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**The Use of Gesture in Exploring the Borderlands of Autism
and Specific Language Impairment: A Vital Accompaniment
to Communication, or an Irrelevant Slight of Hand?**

by

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**A Thesis Submitted in Partial Fulfilment of the Requirements for the Degree of
Doctor of Clinical Psychology**

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CONTENTS

List of Illustrations	v
Acknowledgements	vi
Declaration	vii
Summary	viii

Chapter I : Literature Review

Aspects of communication in children with Autism and children with Specific Language Impairment: Are we looking in the right places?

1 Abstract	2
2 Introduction	3
3 A Focus on Verbal Communication	4
3.1 Specific Language Impairment and Verbal Communication.....	4
3.2 Semantic Pragmatic Disorder and Verbal Communication.....	5
3.3 Autism and Verbal Communication.....	11
4 Non-verbal Communication	12
4.1 Non-verbal Aspects of Communication in Children– The Use of Gesture	13
4.2 Non-verbal Communication in Children with Autism	13
4.3 Non-verbal Communication in Children with SLI.....	18
4.4 Comparing Children with SLI and Children with Autism in terms of Non-verbal Communication	21
5 Assessment and Treatment: Are we missing something?	23
5.1 Assessment and Diagnostic Considerations.....	23
5.2 Directions for Future Research	25
6 References	27

Chapter II : Empirical Research Paper 1

From non-verbal cues to assessment clues: An investigation into the use of gesture by school-age children with high-functioning Autistic Spectrum Disorders and children with Specific Language Impairment.

7 Abstract	40
8 Introduction	41

8.1	Why study Gesture?.....	41
8.2	Non-verbal communication, Gesture and Autism.....	43
8.3	Non-verbal communication, Gesture and Specific Language Impairment.....	44
8.4	Purpose of the study & Hypotheses.....	45
8.4.1	<i>Hypothesis 1</i>	45
8.4.2	<i>Hypothesis 2</i>	45
8.4.3	<i>Hypothesis 3</i>	46
8.4.4	<i>Hypothesis 4</i>	46
9	Method.....	46
9.1	Participants.....	46
9.2	Procedures.....	48
9.2.1	<i>Standardised Assessments</i>	48
9.2.2	<i>Conversational Interactions</i>	48
9.2.3	<i>Pilot analysis and Coding</i>	49
9.2.4	<i>Analysis of Interactions</i>	53
10	Results.....	53
10.1	Reliability Data.....	53
10.1.1	<i>Observer Drift</i>	53
10.1.2	<i>Inter-rater reliability</i>	54
10.2	Background Data.....	54
10.3	Non-verbal communication data – Hypotheses 1 & 2.....	55
10.4	Correlation Data – Hypotheses 3 & 4.....	57
11	Discussion.....	60
11.1	Clinical Implications and Conclusions	65
12	References.....	68

Chapter III : Empirical Research Paper 2

A key to unlocking the boundaries? - The use of the Children's Communication Checklist in the assessment of children with Specific Language Impairments and children with Autistic Spectrum Disorders.

13	Abstract.....	77
14	Introduction.....	78
14.1.1	<i>Hypothesis 1</i>	83
14.1.2	<i>Hypothesis 2</i>	83
14.1.3	<i>Hypothesis 3</i>	83
15	Method.....	84
15.1	Participants.....	84

15.2	Procedures.....	85
16	Results.....	86
16.1	Background Data.....	86
16.2	Inter-rater Reliability Data.....	86
16.3	Analysis of CCC Profiles – Hypotheses 1, 2 & 3	87
17	Discussion.....	91
18	References.....	95

Chapter IV : Reflective Research Review

19	Introduction.....	100
20	Methodological Considerations.....	103
20.1	Sampling and Recruitment.....	103
20.2	Diagnosis and Co-morbidity	104
21	Ethical Considerations	105
21.1	Informed consent.....	105
21.2	Avoidance of Harm	106
21.3	Privacy/Confidentiality	107
21.4	External Ethical Review	108
22	Personal and Professional Reflections	108
23	Conclusions.....	110
24	References.....	111
	Appendices	114
	Appendix A: Ethical Approval	114
	Appendix B: Instructions to Authors	120
	Appendix C: Children’s Communication Checklist	131
	Appendix D: Information for Participants.....	136
	Appendix E: Consent Form	141

