting is recognised as being a basic human right for all adult citizens (The Human Rights Act, 1998). Recent governmental policy has validated the notion that adults with autism should be able to choose how they live and to have access to help when they need it (Department of Health, 2010) so that they are able to live fulfilling and rewarding lives. This suggests that adults with Asperger's syndrome should be free to make their own choices about whether they would like to become a parent or not, and that they should receive support with this if needed.

Due to the triad of impairment, it is likely that parents with Asperger's syndrome will need some support with their parenting skills. However, there are few services that offer such specific help. A number of self-help resources are available, usually in the form of books or websites written by people who have first-hand experience (e.g. ASpar, 2008; Evans, 2010; Lester, 2011; The National Autistic Society, 2015). These resources provide personal accounts as well as guidance and advice to parents who have Asperger's syndrome, and to those living with a parent who has Asperger's syndrome. These resources also provide clinicians with useful information about the types of difficulties that parents with Asperger's syndrome may experience. For example, Liane Holliday Willey (1999) reports that the hardest thing about being a parent for her was the constant possibility of sensory overload and Maxine Aston's (2003) 'Aspergers in Love: Couple Relationships and Family Affairs' contains accounts from children who suggest that parents may struggle with empathy and with seeing their child's point of view.

2.3. Asperger's Syndrome and Attachment

Whilst the difficult experiences of parents with Asperger's syndrome and their children have been well documented, there is little research on how having a parent with Asperger's syndrome may affect a child, or indeed the parent-child relationship. A secure attachment between parent and child is important for healthy child development and is achieved through sensitive and responsive parenting (Bowlby, 1969). In practical terms, this means that the child's primary caregiver needs to be able to consistently and efficiently respond to the behaviours that babies exhibit to get their parents' attention, be able to regulate their own emotions and those of their baby, and be able to interpret what their baby needs (Gerhardt, 2004). It could be hypothesised that parents with Asperger's syndrome may find these skills more difficult than the general population due to the difficulties that they experience with social communication, interaction and imagination.

Whilst there has been no research on how having a parent with Asperger's syndrome may affect the child or the parent-child relationship, there is a body of research on the attachment style of people with autism. This has shown a mixed picture. A meta-analytic review carried out by Rutgers, Bakermans-Kranenburg, Ijzendoorn & Berckelaer-Onnes (2004) found children with autism to be significantly less securely attached to their parents compared with the general population. In addition, Lau & Peterson (2011) who looked specifically at adult romantic attachment styles in adults with Asperger's syndrome, found that this was more likely to typify an insecurely avoidant style compared with a control group. Furthermore, Taylor, Target & Charman (2008) who looked at attachment styles in adults with high-functioning autism found that only three of their twenty participants had a secure attachment style, a lower rate than has been found in non-clinical samples. It therefore seems that adults with Asperger's syndrome may be more likely to have an insecure attachment style compared with the general population.

Research suggests that attachment styles are likely to be passed from parent to child (Cohn, Cowan, Cowan & Pearson, 1992). It could therefore be tentatively suggested that whichever attachment style a parent with Asperger's syndrome has developed as a child will be the likely attachment style that their child develops. However, there is as yet no research evidence that allows reliable predictions about whether having a parent with Asperger's syndrome affects the parent-child relationship, or the subsequent attachment style that the child develops.

2.4. Emotional Intelligence

Emotional intelligence is defined as "the ability to perceive accurately, appraise, and express emotion; the ability to access and/or generate feelings when they facilitate thought; the ability to understand emotion and emotional knowledge; and the ability to regulate emotions to promote emotional and intellectual growth" (Mayer & Salovey, 1997, page

10). It is regarded as being separate from IQ and personality (Brackett & Mayer, 2003; Lopes, Salovey, & Straus, 2003). There are two types of emotional intelligence: trait emotional intelligence and ability emotional intelligence. Trait emotional intelligence or 'emotional self-efficacy' is measured through self-report questionnaires and is a person's behavioural disposition as well as self-perception of his/her emotional intelligence. Ability emotional intelligence or 'cognitive–emotional ability' is measured through performance tests and is a person's cognitive knowledge of emotional intelligence (Petrides & Furnham, 2003).

In people with Asperger's syndrome, studies have found ability emotional intelligence to be intact, but trait emotional intelligence to be impaired (Montgomery, McCrimmon, Schwean, & Saklofske, 2010; Montgomery, Schwean, Burt, Dyke, & Thorne et al., 2008; Petrides, Hudry, Michalaria, Swami, & Sevdalis, 2011). This suggests that people with Asperger's syndrome may have a theoretical understanding of emotional intelligence yet find it difficult to apply these skills in real life.

Research has shown that parental emotional intelligence has important implications for child development. For example, Rutkowska (2011) found that fathers with higher emotional intelligence have a better relationship with their sons, and Batool & Bond (2014) found that parental emotional intelligence influences parenting style, which in turn has an impact upon levels of aggression in children. Furthermore, Cumberland-Li et al. (2003) found that high parental regulation and low negative emotionality, which are aspects of the emotional intelligence construct, are associated with positive developmental outcomes in children.

Other than Rutkowska (2011), there is no other research evidence on whether parental emotional intelligence has an impact upon development of the parent-child relationship.

However, it could be argued that some of the constructs of emotional intelligence, such as the ability to understand and regulate emotions, predict a secure attachment style and thus higher emotional intelligence scores in parents would be associated with a greater likelihood of them establishing a secure attachment style with their children.

2.5. Aim of the Current Study

The main aim of the current study is to explore how much people with Asperger's syndrome who are not parents understand about positive attachment behaviours between parents and babies and whether this knowledge can be increased through the use of a training DVD. Pearson (2013) recently investigated whether young adults with an intellectual disability are able to learn about positive attachment behaviours through an adapted version of a training DVD. They were also given a booklet to supplement their learning. Participants were asked seven knowledge questions before the DVD, after presenting the DVD, and at two week follow-up. The results showed that participants improved in their knowledge of positive attachment behaviours after watching DVD. It was decided that this methodology would be used in the current study, with the addition of an extra condition one week before participants were shown the DVD to control for time or repetition of the attachment questions which have the potential of being confounding variables.

The first aim of this study is to establish whether adults with Asperger's syndrome are able to learn about positive attachment behaviours between parents and babies. The first hypothesis therefore is that there will be a significant increase in knowledge of attachment scores after watching the DVD and that this increase will be maintained at follow-up.

The second aim of the current study is to investigate whether trait emotional intelligence has an impact upon participants' baseline knowledge of attachment as well as on the

improvement in this knowledge after having watched the DVD. The second hypothesis is therefore that there will be a positive correlation between trait emotional intelligence scores and pre-intervention knowledge of attachment scores, and that there will be a positive correlation between trait emotional intelligence scores and increase in knowledge of attachment scores.

The third aim of the current study is to explore whether IQ or level of autistic symptomatology influences participants' pre-intervention knowledge of attachment or any improvement in this knowledge having watched the DVD. Pearson (2013) found that IQ did not affect improvement of knowledge of positive attachment behaviours after watching the DVD. Therefore, the third hypothesis is that there will be no significant correlation between IQ scores and pre-intervention knowledge of attachment scores, and no significant correlation between IQ scores and increase in knowledge of attachment scores.

As mentioned above, it can be hypothesised that people with Asperger's Syndrome may have less knowledge of positive attachment behaviours due to difficulties they experience with social communication, interaction and imagination. However, research has shown that people with Asperger's syndrome respond well to training (Mitchel, Regehr, Reaume & Feldman, 2010; Tse, Strulovitch, Tagalakis, Meng & Fombonne, 2007). Therefore, the fourth hypothesis is that there will be a negative correlation between autistic symptomatology scores and pre-intervention knowledge of attachment scores, and no significant correlation between autistic symptomatology scores and increase in knowledge of attachment scores.

To summarise, the hypotheses are:

1. There will be a significant increase in knowledge of attachment scores after watching the DVD and this increase will be maintained at follow-up.

2. There will be a positive correlation between trait emotional intelligence scores and pre-intervention knowledge of attachment scores, and there will be a positive correlation between trait emotional intelligence scores and increase in knowledge of attachment scores.

3. There will be no significant correlation between IQ scores and pre-intervention knowledge of attachment scores, and no significant correlation between IQ scores and increase in knowledge of attachment scores.

4. There will be a negative correlation between autistic symptomatology scores and pre-intervention knowledge of attachment scores, and no significant correlation between autistic symptomatology scores and increase in knowledge of attachment scores.

3. METHOD

3.1. Design

The current study uses a quantitative repeated measures design. The independent variable is Condition (baseline, pre-intervention, post-intervention, follow-up) and the dependent variable is overall score on the attachment questions.

3.2. Participants

3.2.1. Ethical Approval

The study was granted full ethical approval from the University of Birmingham (see Appendix 2).

3.2.2. Recruitment

Participants were recruited from colleges, support groups, and online websites. They were offered a £10 high street voucher as an incentive for taking part, as well as payment for any travel expenses.

3.2.2.1. Colleges

Both mainstream and specialist colleges within the local area were contacted. If the college was interested in helping to recruit participants, a meeting was arranged with a member of staff to discuss the research further. An information sheet (see Appendix 3) was given to the member of staff to share with potential participants. The member of staff helped to arrange the meetings between participant and researcher.

3.2.2.2. Support Groups

Support groups for people with Asperger's syndrome within the local area were contacted. If they were interested in helping to recruit participants the researcher attended the support group to present the aims of the research. An information sheet was given to group members summarising the details of the research and the researcher contact information (see Appendix 3). If group members indicated there and then that they were interested in taking part, their contact details were taken and they were contacted individually by the researcher.

3.2.2.3. Online Websites

An advertisement was placed on The National Autistic Society and Autism West Midlands websites (see Appendix 4), which included similar information to the information sheet.

Twenty five participants were recruited through support groups, two participants were recruited through colleges, and one participant was recruited through online websites resulting in a total of 28 participants. A post-hoc sensitivity analysis revealed a medium effect size of d=0.55 (see Appendix 12).

3.2.3. Demographics

Participant demographics are presented in Table 5. Two thirds of participants were male and one third were female. The mean age of participants was 35 (range 18-59). The majority of participants had not had any previous teaching on parent-baby relationships. The mean number of siblings was two (range 0-8). For ethical reasons only people who were not parents were recruited. No formal evidence of a diagnosis of Asperger's

syndrome was requested from participants; however they all self-reported having this diagnosis.

Table 5: Participant demographics

Demographic	Number of Participants
Gender	
Male	n=19
Female	n=9
Age	
18-24	n=5
25-34	n=10
35-44	n=4
45-54	n=7
55-64	n=2
Previous teaching	
Yes	n=3
No	n=25
Siblings	
None	5
1-2	14
3-4	6
5-6	1
7-8	2

3.3. Materials

3.3.1. Information Sheet and Consent Form

An information sheet and consent form were presented to participants at the first session (see Appendix 5 and 6).

3.3.2. Demographic Questions

Participants were asked a number of demographic questions during the first session which included information on age, number of siblings, and whether they had had any previous teaching on parent-infant relationships (see Appendix 7).

3.3.3. Wechsler Abbreviated Scale of Intelligence Second Edition (WASI-II)

The WASI-II comprises four subtests: Block Design, Vocabulary, Matrix Reasoning and Similarities, which combined give a measure of overall intellectual functioning. To reduce the procedure time for participants, the two-subtest version was used, which asks participants to complete one verbal (Vocabulary) and one non-verbal (Matrix Reasoning) subtest. Vocabulary requires participants to describe the meaning of a list of words and Matrix Reasoning asks the participant to view an incomplete matrix or series and select a response option that completes it. A higher score on the WASI-II indicates a higher level of intellectual functioning. The WASI-II also provides clinical cut-off points (see Table 11, page 72).

3.3.4. Autism Spectrum Quotient (AQ-10)

The AQ-10 (see Appendix 8) is a 10-item screening tool which helps to detect whether someone may be on the autistic spectrum. It was chosen for its good psychometric properties and its short administration time. It was developed as a short form of the Autism Spectrum Quotient *(*AQ) (Baron-Cohen et al. 2001), which includes 50 items. Although shorter, the AQ-10 has displayed high test accuracy, including an internal consistency of >0.85 (Allison, Auyeung & Baron-Cohen, 2012) and is a recommended screening tool in the NICE guidelines for autism identification and assessment (NICE, 2012).

The AQ-10 asks participants to rate whether they ‘definitely agree’, ‘slightly agree’, ‘slightly disagree’ or ‘definitely disagree’ with each of the 10 items, which are statements such as ‘I find it easy to do more than one thing at once’, and ‘I find it difficult to work out people’s intentions’. A higher score on the AQ-10 indicates a higher likelihood of Autistic Spectrum Disorder (ASD), and in clinical practice, a score of six out of 10 or more would

indicate that the person should be referred for specialist diagnostic assessment. The minimum score that participants can achieve is 0 and the maximum score is 10.

3.3.5. Trait Emotional Intelligence Questionnaire – Short Form (TEIQue-SF)

The TEIQue-SF (see Appendix 9) is a 30-item questionnaire which measures trait emotional intelligence. It was chosen for its good psychometric properties and its short administration time. It has been developed from the Trait Emotional Intelligence Questionnaire (TEIQue; Petrides, 2009), which includes 153 items and provides scores across 15 different facets. Two items from each of these 15 facets are included on the TEIQue-SF. The TEIQue-SF has shown robust psychometric properties and widespread evidence of validity (Cooper & Petrides, 2010).

The TEIQue-SF asks participants to rate how much they agree with the 30 items on a Likert scale, ranging from 1 (completely disagree) to 7 (completely agree), for statements such as 'I can deal effectively with people', and 'I often pause and think about my feelings'. An overall trait emotional intelligence score is calculated by adding up the item scores and dividing by the total number of items. A higher score indicates higher trait emotional intelligence. The minimum score that participants can achieve is 1 and the maximum score is 7.

3.3.6. Attachment Questions

The seven attachment questions (see Appendix 10) were developed by Pearson (2013) to measure knowledge of attachment as taught by the DVD. The questions cover attachment related concepts, specifically:

- Conceptual understanding of attachment
- Understanding of the benefits of a secure attachment

- Understanding of the problems that can emerge from an insecure attachment
- Understanding of some of the behaviours babies exhibit to get parents attention
- Understanding of attunement
- Understanding of emotional regulation

Participant responses to each of the questions are recorded verbatim and then scored 0, 1 or 2 according to the scoring criteria. The minimum score that participants can achieve is 0 and the maximum score is 14.

Inter-rater reliability was calculated for each attachment question (see Appendix 12 for SPSS outputs). Eleven questionnaires were scored by the author and the author's supervisor. Cohen's Kappa was used which provides a score between 0 and 1, where 1 is total agreement between two raters. The results are shown in Table 6. Viera & Garrett (2005) provide cut-off's for kappa scores which give an indication of the level of agreement between two raters. These are included in Table 6.

Table 6: Cohen's Kappa for each attachment question

	Question 1	**Question 2**	**Question 3**	**Question 4**	**Question 5**	**Question 6**	**Question 7**
Cohen's Kappa	0.79	0.48	0.79	n/a	0.56	0.63	0.13
Agreement	Substantial	Moderate	Substantial	n/a	Moderate	Substantial	Slight

The results seem to show a reasonable level of agreement for questions 1, 2, 3, 5 and 6. However, agreement was low for question 7. Cohen's kappa was unable to provide an inter-rater reliability score for question 4 due to one rater choosing the same score for all of these questions. The percentage of agreement for this question was 91%.

Although it is good practice to report validity of any measure employed, as the attachment questionnaire was developed to measure knowledge of attachment as taught by the DVD

(see below), validity was not assessed other than ensuring that the questions addressed the topics covered in the DVD.

3.3.7. DVD

The DVD was adapted by Pearson (2013) from 'Attachment in Practice' (Siren Films, 2009). The aim of the DVD was to explain the above attachment related concepts, as well as:

- Types of attachment styles (secure and insecure)
- Advantages and disadvantages of secure and insecure attachment
- Recognising attachment behaviours in infants
- Attunement and emotional regulation development in infants

3.3.8. Booklet

The booklet (see Appendix 11), also developed by Pearson (2013), contained key information from the DVD for participants to read through before the follow-up session.

3.4. Procedure

Participants were seen by the researcher or a research assistant on an individual basis in a private room. The research assistants were trained to ensure that the procedure was carried out in a consistent manner. Participants were seen for three sessions (see Table 7 for details on the content of these sessions).

Table 7: Participant procedure

Condition	Session Number	Content of Session
Baseline	Session 1	Information Sheet and Consent Form Demographic questions WASI AQ-10 TEIQue-SF Attachment questions
Pre-intervention	Session 2	Attachment questions DVD
Post-intervention		Attachment questions Booklet given out
Follow-up	Session 3	Attachment questions

3.4.1. Session 1 (Baseline)

During the first session participants were given the information sheet to read and then asked to sign the consent form. They were told they could keep the information sheet and were given the slip at the bottom of the consent form with the researcher's contact details on in case of wanting to withdraw their data. Participants were asked demographic questions and then completed the WASI-II. They then completed the AQ-10 and the TEIQue-SF. Participants were offered the option of the researcher reading the questionnaire items out to them or completing them on their own. During this participants were encouraged to ask the researcher any questions they had. The researcher then went through the attachment questions. For the measures where participants needed to give free flowing answers, for example on the Vocabulary subset of the WASI-II and the attachment questions, participants were prompted and encouraged where necessary. Answers were recorded verbatim and later scored.

3.4.2. Session 2 (Pre-intervention and Post-intervention)

During the second session participants were asked the attachment questions before they were shown the DVD. The DVD was paused three times to summarise the previous 'chunk' of information and participants were asked if they had any questions. After the

presentation of the DVD they were asked the attachment questions again and given the booklet to take home and read before the next session.

3.4.3. Session 3 (Follow-up)

At the third session participants were asked whether they had read the booklet. They were then asked the attachment questions again. At the end of the session participants were given the voucher they had chosen and were asked for receipts so their travel expenses could be reimbursed.

4. RESULTS

4.1. Descriptive Statistics

Hypothesis 1: There will be a significant increase in knowledge of attachment scores after watching the DVD (Post-intervention), and this will be maintained at follow-up.

Figure 2 and Table 8 show that the mean knowledge of attachment score increased between baseline and pre-intervention, and pre-intervention and post-intervention. There was no difference in this score between post-intervention and follow-up.

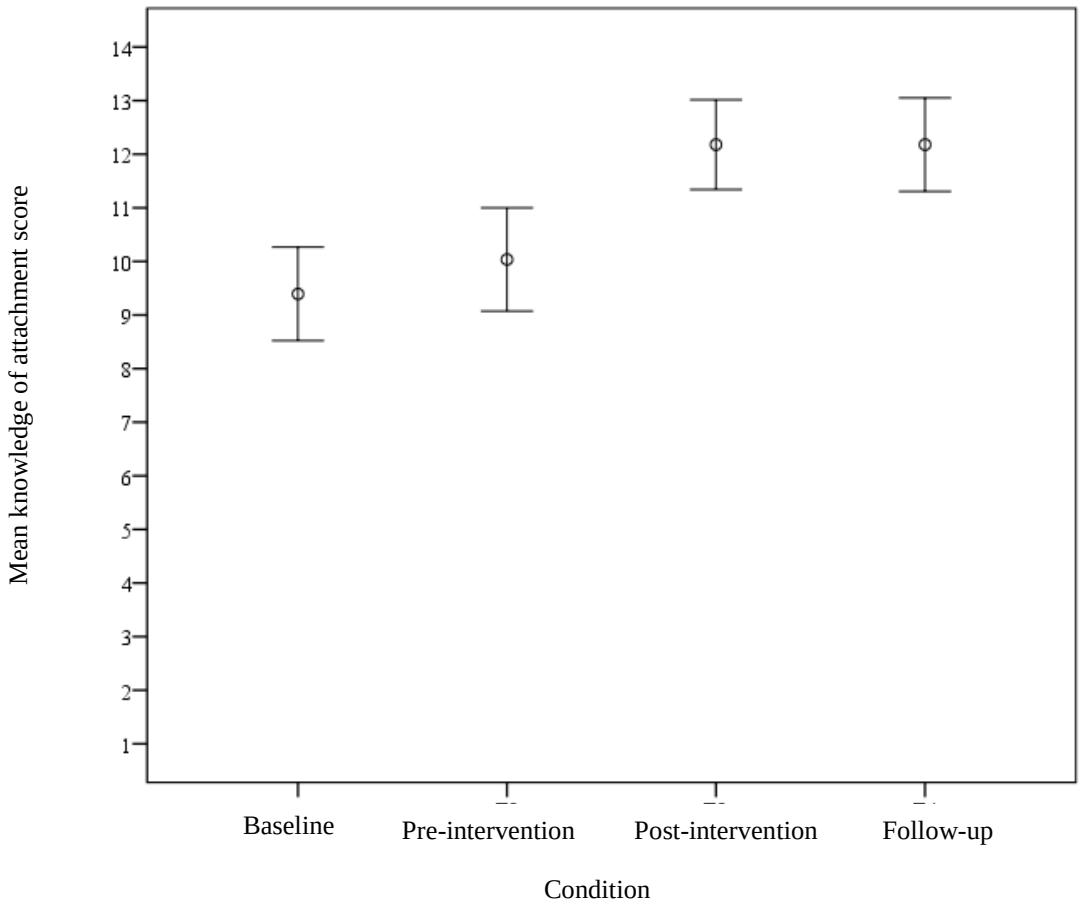


Figure 2: Error bar plot of the mean knowledge of attachment scores across the four conditions

Table 8: Descriptive statistics for participants' total score on attachment questions across the four conditions

		Attachment Questions Total Score	
		Mean	***SD***
Session 1	***Baseline***	9.39	2.25
Session 2	***Pre-Intervention***	10.04	2.49
	Post-Intervention	12.18	2.16
Session 3	***Follow-up***	12.18	2.25

4.2. Statistical Analysis

A paired samples t-test was carried out to establish whether there was a significant difference in knowledge of attachment mean scores between baseline and pre-intervention, pre-intervention and post-intervention and pre-intervention and follow-up. Bootstrap confidence intervals have been carried out as they provide robust inferential tests and have been shown to be less biased in small samples (Hardle, 1991; Moore & McCabe, 2005). All SPSS outputs can be found in Appendix 12.

There was no significant difference between mean knowledge of attachment scores between baseline and pre-intervention [t=1.6, *df* = 27; p>0.05] (bootstrap t=1.6; 95% CI of 1.45 to 0.17). There was a significant difference between mean knowledge of attachment scores between pre-intervention and post-intervention [t=5.7, *df* = 27; p<0.01] (bootstrap t=5.7; 95% CI of 2.91 to 1.38). There was a significant difference between overall mean knowledge of attachment scores between pre-intervention and follow-up [t=-5.6, *df* = 27; p<0.01] (bootstrap t=5.6; 95% CI of 2.92 to 1.36).

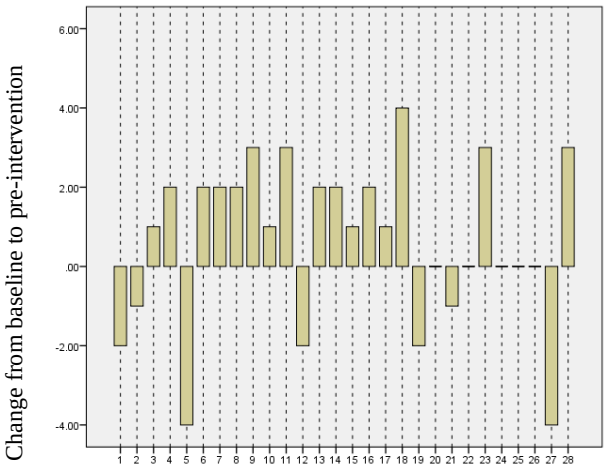
Table 9 shows the number of participants whose scores improved, stayed the same or dropped across the four conditions. This shows that almost all participants' scores improved between pre-intervention and post-intervention, and that just over half improved in score between baseline and pre-intervention. Just under half of participants maintained the same score between post-intervention and follow-up. Just over a quarter of participants

dropped in score between post-intervention and follow-up, with a smaller number of participants' dropping in score between baseline and pre-intervention, and pre-intervention and post-intervention.

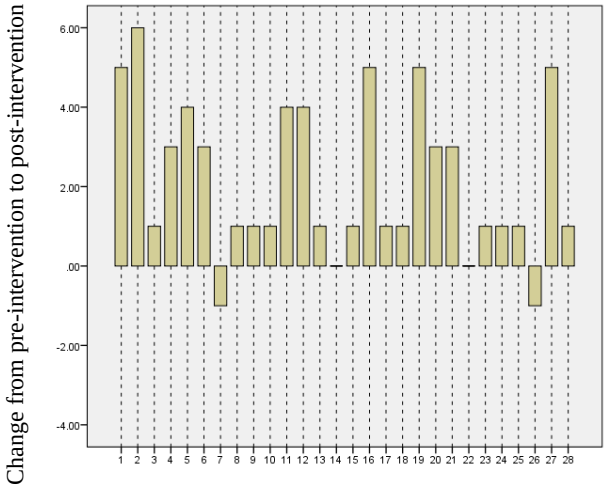
Table 9: Number of participants who's scores improved, stayed the same or dropped across the four conditions

	Baseline – Pre-interv.	**Pre-interv. – Post-interv.**	**Post-interv. – Follow-up**
Improved	16	24	6
Stayed the Same	5	2	13
Dropped	7	2	9

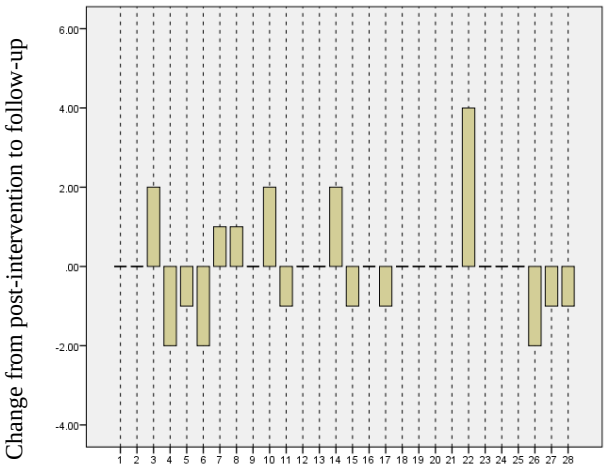
Change scores were calculated to explore how individual participants' scores changed between baseline and pre-intervention, pre-intervention and post-intervention and post-intervention and follow-up. These were calculated by (1) subtracting the scores at baseline from scores at pre-intervention as a measure of variability in a no-treatment condition, (2) subtracting the scores at pre-intervention from scores at post-intervention as a measure of variability in the treatment condition, and (3) subtracting the scores at post-intervention from scores at follow-up as a measure of variability over the follow-up period. These are depicted in Figure 3. These data indicate that although participants showed an improvement in scores between baseline and pre-intervention (see a), and pre-intervention and post-intervention (see b), the improvement in scores between pre-intervention and post-intervention were higher. In addition, the majority of participants improved in score between pre-intervention and post-intervention, whereas a number of participants dropped or maintained their score between baseline and pre-intervention.



(a)



(b)



(c)

Figure 3: Change scores between (a) baseline and pre-intervention, (b) pre-intervention and post intervention, and (c) post-intervention and follow-up.

4.2.1. Individual Questions

To investigate whether there was a significant increase in knowledge for any particular questions on the attachment questionnaire, descriptive statistics and statistical analyses were carried out. The descriptive statistics (see Table 10) show that the mean scores at baseline and pre-intervention were particularly high for questions 1, 4 and 6, and that the largest increase in mean scores between pre-intervention and post-intervention appeared to be for questions 2, 3, 5 and 7. The maximum score that could be achieved for each question was 2.

A Wilcoxon Signed-Rank Test was carried out to find out whether this increase in scores was significant. This non-parametric test was used due to the data being ordinal. This revealed a significant difference in mean knowledge of attachment scores between pre-intervention and post-intervention for questions 2 ($z = 2.81$, $p<0.01$), 3 ($z = 2.50$, $p<0.05$), 5 ($z = 2.67$, $p<0.05$) and 7 ($z = 2.28$, $p<0.05$).

Table 10: Mean scores for each attachment question across the four conditions

		Mean scores for each Attachment Question						
		Qu1	***Qu2***	***Qu3***	***Qu4***	***Qu5***	***Qu6***	***Qu7***
Session1	***Baseline***	1.36	1.07	1.04	1.68	1.18	1.86	1.21
Session 2	***Pre-Intervention***	1.43	*1.25	*1.21	1.79	*1.36	1.82	*1.18
	Post-Intervention	1.68	*1.68	*1.57	1.93	*1.75	1.89	*1.68
Session 3	***Follow-up***	1.61	1.71	1.64	1.93	1.75	1.93	1.61

* indicates significant difference

4.3. Correlations

A Pearson's r test was carried out to investigate hypotheses 2, 3 and 4. One participant did not complete the TEIQue-SF, leaving N=27 for this analysis. Descriptive statistics were also carried out to examine the overall scores for each measure. Bootstrap confidence intervals have been provided.

Hypothesis 2: There will be a positive correlation between trait emotional intelligence (mean TEIQue-SF) scores and pre-intervention knowledge of attachment scores, and there will be a positive correlation between trait emotional intelligence (mean TEIQue-SF) scores and increase in knowledge of attachment (mean difference between pre-intervention and post-intervention) scores.

The mean TEIQue-SF score was 3.6. The maximum score that participants could achieve was 7. Figure 4 shows the distribution of scores. The scores appear to show a normal distribution, with no floor or ceiling effects.