List of Illustrations

Figures

- Figure I-1: A diagrammatic representation of ‘intermediate’ nature of SPD in comparison with SLI and Autistic disorder, in terms of unclear diagnostic boundaries between the groups. 8
- Figure I-2: A diagrammatic representation of SPD as a distinct disorder in comparison with SLI and Autistic disorder, although sharing some common symptomatology. 8
- Figure I-3: A diagrammatic representation of SPD as a sub-type of autism. 9
- Figure II-1: A histogram showing mean incidences of non-verbal communication acts recorded by group..... 56
- Figure II-2: A scatterplot showing a significant negative correlation between age and non-verbal total within the SLI group. 58
- Figure II-3: A scatterplot showing a significant negative correlation between age and non-verbal acts-with speech within the SLI group..... 59
- Figure II-4: A scatterplot showing a significant negative correlation between receptive language score and non-verbal total within the ASD group..... 60
- Figure III-1: Parent and Professional mean sub-scales scores for the ASD group in comparison with findings from Bishop & Baird, 2001. 90
- Figure III-2: Parent and Professional mean sub-scales scores for the SLI group in comparison with findings from Bishop & Baird, 2001.....91

Tables

- Table II.1: Mean (*SD*) age, verbal IQ, performance IQ, expressive and receptive language scores for children in the Control, ASD and SLI groups..... 54
- Table II.2: Mean (*SD*) incidences of non-verbal communication acts recorded..... 55
- Table III.1: Mean age, verbal IQ, performance IQ, expressive and receptive language scores across the ASD and SLI groups..... 86
- Table III.2: Parent/Professional inter-rater reliability coefficients (using Pearson’s correlations) for the current study, and compared to a previous study by Bishop & Baird, 2001..... 87
- Table III.3: Parent, Professional and Combined Mean scores on the CCC with regard to clinical group..... 88

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Declaration

This thesis was carried out under the supervision of Dr. Eve Knight, Clinical Psychologist and Dr. Bryn Williams, Clinical Psychologist. Authorship of published papers will be shared with the above. This thesis has not been submitted for a degree to any other university.

In addition, background data was collected in collaboration with Ms. Sue Cuerden and Ms. Shauna Walsh and authorship of Empirical Paper 1 will also be shared with these. As well as the majority of the background data, I collected all nonverbal data. The analysis of nonverbal data was performed in collaboration with Dr. Eve Knight. Apart from these collaborations all material presented here is my own work.

The thesis has been written for submission to the following journals (*see Appendix B for instructions to authors*):

Chapter 1: Aspects of Communication in Children with Autism and Specific Language Impairment: Are we looking in the right places? *Autism*.

Chapter 2: From non-verbal cues to assessment clues: An investigation into the use of gesture by school-age children with High-Functioning Autistic Spectrum Disorders and children with Specific Language Impairment. *The Journal of Child Psychology and Psychiatry and Allied Disciplines*

Chapter 3: A Key to Unlocking the Boundaries? - The Use of the Children's Communication Checklist in the Assessment of Children with Specific Language Impairments and Autistic Spectrum Disorders. *International Journal of Language and Communication Disorders*.

Summary

Questions surrounding the diagnosis and classification of children with specific language impairments and children with pervasive developmental disorders such as autism have been debated for many years. In particular, research has taken place to try to sub-classify accurately children presenting with specific language impairment and some have concluded that there is a sub-group of children with specific language impairments, those with '*semantic-pragmatic disorder*', who may be better understood within the framework of the autism (e.g. Boucher, 1998a). A great deal of the research investigating these '*Borderlands of Autistic Disorder and Specific Language Impairment*' (Bishop & Norbury, 2002) has focussed on the pragmatic communication skills of the children in question. However, while communication using the verbal modality has been researched extensively, rigorous investigations into children's use of non-verbal communication, and specifically gesture, have been less widespread. This thesis explored the potential that analysis of gesture may have in helping to understand better the difficulties of children with specific language impairment and children with autism.

An initial review of the literature in this area focused on differences between children with specific language impairment and children with autism in terms of verbal and then non-verbal communication skills. These were then drawn together and potential areas for future research examining the use of gesture in children with developmental difficulties were identified.

An investigation was then carried out comparing typically developing children, children with autistic spectrum disorders and children with specific language impairments with regards to their gesture use. Significant group differences in the type and frequency of gesture use were observed. Implications of these findings were discussed and areas for future research were identified.