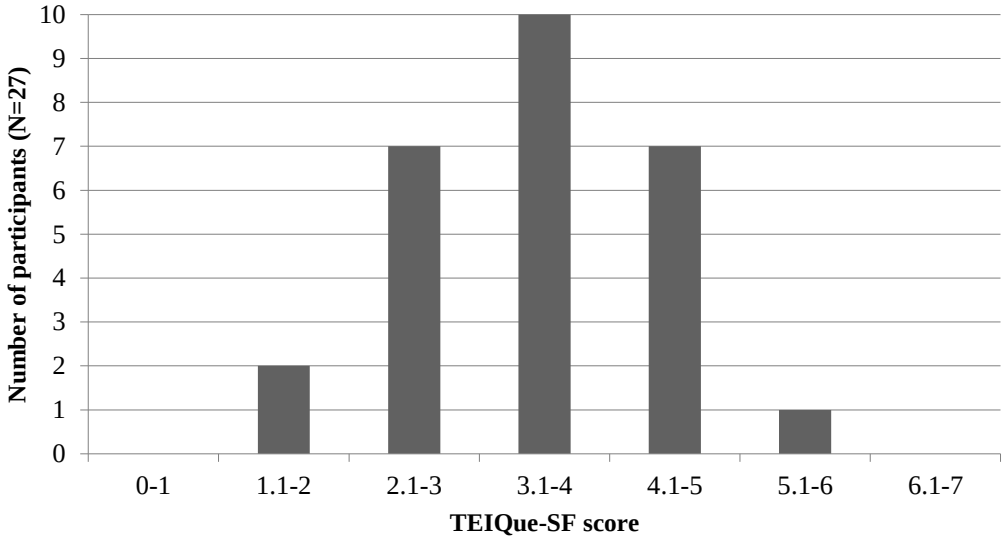


Figure 4: Distribution of TEIQue-SF scores

There was no significant correlation between TEIQue-SF scores and pre-intervention knowledge of attachment mean scores ($r = .18$, $N=27$; $p>0.05$) (95% bootstrap CI -0.55 to 0.18). There was also no significant correlation between mean TEIQue-SF scores and mean difference between pre-intervention and post-intervention scores ($r = .23$, $N=27$; $p>0.05$) (95% bootstrap CI -0.15 to 0.57).

Hypothesis 3: There will be no significant correlation between IQ (WASI-II composite) scores and pre-intervention knowledge of attachment scores, and there will be no significant correlation between IQ (WASI-II composite) scores and increase in knowledge of attachment (mean difference between pre-intervention and post-intervention) scores.

The mean WASI-II composite score was 98. Table 11 shows the distribution of scores. Again, the scores appear to show a normal distribution, with no floor or ceiling effects.

Table 11: Distribution of WASI-II composite scores (N=28)

Composite Score	Qualitative Description	Number of Participants
<70	Extremely Low	1
70-79	Borderline	5
80-89	Low Average	5
90-109	Average	9
110-119	High Average	4
120-129	Superior	3
130>	Very Superior	1

There was no significant correlation between mean WASI-II composite scores and pre-intervention knowledge of attachment mean scores ($r = .01$, $N=27$; $p>0.05$) (95% bootstrap CI -0.33 to 0.25). There was no significant correlation between mean WASI-II composite scores and mean difference between pre-intervention and post-intervention scores ($r = .24$, $N=27$; $p>0.05$) (95% bootstrap CI -0.15 to 0.57).

Hypothesis 4: There will be a negative correlation between autistic symptomatology (AQ-10) scores and pre-intervention knowledge of attachment scores, and there will be no significant correlation between autistic symptomatology (AQ-10) scores and increase in knowledge of attachment (mean difference between pre-intervention and post-intervention) scores.

The mean AQ-10 score was 7.25. The maximum score that participants could achieve was 10. Figure 5 shows the distribution of scores. The majority (79%) of participants scored 6 or more, which is the cut-off score for indicating the likelihood of ASD.

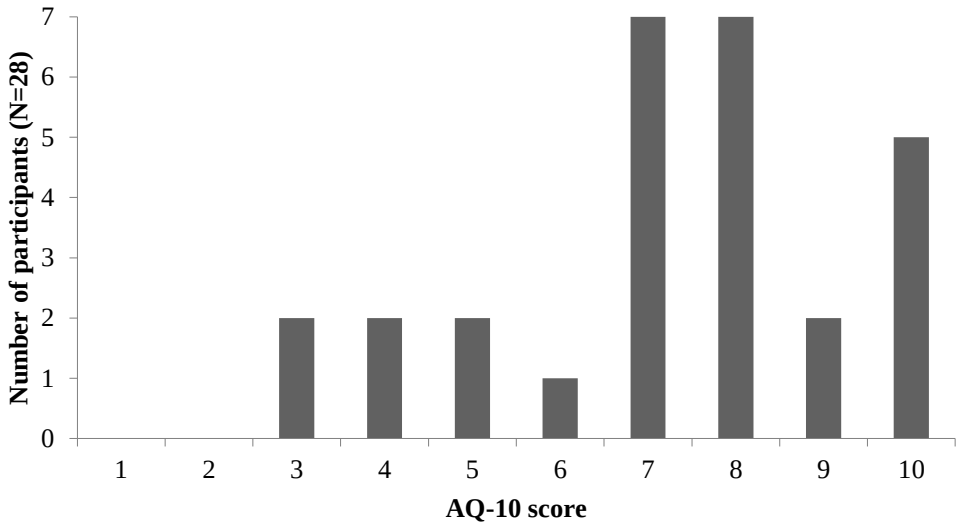


Figure 5: Distribution of AQ-10 scores

There was no significant correlation between mean AQ-10 scores and pre-intervention knowledge of attachment scores ($r = .05$, $N=27$; $p>0.05$) (95% bootstrap CI -0.37 to 0.31). There was no significant correlation between mean AQ-10 scores and mean difference between pre-intervention and post-intervention scores ($r = .22$, $N=27$; $p>0.05$) (95% bootstrap CI -0.20 to 0.62).

5. DISCUSSION

The main aim of the current study is to explore how much people with Asperger's syndrome understand about positive attachment behaviours and whether this knowledge can be increased through the use of a training DVD.

The results have shown that prior to any intervention, adults with Asperger's syndrome have, as indicated by their responses to the seven attachment questions, on average over two-thirds (67%) of knowledge of positive attachment behaviours. This average score was higher than that previously found in the intellectual disability population, (49%; Pearson, 2013). Therefore, although the baseline score cannot yet be compared with the general population, the findings of the current study suggest that adults with Asperger's syndrome have a higher baseline knowledge of positive attachment behaviours than adults with intellectual disabilities.

The results also show that knowledge of positive attachment behaviours increased after participants had watched the training DVD and that this knowledge was maintained at follow-up. A slight increase in knowledge occurred between baseline and pre-intervention, however this was not found to be significant, therefore suggesting that time or repetition of the attachment questions were unlikely to be confounding variables.

Whilst Pearson (2013) also found a significant increase in knowledge of attachment scores between pre and post intervention, this was not maintained at follow-up where instead a decrease in mean knowledge was observed. This could be due to the follow-up session in Pearson's (2013) study being two weeks after the intervention (in comparison to one week for the current study) resulting in a stronger likelihood of knowledge being lost. Another possibility is that adults with Asperger's syndrome are more likely than adults with an

intellectual disability to be able to retain the information they have learnt. However, due to the difference in follow-up times these findings should be interpreted with caution.

Further tests revealed that the significant increase in knowledge after participants had watched the DVD occurred specifically for attachment questions 2 (what are the good things about a parent and their baby having a good and strong attachment?), 3 (what problems do you get if the parent and child don't have a good attachment?), 5 (babies do lots of things to keep their parents close, can you tell me what some of these things are?), and 7 (what does a child learn to do if their parent takes care of them quickly when they are upset?). Pearson (2013) also found an increase in knowledge for these questions.

However, no significant increase in knowledge was found for questions 1 (what do we mean when we say a parent and their baby have a good attachment?), 4 (why is it important that a parent goes to the baby as quickly as possible when the baby cries?), or 6 (what does a parent do to show the baby they are listening to them?). This could be accounted for by the observation that participants tended to have higher pre-intervention scores for these questions (mean 1.68 vs. mean 1.25) and there was therefore less room for improvement in these scores.

Interestingly, Pearson (2013) also found a high mean scores at the pre-intervention stage for question 4 (M=1.7). This suggests that both adults with Asperger's syndrome and adults with an intellectual disability have a good understanding of why it is important that a parent goes to a baby as quickly as possible when it cries. Conversely, in Pearson's (2013) study, question 1 produced one of the lower mean scores (M=0.8). This suggests that adults with Asperger's syndrome have a better pre-intervention knowledge of the definition of a good attachment, compared to adults who have an intellectual disability who may find this more difficult as it is a complex and abstract concept.

The mean scores at both post intervention and follow-up ranged between 1.57 and 1.93, which is close to the maximum score of 2. The biggest improvement in scores was for question 7. It was observed during the procedure at both baseline and pre-intervention that participants tended to have a view that taking care of a baby quickly when they are upset would result in negative consequences rather than positive ones, for example suggesting that this would result in the baby not learning how to wait for things. It could be suggested that this is a general view within the population, perhaps stemming from older more traditional views (e.g. Sackett, 1962). Despite this, participants were able to learn from the DVD that in fact taking care of a baby when they are upset has positive consequences, reflected in the improvement in scores for this question.

However, at follow-up, a decrease in knowledge occurred for question 7. This was also found in Pearson's (2013) study. This seems to suggest that both adults with Asperger's syndrome and adults with an intellectual disability find it difficult to retain this new knowledge. Perhaps in the current study this was due to the clear opposing views observed prior to the intervention, which may have been held for a long time.

This study also aimed to explore whether trait emotional intelligence, IQ or autistic symptomatology has an impact upon participants' baseline knowledge of attachment and any improvement in this knowledge having watched the DVD. The results indicate that they do not. This is in line with the research carried out by Pearson (2013), who also found that IQ is not associated with pre-intervention attachment knowledge scores or increase in knowledge scores post-intervention.

However, it was more surprising that in the current study trait emotional intelligence and autistic symptomatology did not affect knowledge of positive attachment behaviours before and after intervention. It was hypothesised that higher trait emotional intelligence

would result in a higher pre-intervention knowledge of positive attachment behaviours and that this would also impact upon improvement of scores. This was based on the idea that some of the constructs which define emotional intelligence appear to be similar to the knowledge needed to know how to establish a secure attachment with a child, such as the ability to understand and regulate emotions. However, this did not appear to be the case. Participants scored on average 3.6 out of a possible 7. The mean average score in the general population is 5.1 (Cooper & Petrides, 2010) indicating that, as was expected, trait emotional intelligence was low across participants in the current study. This supports previous research which suggests that trait emotional intelligence is impaired within this population (e.g. Montgomery, McCrimmon, Schwean, & Saklofske, 2010; Montgomery, Schwean, Burt, Dyke, & Thorne et al., 2008; Petrides, Hudry, Michalaria, Swami, & Sevdalis, 2011).

It was also hypothesised that higher autistic symptomatology would be associated with lower knowledge of positive attachment behaviours but not with improvement of knowledge scores. The results supported the latter, however no significant correlation was not found between autistic symptomatology and pre-intervention knowledge of positive attachment behaviours. The current findings suggest that autistic symptomatology is not a predicting factor of adults' with Asperger's syndrome knowledge of positive attachment behaviours or their ability to learn more about this.

Overall, the current study shows that adults with Asperger's syndrome have some knowledge of positive attachment behaviours and that this knowledge can be improved significantly through watching the DVD. This improvement in knowledge was not affected by trait emotional intelligence, IQ or autistic symptomatology, suggesting that the DVD can be effective regardless of these variables.

A potential limitation of this research is that the average AQ-10 score across participants was 7.25. On the AQ-10, a score of 6 or more indicates the possibility of an autistic spectrum disorder and in clinical settings would mean that a person is referred for specialist diagnostic assessment. It could therefore be argued that the six participants who scored below this cut-off point are not representative of the Asperger's syndrome population.

Another possible reason why these six participants scored below the cut-off point is related to the psychometric properties of the AQ-10 measure. The AQ-10, as well as the other measures used, were selected for their brevity in order to minimise administration time. Whilst they all have acceptable reliability and validity, the original longer versions of the measures (including the AQ) may have provided more thorough, reliable and valid measurement.

Question seven of the Attachment Questionnaire had low inter-rater reliability, another potential limitation of this study. This was a surprising finding as Pearson (2013) had previously found inter-rater reliability for the attachment questions as a whole to be 85%. In the current study only eleven questionnaires were scored by the author and the author's supervisor, therefore it is possible that had more questionnaires been scored, a more representative inter-rater reliability score for each question would have been obtained. Future research should focus on improving inter-rater reliability using a larger sample of questionnaires and then adjusting the questions and/or the scoring criteria if necessary. In particular, further analysis of inter-rater reliability should be carried out for question four which could not be calculated in the current study.

A final limitation to this research is the extent to which the results can be applied in real-life settings, considering that the participants who took part were not parents. It could be

hypothesised that if participants had been parents they would have invested more in the task and more improvement in scores may have been observed. It could also be hypothesised that a higher improvement in scores would have been observed particularly at follow-up, at which point participants would have had the opportunity to put what they had learnt into practice. Future research could involve trialling the resources with those who are thinking about having children or are expecting a child, and perhaps observing and assessing real life parent-child interactions and/or long-term outcomes for the child. Future research could also measure attachment style of participants to see whether this is associated with their baseline knowledge of attachment and any improvement in scores.

Currently, there are no clinical tools that are being used to determine how much people with Asperger's syndrome understand about positive attachment behaviours, or any tools to help to teach them more about this. The resources used in this study may provide professionals who are working with those who are thinking about having children or are expecting a child with a means of assessing knowledge and increasing knowledge and understanding of the importance of positive attachment behaviours between parents with Asperger's syndrome and their babies. However, before this happens further research is needed to strengthen and validate the current findings. This could involve repetition of the study with a larger and more representative sample, more robust measures and for the attachment questionnaire, additional real life measures.

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PUBLIC DISSEMINATION DOCUMENT

HOW DO PEOPLE WITH AUTISTIC SPECTRUM DISORDER EXPERIENCE THEIR RELATIONSHIPS WITH OTHERS?

AND

CAN ADULTS WITH ASPERGER'S SYNDROME LEARN ABOUT POSITIVE ATTACHMENT BEHAVIOURS BETWEEN PARENTS AND YOUNG BABIES THROUGH THE USE OF A DVD?

Outline

This research was carried out by Nicola Brandaro (Trainee Clinical Psychologist) at the University of Birmingham under the supervision of Dr Biza Kroese (Senior Lecturer and Clinical Psychologist). It was submitted for the degree of Doctor of Clinical Psychology.

Autistic Spectrum Disorder

Autistic Spectrum Disorder (ASD) is a developmental condition that is marked by difficulties with social communication, social interaction, and social imagination. The term ASD has traditionally been used an umbrella term for autism and Asperger's syndrome. Asperger's syndrome was previously diagnosed as a form of autism in those who were considered at the high-functioning end of the autistic spectrum, usually displaying fewer difficulties with speech and an average or above average intelligence.

The literature review explored how people with ASD experience their relationships with others. The empirical paper investigated whether adults with Asperger's syndrome could learn about positive attachment behaviours through the use of a DVD.

Literature Review

HOW DO PEOPLE WITH AUTISTIC SPECTRUM DISORDER EXPERIENCE THEIR RELATIONSHIPS WITH OTHERS?

The literature review explored how people with ASD experience their relationships with others. To answer this, two sub-questions were explored: 1. How do people with ASD perceive the quality of their relationships with others? and 2. What facilitates or inhibits ability to develop relationships with others in people with ASD? A systematic search of papers was carried out and 13 papers were identified.

The results showed that children and adolescents with ASD perceive their friendship quality to be lower than children and adolescents who do not have ASD. Preliminary results suggested that adults with Asperger's syndrome are equally satisfied with their marriage as adults without Asperger's syndrome. Preliminary results also suggested that adults with Asperger's syndrome who have a child with Asperger's syndrome perceive the quality of their parent-child relationship to be the same as other parents who have a child with Asperger's syndrome who do not have Asperger's syndrome themselves.

The results also suggested that people with ASD appear to use a number of strategies to help them to develop relationships, and other people also use strategies that help with this. Furthermore, the results suggested that some of the personal qualities that are associated with having ASD can both help and hinder the development of relationships. In light of these results, it was concluded that more work needs to be done to help children and adolescents with ASD to achieve the same level of quality in their friendships as those who do not have ASD. Furthermore, the factors that may help or hinder the development of relationships that were identified could be considered by individuals with ASD who are looking to develop their relationships, or by professionals who are working with them.

Empirical Paper

CAN ADULTS WITH ASPERGER'S SYNDROME LEARN ABOUT POSITIVE ATTACHMENT BEHAVIOURS BETWEEN PARENTS AND YOUNG BABIES THROUGH THE USE OF A DVD?

Background

Whilst most people who have Asperger's syndrome make great parents, some of the difficulties associated with having this diagnosis can make communication and interaction with infants more difficult. Whilst some self-help resources have been developed, there has been no research looking at whether there are any interventions that may be able to help with this. The aim of this research was to explore how much people with Asperger's syndrome understand about positive attachment behaviours and whether this knowledge could be increased through the use of a DVD. Trait emotional intelligence (how well a person shows they understand emotions), as well as IQ (general intelligence) and severity of autistic symptoms were explored as possible factors which may predict this.

Method

Twenty eight adults with Asperger's syndrome took part in four experimental conditions: Baseline, pre-intervention, post-intervention and follow-up. The intervention involved participants watching a DVD and receiving a booklet summarising its contents. Participants were asked seven questions about attachment in all four conditions. Measures of trait emotional intelligence, IQ and autistic symptomatology were taken at baseline.

Results

A significant increase in knowledge of positive attachment behaviours was observed at post-intervention. This was maintained at follow-up. This significant increase in knowledge occurred for the total knowledge score as well as for four out of the seven

attachment questions. There was no significant correlation between pre-intervention knowledge or increase in knowledge for trait emotional intelligence, IQ or autistic symptomatology.

Conclusions

It was concluded that the knowledge of adults with Asperger's syndrome of positive attachment behaviours can be improved through the use of the DVD. This improvement in knowledge was not affected by trait emotional intelligence, IQ or autistic symptomatology.

Clinical Implications

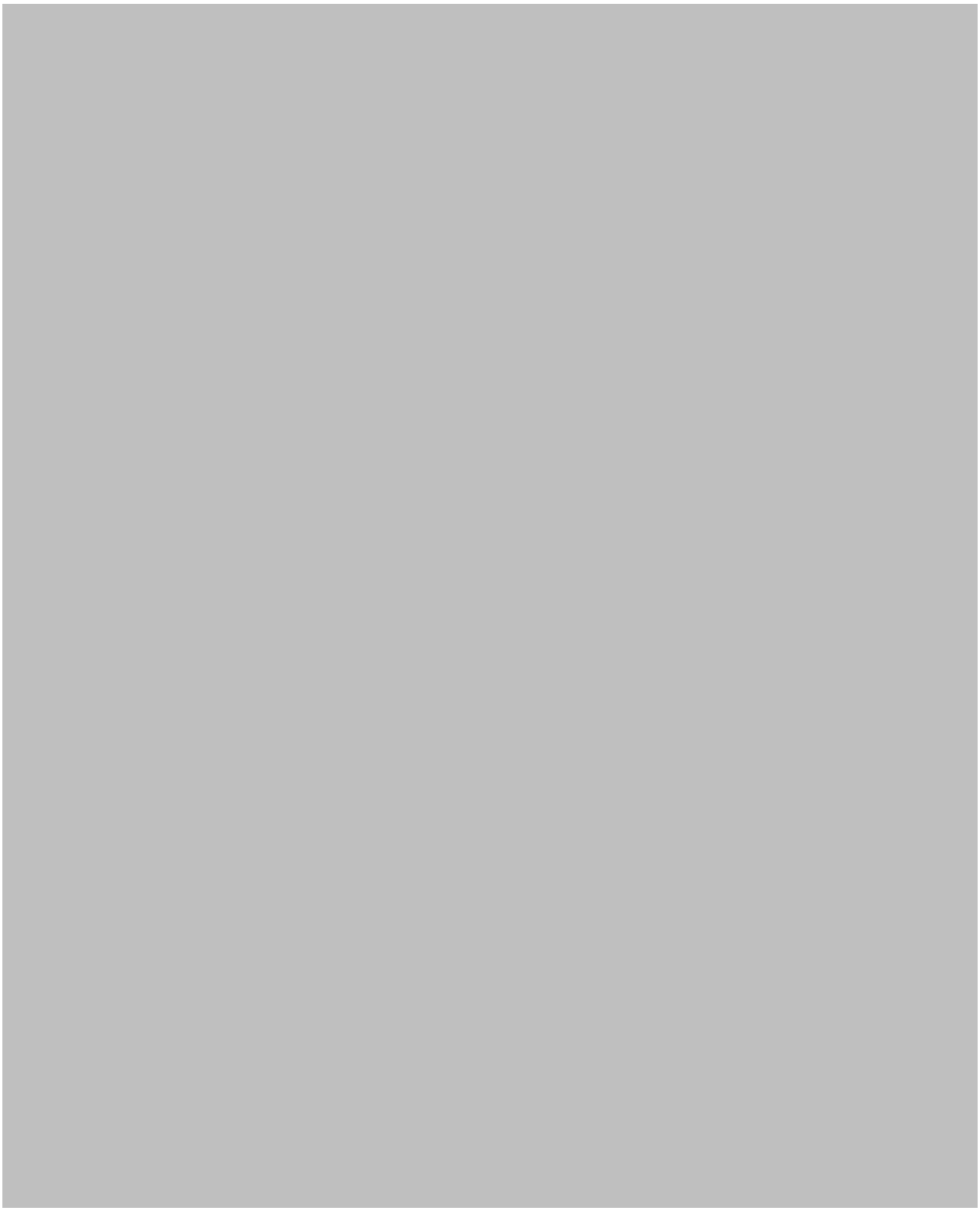
Currently, there are no clinical tools that are being used to determine how much people with Asperger's syndrome understand about positive attachment behaviours, or any tools to help to teach them more about this. The resources used in this study may provide professionals who are working with those who are thinking about having children or are expecting a child with a means of assessing knowledge and increasing knowledge and understanding of the importance of positive attachment behaviours between parents with Asperger's syndrome and their babies.

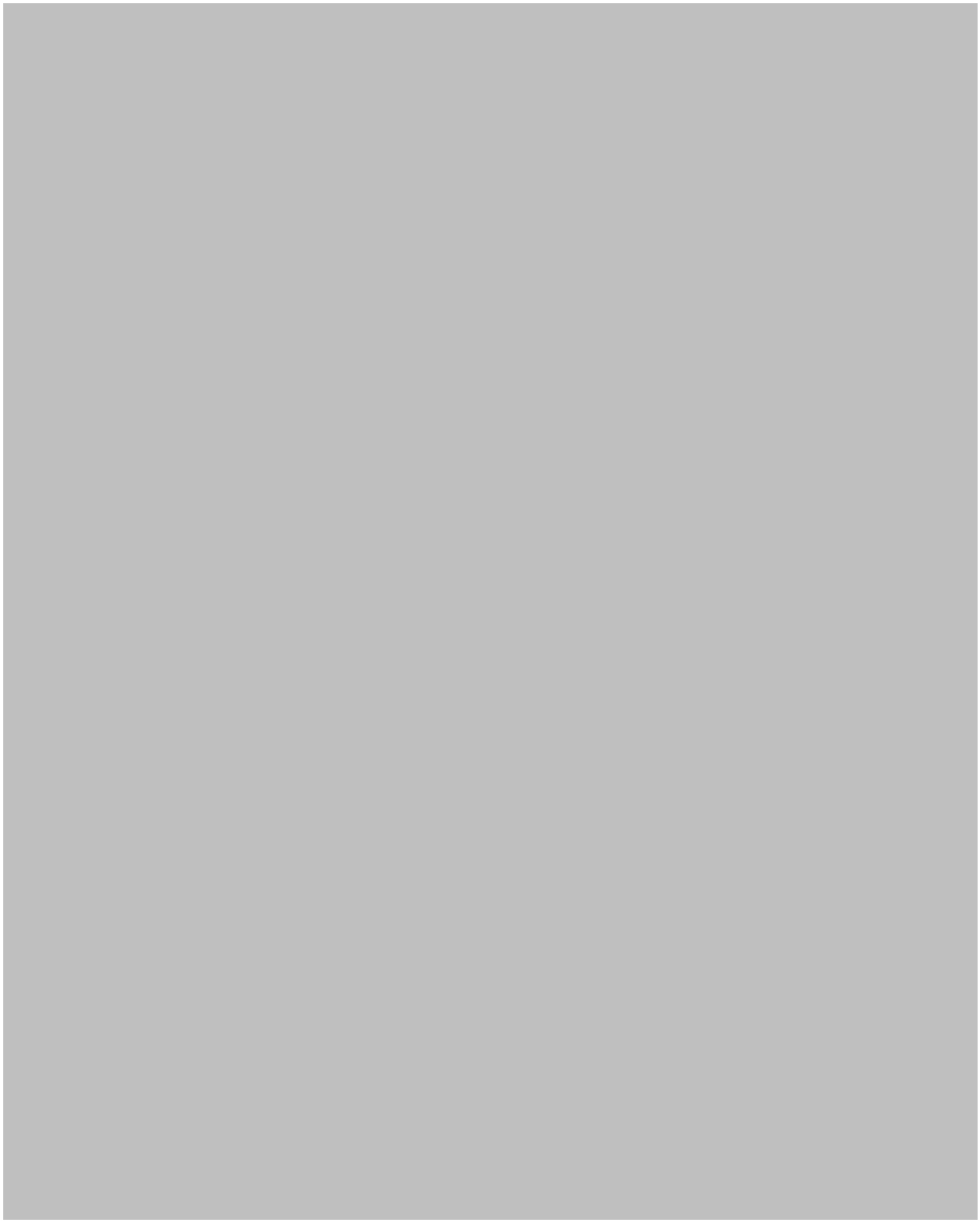
Acknowledgements

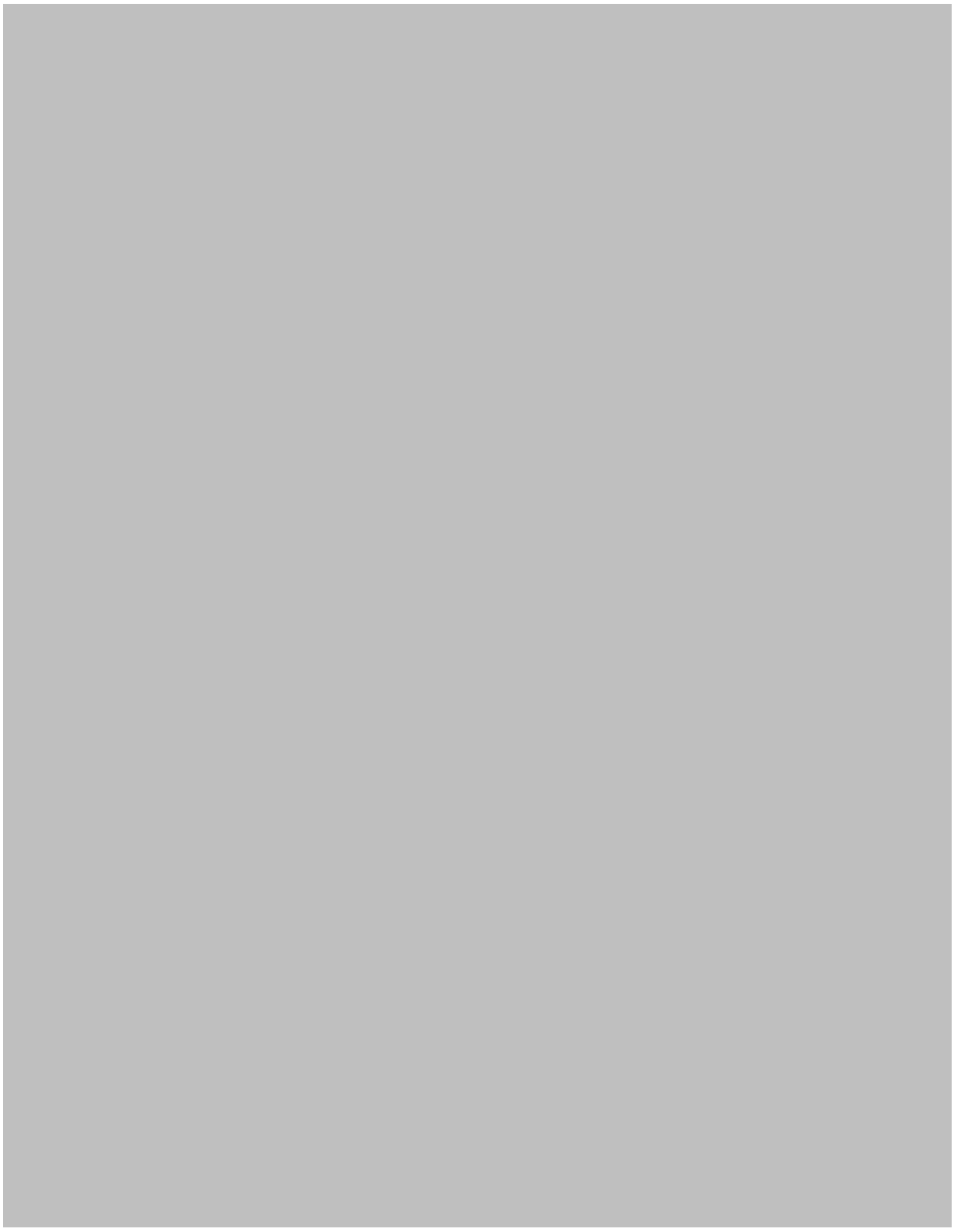
The author would like to thank all of the organisations who helped with recruitment of participants and the participants themselves for taking part in this research.