Group differences were also investigated using the Children's Communication Checklist, (Bishop, 1998) a questionnaire originally designed to assess pragmatic abilities in children with language difficulties. Children with autistic spectrum disorders were shown to have a different profile of results to those with specific language impairment. These results were compared to those from a similar study carried out previously and the implications were discussed.

Finally, methodological and ethical considerations along with personal and professional reflections were considered in the reflective research review.

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Chapter I: Literature Review

Aspects of communication in children with Autism and children with Specific
Language Impairment: Are we looking in the right places?

1 Abstract

While there is much research into the language and communicative skills of children with autism and children with specific language impairments, much of this is focussed primarily on the verbal modality. Furthermore, there remains much debate as to the appropriate sub-classification of children with specific language impairment, and in particular whether clinical descriptions such as 'semantic-pragmatic disorder' or 'pragmatic language impairment' should be seen as separate from or subsumed by the concept of autism. In attempting to describe the various viewpoints using primarily research investigating differences in verbal communication and the pragmatic use of language, this review then attempts to highlight the potential of non-verbal expression, and in particular the use of gesture, in helping to shed light on these discussions. Directions for future research are also discussed

Keywords: Specific language impairment, autism, autistic spectrum disorders, semantic pragmatic disorder, communication, nonverbal, gesture, assessment.

Abbreviations: SLI: Specific Language Impairment; ASD: Autistic Spectrum Disorders; SPD: Semantic Pragmatic Disorder.

2 Introduction

An understanding of child development, and development across the life span appears essential in providing us with a fundamental insight into the complexities of human behaviour and relationships. From an early age we use communication, however basic it may be, in an attempt to get our most fundamental needs met (Vygotsky, 1978). Through the development of language, this communication becomes more sophisticated and remains a major tool in satisfying our needs and desires. As a result, the acquisition of appropriate language and communication skills may be seen as a particularly important factor in determining the course of our development.

Due to the immense complexities and interpersonal differences involved, the concept of 'normal' language development is a difficult one to describe. This is particularly evident when taking into account children with physical or mental impairments or any other significant factor that may affect the course of general development. However, in British culture it is generally accepted that by the time children attend school (at approximately 5 years old) they will have '*mastered the basic grammar and pronunciation of their native tongue*' (Bee, 1995). Indeed, they are likely to be able to produce complex sentences and understand many thousands of words. Yet verbal communication is not the only form of language that develops from early childhood. Increasingly, the importance of a rich non-verbal language, including the use of gesture, is becoming more recognised as a tool that can enable people to reach their communicative potential.

3 A Focus on Verbal Communication

3.1 Specific Language Impairment and Verbal Communication

For many children the process of language development proceeds without difficulty and unabated long into adulthood. However, for a significant minority, who appear in all other areas to be developing in the expected way, the process of language development is impaired. These children with 'specific language impairment' (SLI) are likely to display significant difficulties with language in the *absence* of neurological damage, hearing impairment, mental or physical handicap, or emotional difficulties (Leonard, 1998; Friel-Patti, 1999; Hill, 2001). In addition, nonverbal intelligence scores within the 'normal' range are suggested as necessary for a diagnosis of SLI (Miller, Kail, Leonard & Tomblin, 2001). Despite these defining characteristics, there seems to be no universally accepted process for the diagnosis of 'specific language impairment' (Ahmed, Lombardino & Leonard, 2001).

To highlight the extent of specific language difficulties encountered within the population, a study by Tomblin, Records, Buckwalter, Zhang, Smith and O'Brien (1997) investigated the presence of specific language impairment in over 2,000 kindergarten children. They identified an overall prevalence rate of 7.4%, although this figure was estimated to be slightly higher in boys than in girls.

Much of the literature suggests that the difficulties experienced by children with SLI are not specific to language *per se*, with deficits being highlighted in areas such as speed of processing (Miller *et al.*, 2001), processing capacity (Leonard, 1998), attention (Tallal, Dukette & Curtiss, 1989), memory (Gathercole & Baddeley, 1990, 1993), and motor functioning (Hill, 2001). In addition, the effects of SLI on people's lives are known to

be long lasting (Friel-Patti, 1999). As well as having a detrimental effect on a child's academic achievement, SLI's have been shown to result in difficulties in social interactions with peers, family and other significant adults (Goldman, 1987; Hadley & Rice, 1991; Gernter, Rice & Hadley, 1994).