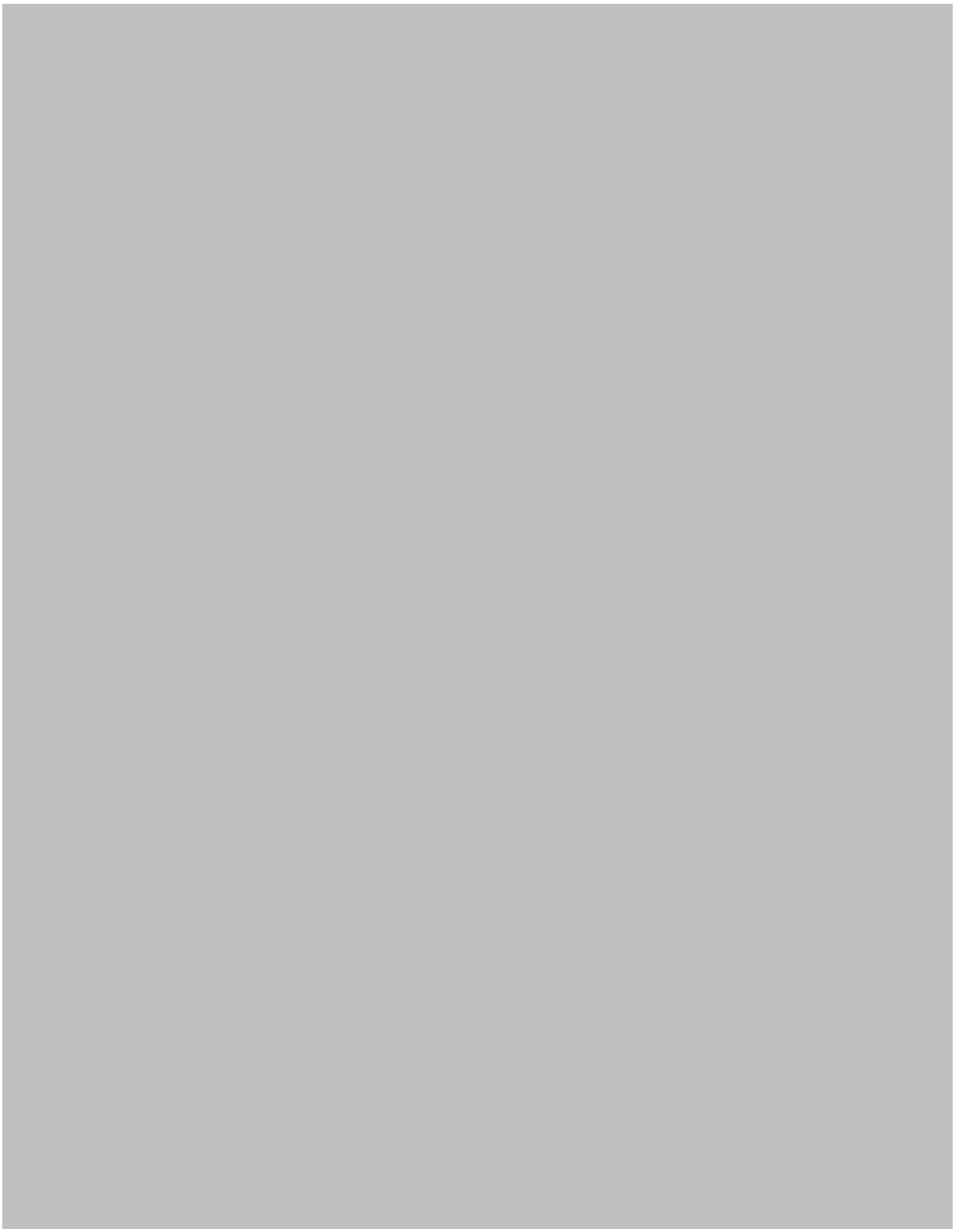
APPENDICIES

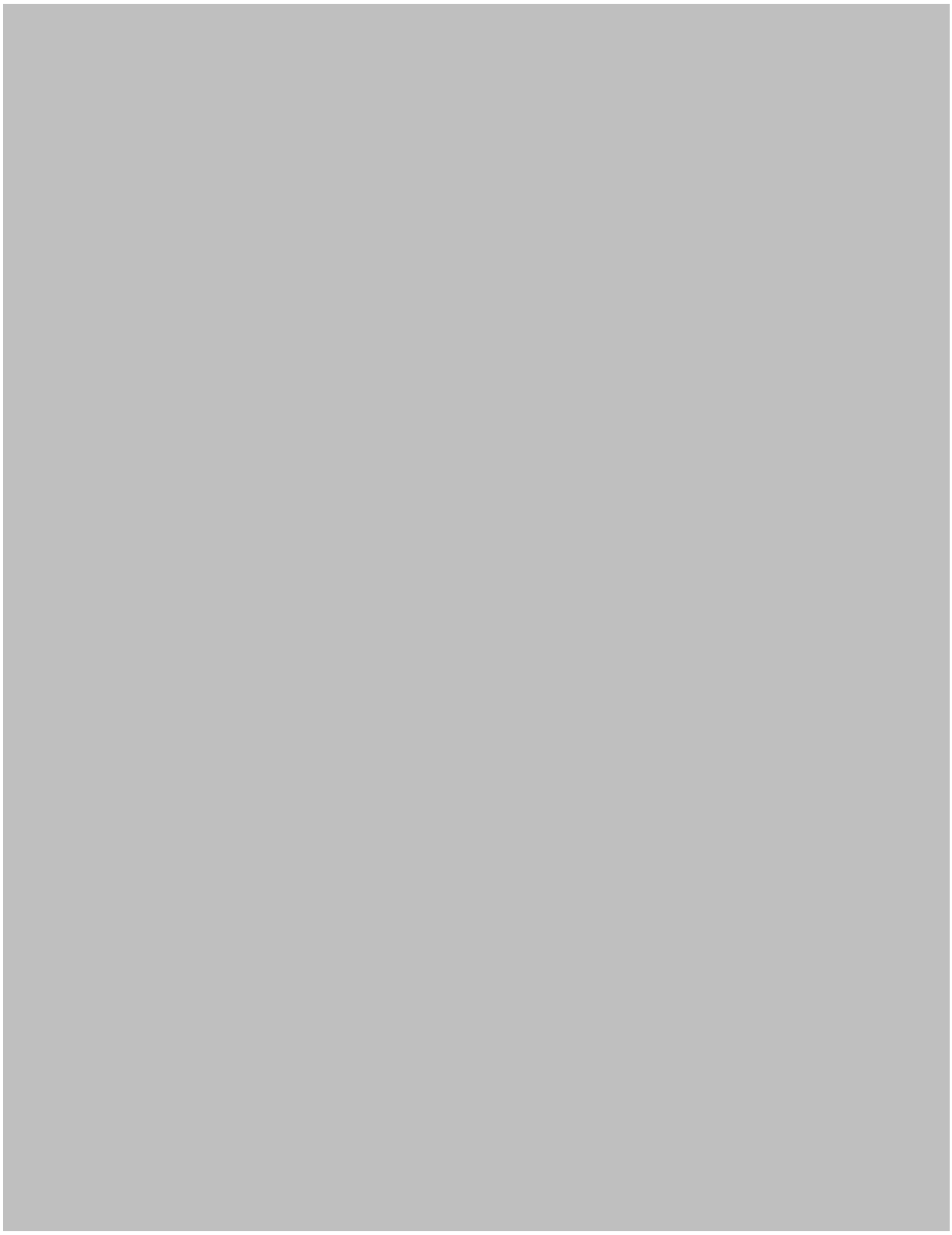
Appendix 1: Kmet, Lee & Cook (2004) Manual for Quality Scoring of Quantitative and Qualitative Studies