Despite the defining characteristics identified earlier, children with SLI are a considerably heterogeneous group (Bishop, 1998; Friel-Patti, 1999). To try to reduce this heterogeneity, researchers have attempted to classify children with SLI more precisely into sub-groups, according to their particular range of difficulties (Rapin & Allen, 1983, Bishop & Rosenbloom, 1987, Rapin & Allen, 1987). While the benefits of such an approach have been highlighted (Friel-Patti, 1999), this classification process has proved a difficult task (Bishop, 1998). Indeed, despite the move towards sub-grouping children with language difficulties, recent proposals suggest the notion of overlapping rather than distinct disorders (Bishop 2000; Hill, 2001).

3.2 Semantic Pragmatic Disorder and Verbal Communication

One such sub-group that has attracted some debate has been termed 'semantic-pragmatic syndrome' (Rapin & Allen, 1983), 'semantic-pragmatic disorder' (SPD: Bishop & Rosenbloom, 1987) or 'pragmatic-language impairment' (PLI: Bishop, 1998). These terms appear to describe children that have few difficulties with the complexities of language form (phonology and grammar), but have particular problems in their use of language in conversation (the pragmatics of language). Recognising that a debate continues as to the validity of and appropriate diagnostic label for this sub-group, to avoid confusion this paper will use the seemingly more clinically recognised term 'semantic-pragmatic disorder' (SPD) throughout.

Common features of SPD, highlighted by Rapin (1987) and again by Adams and Bishop (1989), have been shown to include: seemingly fluent speech with adequate articulation; verbosity; a tendency to interpret messages literally; a tendency to respond to one or two words in a sentence rather than to the entire message; incessant chatter; perseveration and difficulties in turn-taking. In addition, characteristics such as repetitive, stereotyped behaviours and a lack of creativity have also been identified (Baron-Cohen, 1989; Bishop, 1989; Lister-Brook & Bowler, 1992; Boucher, 1998). Consequently, there has been much debate surrounding the clinical validity of 'semantic-pragmatic disorder' as a distinct disorder (Lister-Brook and Bowler, 1992; Bishop, 1998; Bishop, 2000; Boucher 1998). In particular, there has been some discussion surrounding the similarities between children with SLI, children with pragmatic language difficulties and those diagnosed with autism or autistic spectrum disorders (Gagnon, Mottron & Joannette, 1997; Boucher, 1998; Bishop, 2000).

It appears from the literature that three main views predominate when characterising children with such difficulties. The first, highlighted by Bishop (1989, 1998, 2000) appears to suggest the notion of overlapping disorders, based on the child's language structure, social use of language and interests. Depending on the nature and severity of the difficulties observed in these three domains, Bishop argues that the lines are blurred between the diagnostic concepts of autism, Asperger's syndrome, specific language impairment or pragmatic language impairment (semantic-pragmatic disorder).

At this point it is recognised that the term 'autism' can be misleading, as it is not recognised by the diagnostic classifications in the Diagnostic and Statistical Manual of

Mental Disorders-Fourth Edition (DSM-IV, American Psychiatric Association, 1994), or the ICD-10 Classification of Mental and Behavioural disorders: clinical descriptions and Diagnostic Guidelines (ICD-10, World Health organisation, 1992, 1993). However, for the purpose of this review the term 'autism' is to be used to incorporate Autistic Disorder and Asperger's Disorder, which are clearly defined sub-types in DSM-IV under a broader heading of Pervasive Developmental Disorders.

In contrast to Bishop (1998, 2000), Botting (1998) highlights a slightly different option: In recognising that there are similarities in the symptomatology of children with SPD, autism and SLI, Botting proposes that those with SPD may be an entirely separate clinical group in terms of the mechanism of the difficulties and its aetiology.

The third position, held by Boucher (1998a) predicts that SPD is a '*valid sub-type of autism*'. This is also a view supported by Gagnon, Mottron and Joannette (1997), who '*question the validity of semantic-pragmatic disorder as a diagnostic concept distinct from high-functioning autism*'.

With these ideas in mind, Figures I-1, I-2 and I-3 are a simplified diagrammatic attempt to highlight some of the apparent differences in opinion in this area and clearly demonstrate the difficulty that clinicians face in trying to incorporate the research literature into effective, evidence-based clinical practice. These diagrams are not meant to be explanatory in terms of the symptomatology associated with each group, nor are representative of the morbidity of each group. They are also not designed to incorporate all the detail of the arguments proposed by Bishop, (1989, 1998, 2000), Botting, (1998) or Boucher, (1998a, 1998b). Rather, they are simple diagrammatic representations of

how SPD *may* be viewed in relation to SLI and autism, in terms of its aetiology and classification.

Figure I-1: A diagrammatic representation of 'intermediate' nature of SPD in comparison with SLI and Autistic disorder, in terms of unclear diagnostic boundaries between the groups.

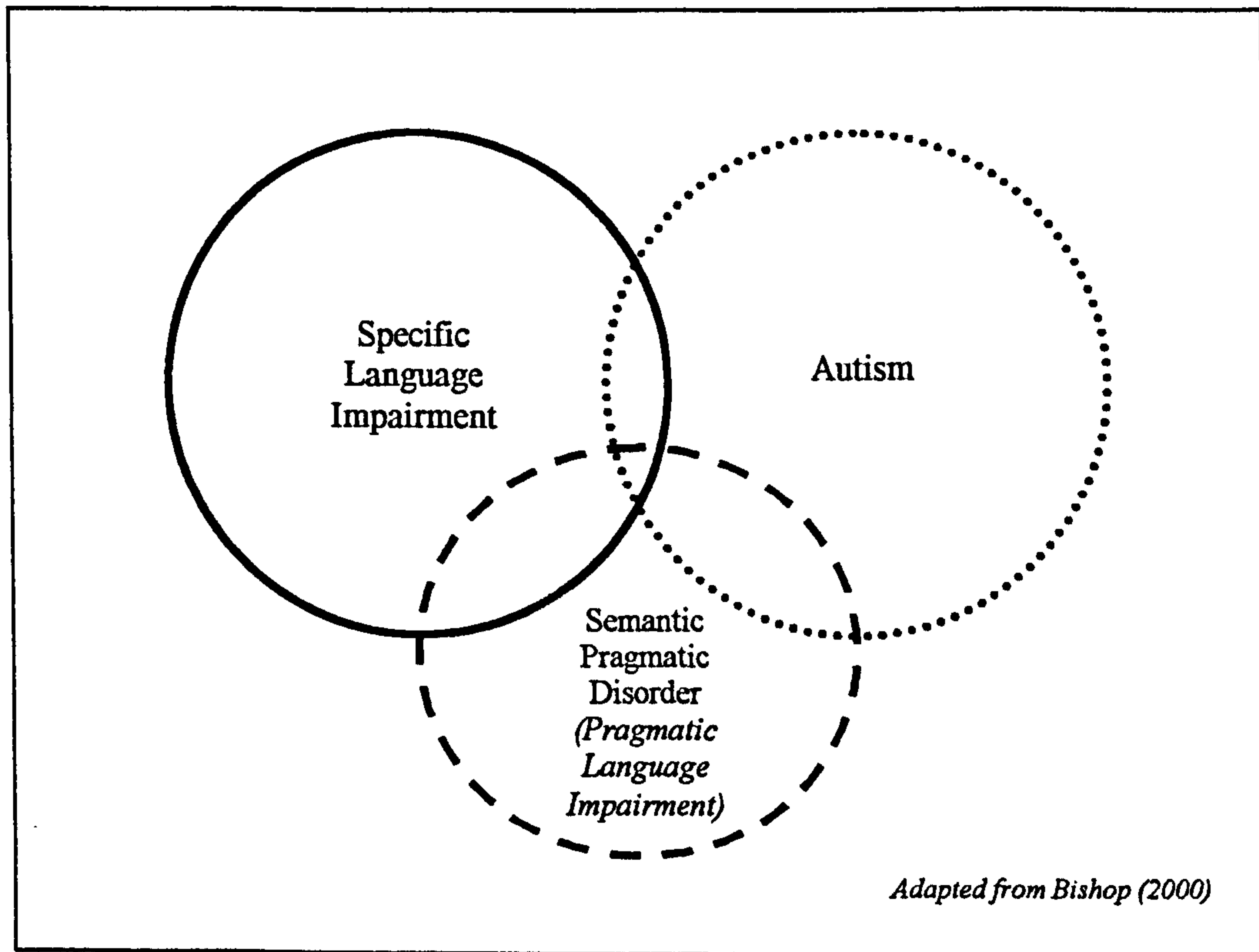


Figure I-2: A diagrammatic representation of SPD as a distinct disorder in comparison with SLI and Autistic disorder, although sharing some common symptomatology.