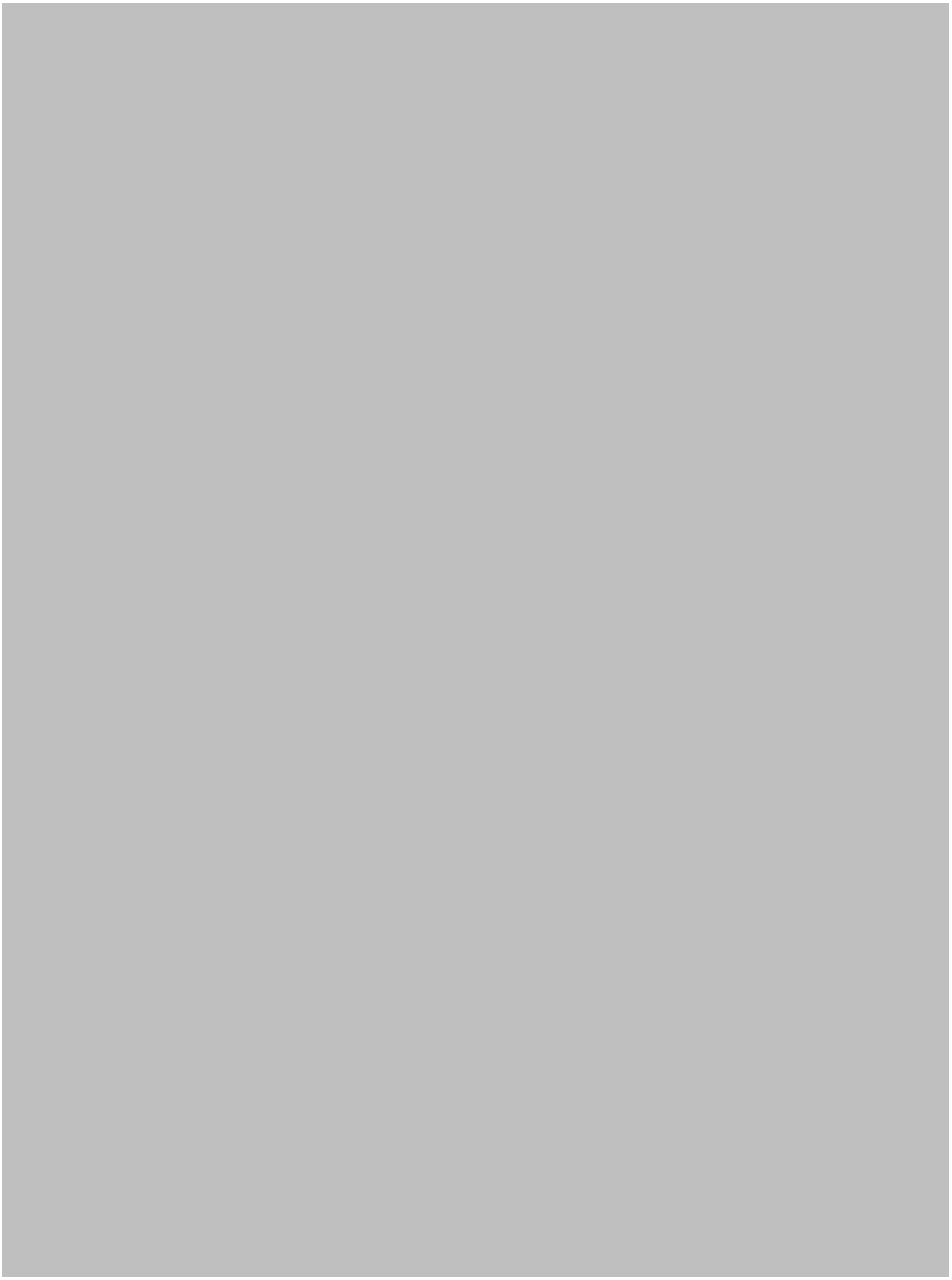


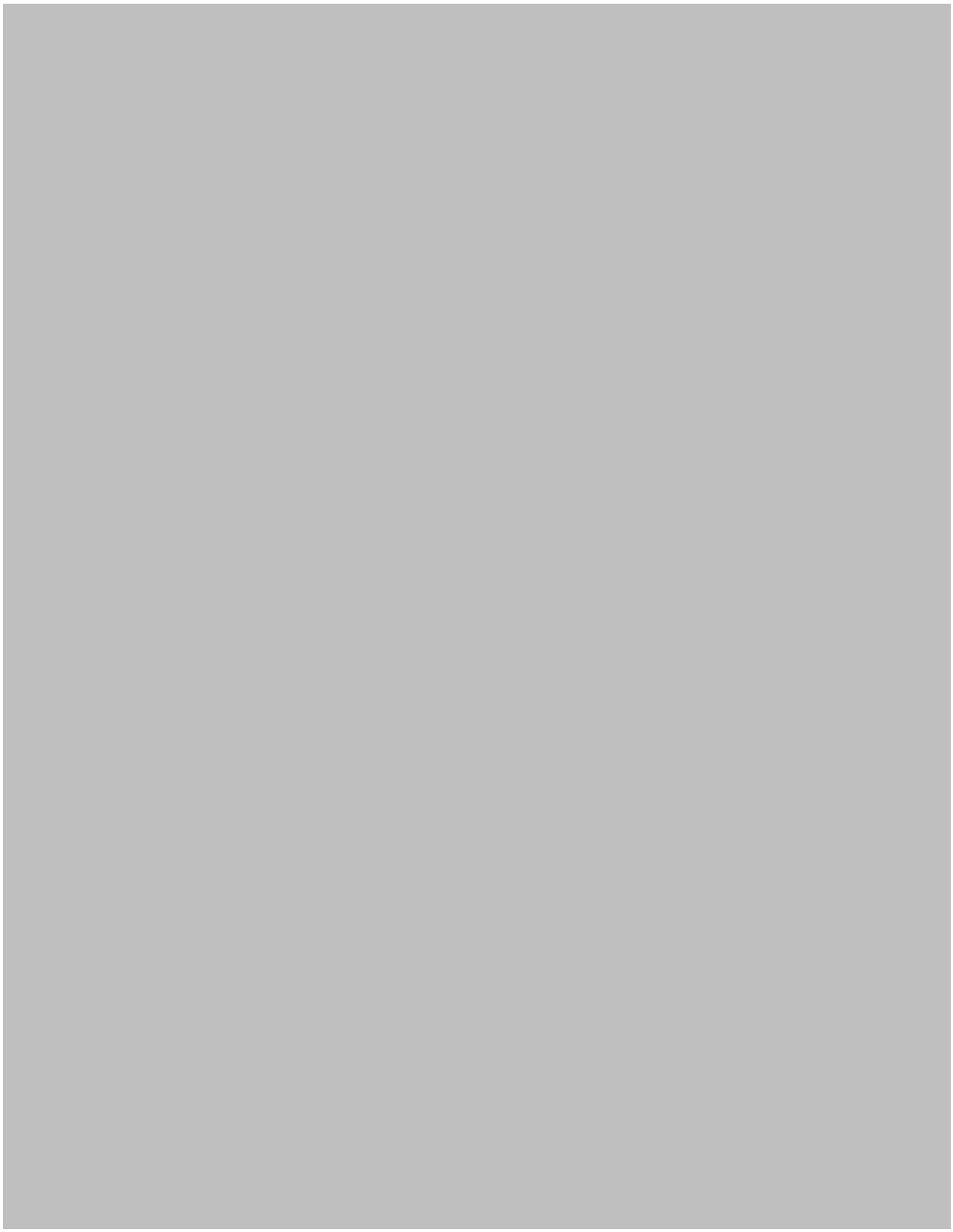


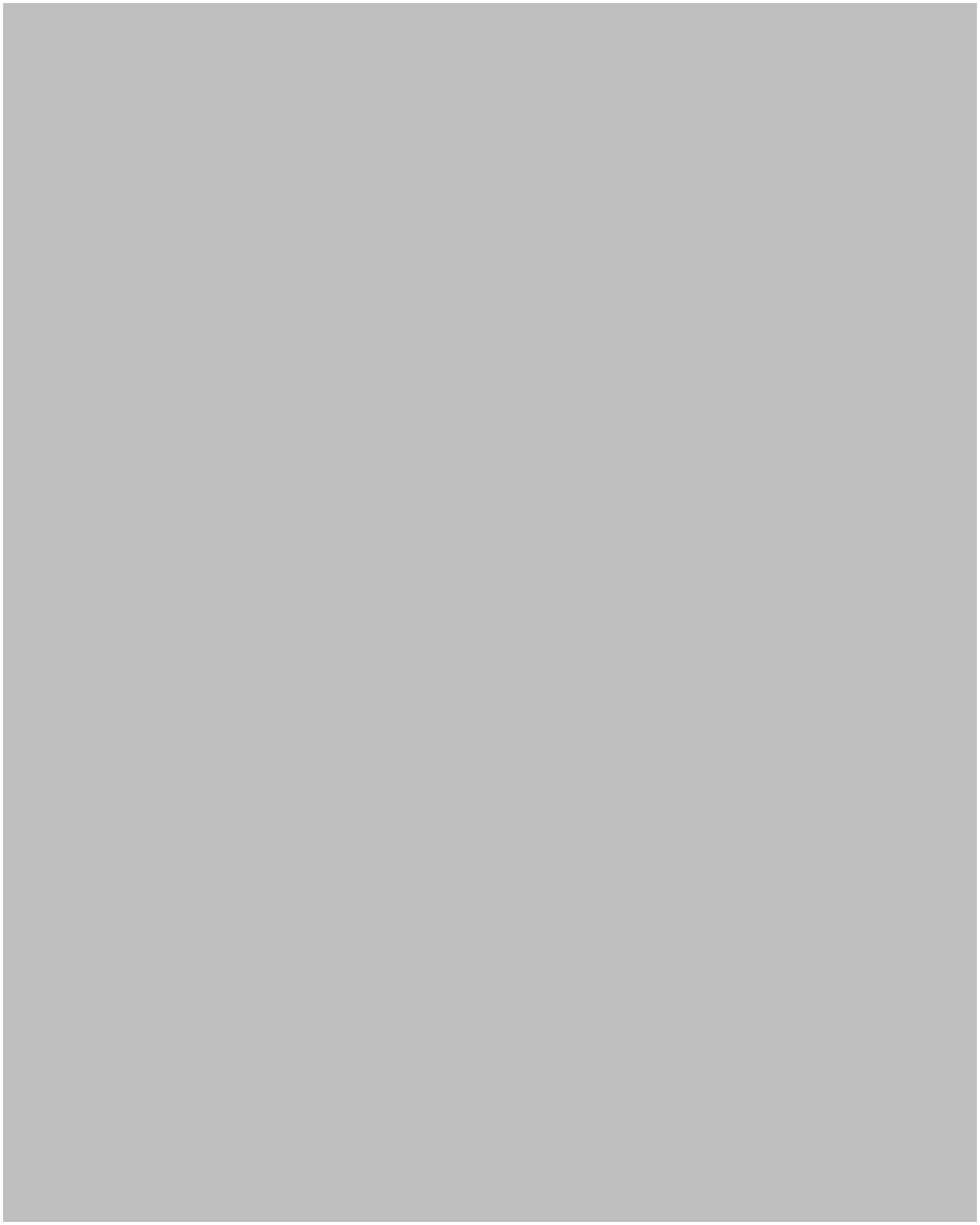


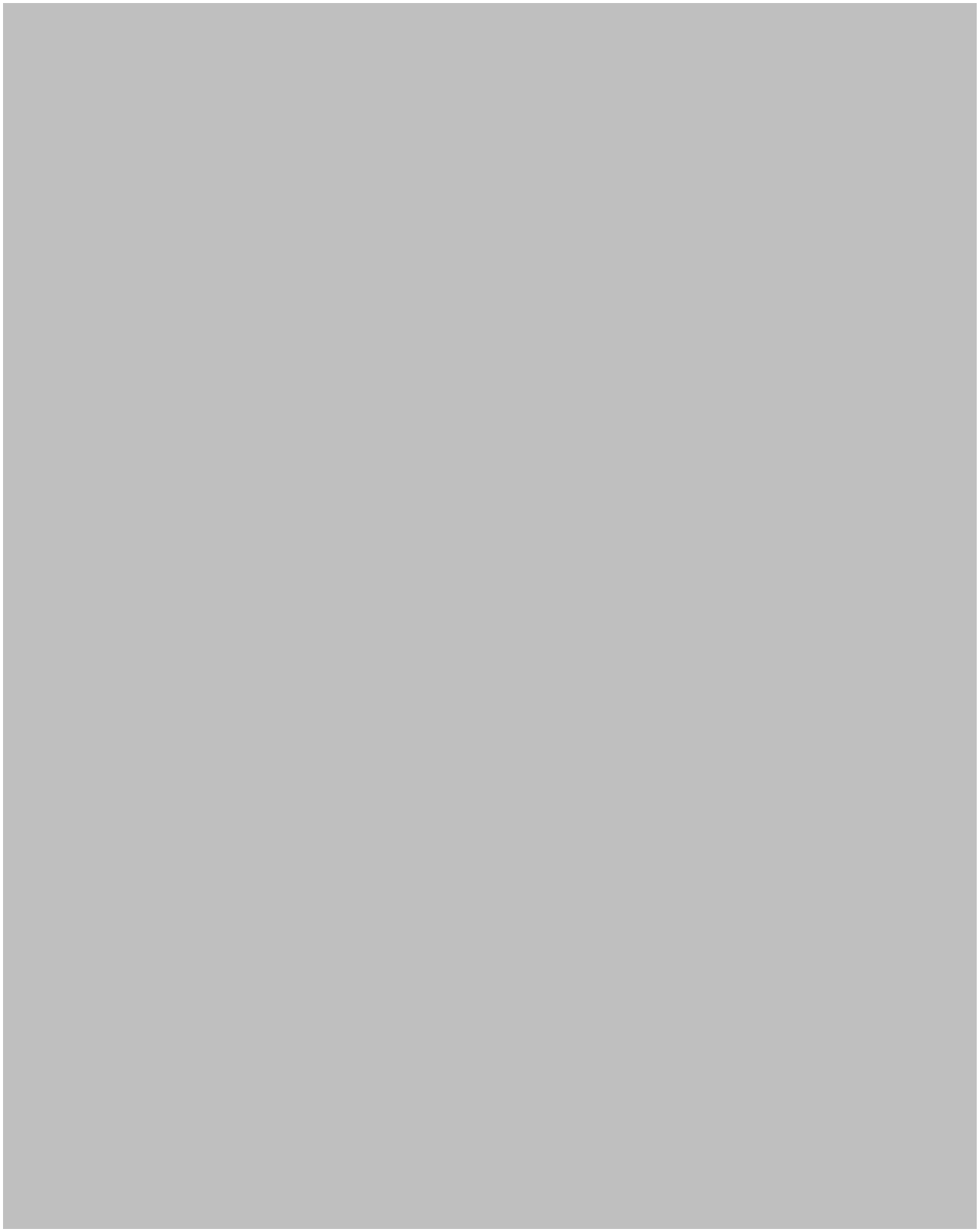












Appendix 2: University of Birmingham Ethical Approval

Appendix 3: Participant Recruitment Information Sheet

UNIVERSITY OF BIRMINGHAM

Would you like to take part in some research?

My name is xxxxxxxxxx and I am a Clinical Psychologist in Training at the University of Birmingham. I am investigating whether people with Asperger's Syndrome/High Functioning Autism can learn more about parent-baby relationships.

Why is this research being carried out?
When people find being a parent difficult, they receive help from social services to improve their parenting skills. However, people with Asperger's Syndrome/High Functioning Autism can sometimes be stigmatised and not offered help, partly because there are not any resources available. I am looking at the effectiveness of a training video, which if proved effective, could be used as a resource in this area.

Who are we looking for?
We are not looking for parents to take part in this study. We are looking for adults aged 18 or over who have a diagnosis of Asperger's Syndrome/High Functioning Autism and do not have any children. You also need to have English as your first language.

If I chose to take part, what will happen?
I will contact you to make sure that you are definitely happy to take part, and then arrange a time and a place to meet up.

What will I be asked to do?
You will be asked to attend three short sessions the first one lasting 45 minutes, the second one lasting 20 minutes, and the third one lasting 10 minutes. During the first one you will be asked:

- Some demographic questions (e.g. age)
- To complete some puzzles
- To fill in two short questionnaire's – one about your diagnosis and one about emotions
- Some questions about parent-baby relationships

At the second session (one week later) you will be asked the questions on parent-baby relationships, shown a short DVD of parents looking after their babies, and then asked the same parent-baby questions again. At the third meeting (one week later), you will only be asked the questions about parent-baby relationships.

Where will we meet?
At a place that is most convenient to you. The only place we cannot meet would be at your home.

As a thank you for taking part in the study, we are able to offer you a **£10 high street voucher** of your choice. We will also pay any travel expenses which are incurred.

If you would like to take part in the research, or would like any further information, please do not hesitate to email me at xxxxxxxxxxx or call me on xxxxxxxxx.

Thank you for your interest!

Appendix 4: Participant Recruitment Online Advertisement

Research: Can people with Asperger's Syndrome/High Functioning Autism learn more about parent-child relationships through the use of a DVD?

My name is xxxxxxxxxx and I am a Clinical Psychologist in Training at the University of Birmingham. I am investigating whether people with Asperger's Syndrome/High Functioning Autism can learn more about parent-child relationships through the use of a DVD.

Research has shown that whilst most people who have AS/HFA make great parents, some of the difficulties associated with having this diagnosis can make communication and interaction with their children more difficult. The aim of the research is to find out whether a DVD can help people who have Asperger's Syndrome/High Functioning Autism to improve upon these skills.

Please note we are **not** looking for parents to take part in this study. We are looking for adults aged 18 or over who have a diagnosis of AS/HFA and do **not** currently have any children. You also need to have English as your first language.

The research would involve meeting with myself or one of my colleagues for three short sessions, each one week apart, at a location that is convenient to you. The first session will last about 45 minutes and will involve asking you to complete some puzzles and questionnaires. The second session will last about 20 minutes and will involve asking you some questions about parent-baby relationships and showing you a DVD. The third session will last about 10 minutes and will involve asking you some questions about parent-baby relationships. All of your data will be kept confidential and will be anonymised when the research is written up.

As a thank you for taking part in the study, we are able to offer you a £10 high street voucher of your choice. We will also pay any travel expenses which are incurred.

If you would like to take part in the study, or would like any further information, please email me at xxxxxxxxxx. Thank you for your interest.

Appendix 5: Information Sheet

INFORMATION SHEET

Hi! I work with people with mental health difficulties and developmental difficulties, including people with Asperger's Syndrome/High Functioning Autism. As part of my course I am carrying out a research project.

What is the study about?
I want to find out how we can help people with Asperger's Syndrome/ High Functioning Autism to learn more about parent-baby relationships.

If I chose to take part, what will happen?
I will contact you to arrange a time and place to meet up, and to answer any questions you may have.

What will I be asked to do?
You will be asked to attend three short sessions, the first one lasting 45 minutes, the second one lasting 20 minutes, and the third one lasting 10 minutes. During the first one you will be asked:

- Some demographic questions
- To complete some puzzles
- To fill in two short questionnaire's – one about your diagnosis and one about emotions
- Some questions about parent-baby relationships

You will be invited back in a week's time when you will be asked the questions on parent-baby relationships, shown a short DVD of parents looking after their babies, and then asked the same questions again. At the third meeting one week later, you will only be asked the questions about parent-baby relationships.

Are there any risks?
If after you have taken part, you feel you would like to talk to someone, I can put you in contact with Dr Biza Kroese, Senior Lecturer and Clinical Psychologist (please find details at the bottom of this sheet). Your decision to take part or not to take part in the study will not change the support you get now or in the future. If you are at college, we will make sure that the study does not interfere with your education.

Where will we meet?
If you are at college, we will meet there. If you have been recruited from a support group or a website advertisement, we can meet at a place that is most convenient to you. We are able to offer you a re-imbursement of any travel expenses incurred.

Who will find out what I say?
Everything you say will be confidential. At the end of the research, I will send a copy of my report to the colleges, support groups, and websites which have been involved. The information in the report will have been anonymised, meaning the answers you have given in the study will not be identifiable as you.

You will be offered the opportunity to meet with other participants at the end of the study, to receive feedback from me as a group about the results of the study. Alternatively, I can send you a copy of the research paper.

How about the £10 high street voucher?
You will be able to choose which high street shop you would like your £10 voucher for. I will give you the voucher at our last session.

What if I change my mind?
If you change your mind and decide you do not want to take part, just let me know and I will not use any of your answers in the study. You will be able to pull out up until I start analysing the results in January 2015. If you decide you do not want to take part in the study, you can still watch the DVD.

Who shall I contact if I have any questions or would like to speak to someone after I have taken part in the study?
You can contact Dr Biza Kroese at the University of Birmingham on

Appendix 6: Consent Form

CONSENT FORM

I confirm that I have read and understood the Information Sheet for the above research and have had the opportunity to ask questions. ☐

I understand that my participation in the study is entirely voluntary and that I am able to withdraw my data until 1st January 2015, without giving reason. ☐

I understand that after this time, it will not be possible to withdraw my data as it will be included in the report. ☐

I agree to participate in the above research.

Name: …….....

Signature: …….....

Date:…….....

…… 

If you have any further questions about the research, or decide that you would like to withdraw your data (before 1st January 2015), my contact details are:

xxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxxxx

Appendix 7: Demographic Questions

Demographic Questions

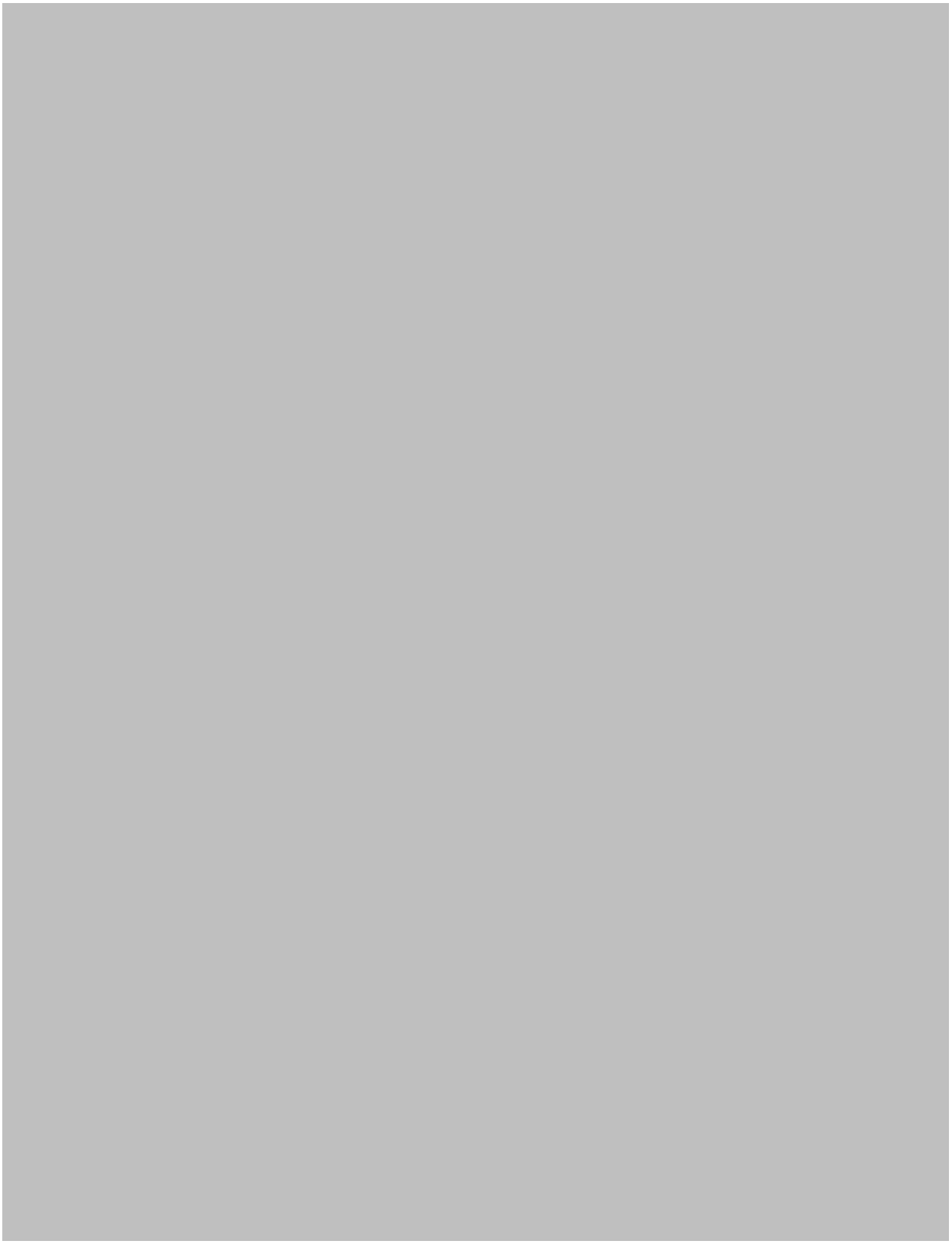
Participant name:
Telephone number:
Email address:

1. Age:
2. Info about siblings (e.g. number, gender, ages):

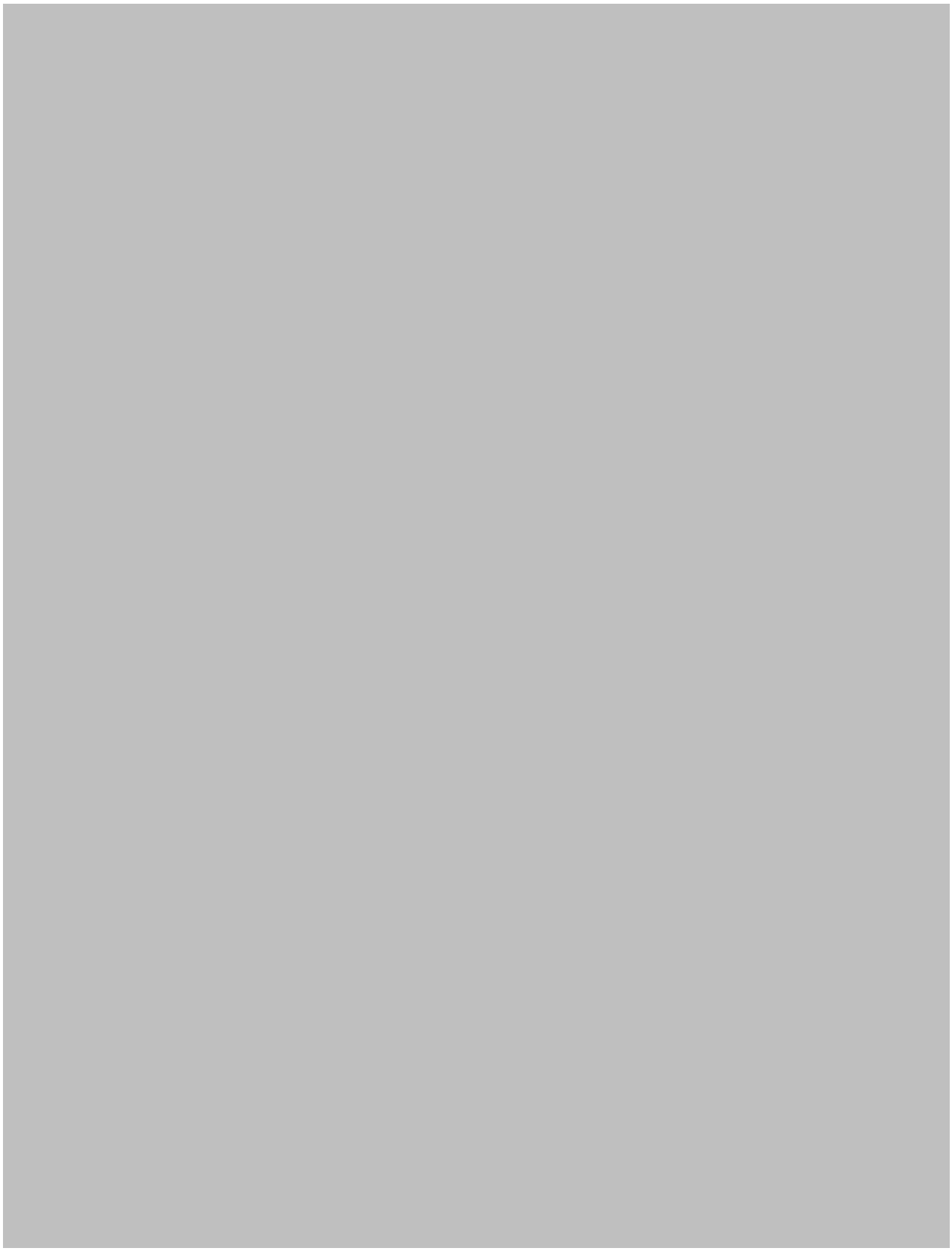
3. Have you had any previous teaching on parent-infant relationships? If so, ask for details.

- Ask where they would like their £10 high-street voucher for (ask for 2 options)
- Explain travel expenses procedure

Appendix 8: Autism Spectrum Quotient (AQ-10)



Appendix 9: Trait Emotional Intelligence Questionnaire – Short Form (TEIQue-SF)



Appendix 10: Attachment Questions

Question	Scoring Criteria
1. What do we mean when we say a parent and their baby have a good attachment? (Question assesses participants' conceptual understanding of attachment)	2 points • Acknowledges both sides of the attachment relationship – e.g. when they both love each other. When the baby knows the mum cares and baby is looked after by parent • Acknowledges the feeling of safety which a secure attachment can provide 1 point • Understands that attachment is based on the parent being responsive to the baby (e.g. when the baby cries or looks uncomfortable) as well as being able to work out what the baby needs (e.g. burping the baby) • Acknowledges only one side of the attachment relationship – e.g. the baby loves the mum more/gets on with their parents • Describes a feature of the attachment relationship e.g. the role of a primary caregiver (mum/dad), baby and parent recognise/know each other, look at faces/eye contact, baby smiles at their parents, parent and baby get on/play together/ sit and/or eat together 0 point • Response is unrelated to the question or show a limited understanding of attachment e.g. can't think/no response, parent and child have same genetic make-up/physical characteristic or mum gives birth to the baby, mum knows how to treat it better than the dad • Focuses on the benefit and consequences of attachment/positive and negative behaviours that can result from the attachment relationship e.g. bad- baby gets used to being picked up by adults
2. What are the good things about a parent and their baby having a good and strong attachment? (Assess participants understanding of the benefits a secure attachment)	2 points • Describes one or more of the 'good' things about attachment as mentioned in the DVD e.g. when they are older babies with a good attachment can feel good about themselves, do well at school and be good at making friends • Describes one of the benefits of a secure attachment and gives an accurate explanation as to why the child has developed a secure attachment with its parent (e.g. the person/child is good at making friends because they got on well with their parent as a baby or their relationship with the parent as a baby helps

	them to make friends as an adult) • Baby knows there is someone to support them and their parents will make them happy 1 point • Focuses on how the parent might try to meet the physical needs of the infant (e.g. feeds) • Describes parent as being responsive and/or sensitive to the baby (e.g. parent goes to the baby when something is wrong/tries to understand what the baby is communicating/picks the baby up/comforts the baby/feeds the baby if he/she is hungry)/plays with the baby • Describes the characteristics and/or benefits of a secure attachment relationship e.g. interaction between the parent and baby, parent and baby enjoy each other's company, parent looks after/takes care of the baby, keeps the baby safe, baby and parent get on more, baby will be happy, baby will know where to get help from, parent praises the baby (delights in the baby) • The baby and mum is happy 0 point • Show no understanding of the question e.g. no response, can't think, don't know. Response focuses more on the consequences of an insecure attachment (e.g. they cry too much) • Shows a limited understanding of a secure attachment e.g. baby and parent do not fall out, describes the parent's ability to manage separation from their infant, parent gets a pushchair for the baby, pays the bills) • Describes baby's helping seeking behaviour to signal that something is not right e.g. cries when nappy needs changing • Confusing bonding with attachment (e.g. bonding with the baby is good and has to keep bond when grown up otherwise they will be naughty)
3. What problems do you get if the parent and child don't have a good attachment? (Assesses participants' understanding of the problems that can emerge from an insecure attachment)	2 points • They won't talk to each other/won't get along • Babies find it hard to trust their parents and other people • conflict e.g. arguments between parent and baby 1 point • Response considers some of the wider issues (e.g. the psychological impact of having a new born on the marital

	relationship, social services involvement due disputes in the family, child might run away) rather than the relationship itself • bad/criminal behaviour e.g. shout and threaten their mum/people, swear, racist • baby will be frightened and nervous – stay away from parents • Focuses on parent's behaviour in response to the child's undesired behaviour and the consequences this may have for the child e.g. parents may leave the child alone if he/she becomes rowdy and child my go hungry, fostered or dies of hunger • Acknowledges some of the ways in which a bad attachment can affect parents e.g. lack of sleep, mother would be annoyed/upset or gets stressed. Fighting, splitting up • Response focuses on safety issues rather than the attachment relationship e.g. limited parental supervision, lack of parental capacity to keep the child safe • Parent won't look after it as well as they need to, parent may ignore the baby's when he/she is crying. The baby could be in danger of having no food 0 point • Response is unrelated to the question or lacks understanding e.g. medication, "the baby will go to sleep, they cry and the dad take over" or the participant identifies the benefits of a secure attachment rather than the problems associated with a 'bad' attachment • No response – e.g. can't think • Response describes the death of a baby e.g. when a mum puts the a baby to sleep they die
4. Why is it important that a parent goes to the baby as quickly as possible when the baby cries?	2 points • Something could be wrong with the baby/to assess the problem/attend to a potential emergency – e.g. may be frightened, poorly, hungry, nappy might need changing, burping, teething, hurt, to prevent suffocation, baby may need to see a doctor • Baby is able to trust their parent – e.g. so that the baby knows their parent is there for him or her all the time. • To keep the baby safe (e.g. babies maybe fighting, something bad could happen to the baby – it could gain access to dangerous objects such as bleach) 1 point • To keep it calm • Make it better • Because the baby is crying/to stop the baby from crying

	• Baby want mum • Mum knows what to do/how to respond 0 point • Inadequate responses e.g. no, don't know, not sure
5. Babies do lots of things to keep their parents close, can you tell me what some of these things are? (Assesses understanding of some of the behaviours babies exhibit to get parents attention)	2 points Gives <u>one answer from both</u> categories • Recognises the infant's proximity seeking behaviour (towards their parent) e.g. crawl, walking, shuffle, cling to mother/stay close to parent • To signal to caregiver that something is not right/ to get attention – e.g. crying/weeping, screaming 1 point Gives one of the following answers • Recognises the infant's proximity seeking behaviour (towards their parent) e.g. crawl, walking, shuffle, cling to mother/stay close to parent • To signal to caregiver that something is not right/ to get attention – e.g. crying/weeping, screaming • Baby gets happy when they see their mother/they cry if they don't see their mother 0 point • Inadequate response e.g. no, don't know, they like sleeping • Response is not related to the question or shows very limited understanding e.g. not adequately supervised the child may injure themselves or exhibit a range of behaviours e.g. throws things, kick the parents, child will ask or demand for things.
6. What does a parent do to show the baby they are listening to them? (Assess understanding of attunement)	2 points • They are looking at them, talk. Try to understand what the baby is saying to them with their faces, faces expression • Parent may pick baby up • Parent talk back to the baby/sing to the baby/make funny sounds/noises 1 point • The baby is always with the parent at the time, baby knows it is safe • Mum will run to them and pick them up if they cry • Calls them, shows them a toy • Comforting them/care for them/respect them • Focuses on parental behaviours which aim to satisfy the baby's physical/emotional needs e.g. feeds them and treats them well,

	looks after them if they are ill. Comforts the baby. 0 point • Inadequate response – e.g. they give a dummy to the baby, tell the baby to be quiet, show the baby the teddy bear
7. What does a child learn to do if their parent takes care of them quickly when they are upset? (Assesses understanding of emotional regulation)	2 points • The baby learns to trust their parent when he/she is responsive to their needs/baby knows that the mother is there • Baby knows his/her parents are there • Baby learns his parents care for him • Baby learns that it is ok to cry and their parent will come as quickly as they can 1 point • To stop crying • Learns to cry and say momma/cry when upset/babies learn to cry (some mum's let the babies cry because they have had enough) 0 point • Inadequate response e.g. no answer, "hand signals", "baby wants attention/hug/conversation from parent", "responds in a positive manner", "hug the parent/gives the parent love" or they may be a favourite if there are two babies • Response focuses more on negative parenting practices e.g. swearing in front of one's baby • Response is unrelated to the question e.g. learns to hold on tightly, throws things, make noises, make a mess to get parent's attention

Appendix 11: Booklet

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Attachment between Parents and Babies

Attachment

Attachment is a special bond between a parent and their child. When they are older babies with a good attachment can feel good about themselves, do well at school and be good at making friends. Babies with a bad attachment find it hard to trust their parents and other people.

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By Tanya Pearson, School of Psychology, Birmingham University
Supervised by Dr Biza Stenfert Kroese and Dr Peter Corr

Appendix 12: SPSS Outputs

Sensitivity Analysis

t tests - Means: Difference between two dependent means (matched pairs)
Analysis: Sensitivity: Compute required effect size

Input:	Tail(s)	= Two
	α err prob	= 0.05
	Power (1-β err prob)	= 0.80
	Total sample size	= 28
Output:	Noncentrality parameter δ	= 2.9063014
	Critical t	= 2.0518305
	Df	= 27
	Effect size dz	= 0.5492393

Cohen's Kappa

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Q1N * Q1B	11	100.0%	0	0.0%	11	100.0%

Q1N * Q1B Crosstabulation

Count

		Q1B		
		1.00	2.00	Total
Q1N	1.00	3	1	4
	2.00	0	7	7
Total		3	8	11

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Measure of Agreement	Kappa	.792	.194	2.687	.007
N of Valid Cases		11			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Q2N * Q2B	11	100.0%	0	0.0%	11	100.0%

Q2N * Q2B Crosstabulation

Count

		Q2B		
		1.00	2.00	Total
Q2N	.00	0	1	1
	1.00	3	0	3
	2.00	2	5	7
Total		5	6	11

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Measure of Agreement	Kappa	.484	.228	1.936	.053
N of Valid Cases		11			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Q3N * Q3B Crosstabulation

Count

		Q3B		
		1.00	2.00	Total
Q3N	1.00	3	1	4
	2.00	0	7	7
Total		3	8	11

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Measure of Agreement	Kappa	.792	.194	2.687	.007
N of Valid Cases		11			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Q3N * Q3B	11	100.0%	0	0.0%	11	100.0%

Warnings

No measures of association are computed for the crosstabulation of Q4N * Q4B. At least one variable in each 2-way table upon which measures of association are computed is a constant.

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Q4N * Q4B	11	100.0%	0	0.0%	11	100.0%

Q4N * Q4B Crosstabulation

Count

		Q4B		
		1.00	2.00	Total
Q4N	2.00	1	10	11
Total		1	10	11

Symmetric Measures

		Value	Asymp. Std. Error[b]	Approx. T[c]
Measure of Agreement	Kappa	.000[a]	.000	.
N of Valid Cases		11		

a. No statistics are computed because Q4N is a constant.

b. Not assuming the null hypothesis.

c. Using the asymptotic standard error assuming the null hypothesis.

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Q5N * Q5B	11	100.0%	0	0.0%	11	100.0%

Q5N * Q5B Crosstabulation

Count

		Q5B		
		1.00	2.00	Total
Q5N	1.00	2	2	4
	2.00	0	7	7
Total		2	9	11

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Measure of Agreement	Kappa	.560	.253	2.068	.039
N of Valid Cases		11			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Q6N * Q6B	11	100.0%	0	0.0%	11	100.0%

Q6N * Q6B Crosstabulation

Count

		Q6B			Total
		.00	1.00	2.00	
Q6N	.00	1	0	0	1
	2.00	0	1	9	10
Total		1	1	9	11

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Measure of Agreement	Kappa	.633	.321	2.938	.003
N of Valid Cases		11			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Q7N * Q7B	11	100.0%	0	0.0%	11	100.0%

Q7N * Q7B Crosstabulation

Count

		Q7B		
		1.00	2.00	Total
Q7N	.00	1	0	1
	1.00	0	1	1
	2.00	1	8	9
Total		2	9	11

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Measure of Agreement	Kappa	.132	.190	.576	.564
N of Valid Cases		11			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Paired samples t-test with bootstrap confidence intervals

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Bootstrap Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Baseline - PreInt2	-.64286	2.09434	.39579	-1.45496	.16924	-1.624	27	.116
Pair 2	Baseline - PreInt3	-2.78571	1.98806	.37571	-3.55660	-2.01483	-7.415	27	.000
Pair 3	Baseline - Followup	-2.78571	2.09686	.39627	-3.59879	-1.97264	-7.030	27	.000
Pair 4	PreInt2 - PreInt3	-2.14286	1.97605	.37344	-2.90909	-1.37663	-5.738	27	.000
Pair 5	PreInt2 - Followup	-2.14286	2.01318	.38046	-2.92349	-1.36223	-5.632	27	.000
Pair 6	PreInt3 - Followup	.00000	1.33333	.25198	-.51701	.51701	.000	27	1.000

Wilcoxon Signed Rank Test

Test Statisticsa

	2.100000 - 1.100000	2.200000 - 1.200000	2.300000 - 1.300000	2.400000 - 1.400000	2.500000 - 1.500000	2.600000 - 1.600000	2.700000 - 1.700000
Z	-.707b	-1.387b	-1.184b	-.780b	-1.232b	-.577c	-.237c
Asymp. Sig. (2-tailed)	.480	.166	.236	.435	.218	.564	.813
Exact Sig. (2-tailed)	.727	.267	.340	.563	.270	1.000	.965
Exact Sig. (1-tailed)	.363	.133	.170	.281	.135	.500	.482
Point Probability	.219	.087	.035	.094	.062	.375	.123

a. Wilcoxon Signed Ranks Test
b. Based on negative ranks.
c. Based on positive ranks.

Test Statistics[a]

	3.100000 - 2.100000	3.200000 - 2.200000	3.300000 - 2.300000	3.400000 - 2.400000	3.500000 - 2.500000	3.600000 - 2.600000	3.700000 - 2.700000
Z	-1.807[b]	-2.814[b]	-2.500[b]	-1.300[b]	-2.668[b]	-.557[b]	-2.280[b]
Asymp. Sig. (2-tailed)	.071	.005	.012	.194	.008	.577	.023
Exact Sig. (2-tailed)	.119	.005	.020	.375	.011	.750	.026
Exact Sig. (1-tailed)	.060	.003	.010	.188	.006	.375	.013
Point Probability	.043	.002	.008	.125	.005	.125	.006

a. Wilcoxon Signed Ranks Test
b. Based on negative ranks.

Test Statistics[a]

	4.100000 - 3.100000	4.200000 - 3.200000	4.300000 - 3.300000	4.400000 - 3.400000	4.500000 - 3.500000	4.600000 - 3.600000	4.700000 - 3.700000
Z	-.816[b]	-.276[c]	-.816[c]	.000[d]	.000[d]	-.272[c]	-.816[b]
Asymp. Sig. (2-tailed)	.414	.783	.414	1.000	1.000	.785	.414
Exact Sig. (2-tailed)	.688	1.000	.688	1.000	1.000	1.000	.750
Exact Sig. (1-tailed)	.344	.500	.344	.687	.750	.500	.375
Point Probability	.234	.188	.234	.375	.500	.250	.250

a. Wilcoxon Signed Ranks Test
b. Based on positive ranks.
c. Based on negative ranks.
d. The sum of negative ranks equals the sum of positive ranks.

Pearson's r test with bootstrap confidence intervals

Correlations

				AttQusT2	AttQusT1	AttQusT3	AttQsT4	T1T2Diff	T2T3Diff	T3T4Diff	AQ10	TEIQueSF	WASIFSIQ2	Age
AttQusT2	Pearson Correlation			1	.554**	.596**	.596**	.605**	-.668**	.140	-.051	-.177	-.010	-.012
	Sig. (2-tailed)				.003	.001	.001	.001	.000	.486	.799	.378	.960	.954
	N			27	27	27	27	27	27	27	27	27	27	27
	Bootstrap[c]	Bias		0	-.010	-.055	-.053	-.020	-.009	.010	.004	-.014	-.013	-.002
		Std. Error		0	.133	.198	.205	.145	.075	.162	.174	.185	.144	.152
		95% Confidence Interval	Lower	1	.220	.102	.055	.216	-.815	-.197	-.372	-.546	-.328	-.330
			Upper	1	.754	.832	.837	.799	-.520	.445	.311	.177	.247	.264
AttQusT1	Pearson Correlation			.554**	1	.453*	.479*	-.327	-.256	.149	-.122	-.070	-.110	-.079
	Sig. (2-tailed)			.003		.018	.012	.095	.197	.458	.544	.729	.584	.696
	N			27	27	27	27	27	27	27	27	27	27	27
	Bootstrap[c]	Bias		-.010	0	-.012	-.012	-.008	.009	.009	.001	-.003	-.009	.008
		Std. Error		.133	0	.166	.192	.226	.167	.180	.176	.163	.169	.169
		95% Confidence Interval	Lower	.220	1	.089	.017	-.703	-.570	-.195	-.456	-.390	-.452	-.408
			Upper	.754	1	.729	.760	.152	.084	.485	.249	.248	.221	.270
AttQusT3	Pearson Correlation			.596**	.453*	1	.795**	.244	.199	-.100	.166	.016	.243	-.334
	Sig. (2-tailed)			.001	.018		.000	.220	.320	.618	.408	.937	.221	.089
	N			27	27	27	27	27	27	27	27	27	27	27
	Bootstrap[c]	Bias		-.055	-.012	0	-.012	-.037	.025	.040	.005	.001	-.002	-.014
		Std. Error		.198	.166	0	.116	.221	.231	.263	.168	.164	.168	.137
		95% Confidence Interval	Lower	.102	.089	1	.522	-.256	-.242	-.558	-.164	-.305	-.110	-.614
			Upper	.832	.729	1	.949	.594	.621	.415	.501	.350	.591	-.088
AttQsT4	Pearson Correlation			.596**	.479*	.795**	1	.219	.009	.524**	.235	-.211	.262	-.144
	Sig. (2-tailed)			.001	.012	.000		.273	.964	.005	.238	.292	.187	.474
	N			27	27	27	27	27	27	27	27	27	27	27
	Bootstrap[c]	Bias		-.053	-.012	-.012	0	-.039	.016	.024	-.004	-.004	-.004	-.003
		Std. Error		.205	.192	.116	0	.226	.220	.116	.183	.133	.148	.152
		95% Confidence Interval	Lower	.055	.017	.522	1	-.290	-.414	.313	-.126	-.485	-.048	-.453
			Upper	.837	.760	.949	1	.572	.447	.772	.592	.042	.532	.149
T1T2Diff	Pearson Correlation			.605**	-.327	.244	.219	1	-.513**	.017	.058	-.134	.094	.062
	Sig. (2-tailed)			.001	.095	.220	.273		.006	.935	.772	.506	.641	.758
	N			27	27	27	27	27	27	27	27	27	27	27
	Bootstrap[c]	Bias		-.020	-.008	-.037	-.039	0	.002	.000	.006	-.002	.000	-.009
		Std. Error		.145	.226	.221	.226	0	.150	.132	.163	.166	.152	.191
		95% Confidence Interval	Lower	.216	-.703	-.256	-.290	1	-.757	-.243	-.255	-.429	-.220	-.335
			Upper	.799	.152	.594	.572	1	-.164	.294	.374	.221	.383	.394
T2T3Diff	Pearson Correlation			-.668**	-.256	.199	.009	-.513**	1	-.264	.217	.231	.238	-.295
	Sig. (2-tailed)			.000	.197	.320	.964	.006		.183	.278	.247	.232	.135
	N			27	27	27	27	27	27	27	27	27	27	27
	Bootstrap[c]	Bias		-.009	.009	.025	.016	.002	0	.010	-.001	.005	.008	-.004
		Std. Error		.075	.167	.231	.220	.150	0	.182	.210	.190	.186	.174
		95% Confidence Interval	Lower	-.815	-.570	-.242	-.414	-.757	1	-.567	-.202	-.146	-.145	-.610
			Upper	-.520	.084	.621	.447	-.164	1	.124	.616	.571	.571	.074
T3T4Diff	Pearson Correlation			.140	.149	-.100	.524**	.017	-.264	1	.152	-.368	.087	.233
	Sig. (2-tailed)			.486	.458	.618	.005	.935	.183		.449	.059	.665	.242
	N			27	27	27	27	27	27	27	27	27	27	27
	Bootstrap[c]	Bias		.010	.009	.040	.024	.000	.010	0	-.003	-.007	.017	.000

		Std. Error		.162	.180	.263	.116	.132	.182	0	.157	.118	.252	.222
		95% Confidence Interval	Lower	-.197	-.195	-.558	.313	-.243	-.567	1	-.142	-.591	-.360	-.278
			Upper	.445	.485	.415	.772	.294	.124	1	.478	-.133	.580	.588
AQ10	Pearson Correlation			-.051	-.122	.166	.235	.058	.217	.152	1	-.154	.337	.100
	Sig. (2-tailed)			.799	.544	.408	.238	.772	.278	.449		.443	.086	.620
	N			27	27	27	27	27	27	27	27	27	27	27
	Bootstrap[c]	Bias		.004	.001	.005	-.004	.006	-.001	-.003	0	-.001	-.002	-.006
		Std. Error		.174	.176	.168	.183	.163	.210	.157	0	.193	.145	.174
		95% Confidence Interval	Lower	-.372	-.456	-.164	-.126	-.255	-.202	-.142	1	-.509	.035	-.272
			Upper	.311	.249	.501	.592	.374	.616	.478	1	.226	.600	.409
TEIQueSF	Pearson Correlation			-.177	-.070	.016	-.211	-.134	.231	-.368	-.154	1	-.016	-.532**
	Sig. (2-tailed)			.378	.729	.937	.292	.506	.247	.059	.443		.937	.004
	N			27	27	27	27	27	27	27	27	27	27	27
	Bootstrap[c]	Bias		-.014	-.003	.001	-.004	-.002	.005	-.007	-.001	0	.004	-.003
		Std. Error		.185	.163	.164	.133	.166	.190	.118	.193	0	.171	.121
		95% Confidence Interval	Lower	-.546	-.390	-.305	-.485	-.429	-.146	-.591	-.509	1	-.350	-.738
			Upper	.177	.248	.350	.042	.221	.571	-.133	.226	1	.322	-.277
WASIFSIQ2	Pearson Correlation			-.010	-.110	.243	.262	.094	.238	.087	.337	-.016	1	-.023
	Sig. (2-tailed)			.960	.584	.221	.187	.641	.232	.665	.086	.937		.911
	N			27	27	27	27	27	27	27	27	27	27	27
	Bootstrap[c]	Bias		-.013	-.009	-.002	-.004	.000	.008	.017	-.002	.004	0	-.019
		Std. Error		.144	.169	.168	.148	.152	.186	.252	.145	.171	0	.224
		95% Confidence Interval	Lower	-.328	-.452	-.110	-.048	-.220	-.145	-.360	.035	-.350	1	-.513
			Upper	.247	.221	.591	.532	.383	.571	.580	.600	.322	1	.355
Age	Pearson Correlation			-.012	-.079	-.334	-.144	.062	-.295	.233	.100	-.532**	-.023	1
	Sig. (2-tailed)			.954	.696	.089	.474	.758	.135	.242	.620	.004	.911	
	N			27	27	27	27	27	27	27	27	27	27	27
	Bootstrap[c]	Bias		-.002	.008	-.014	-.003	-.009	-.004	.000	-.006	-.003	-.019	0
		Std. Error		.152	.169	.137	.152	.191	.174	.222	.174	.121	.224	0
		95% Confidence Interval	Lower	-.330	-.408	-.614	-.453	-.335	-.610	-.278	-.272	-.738	-.513	1
			Upper	.264	.270	-.088	.149	.394	.074	.588	.409	-.277	.355	1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

c. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples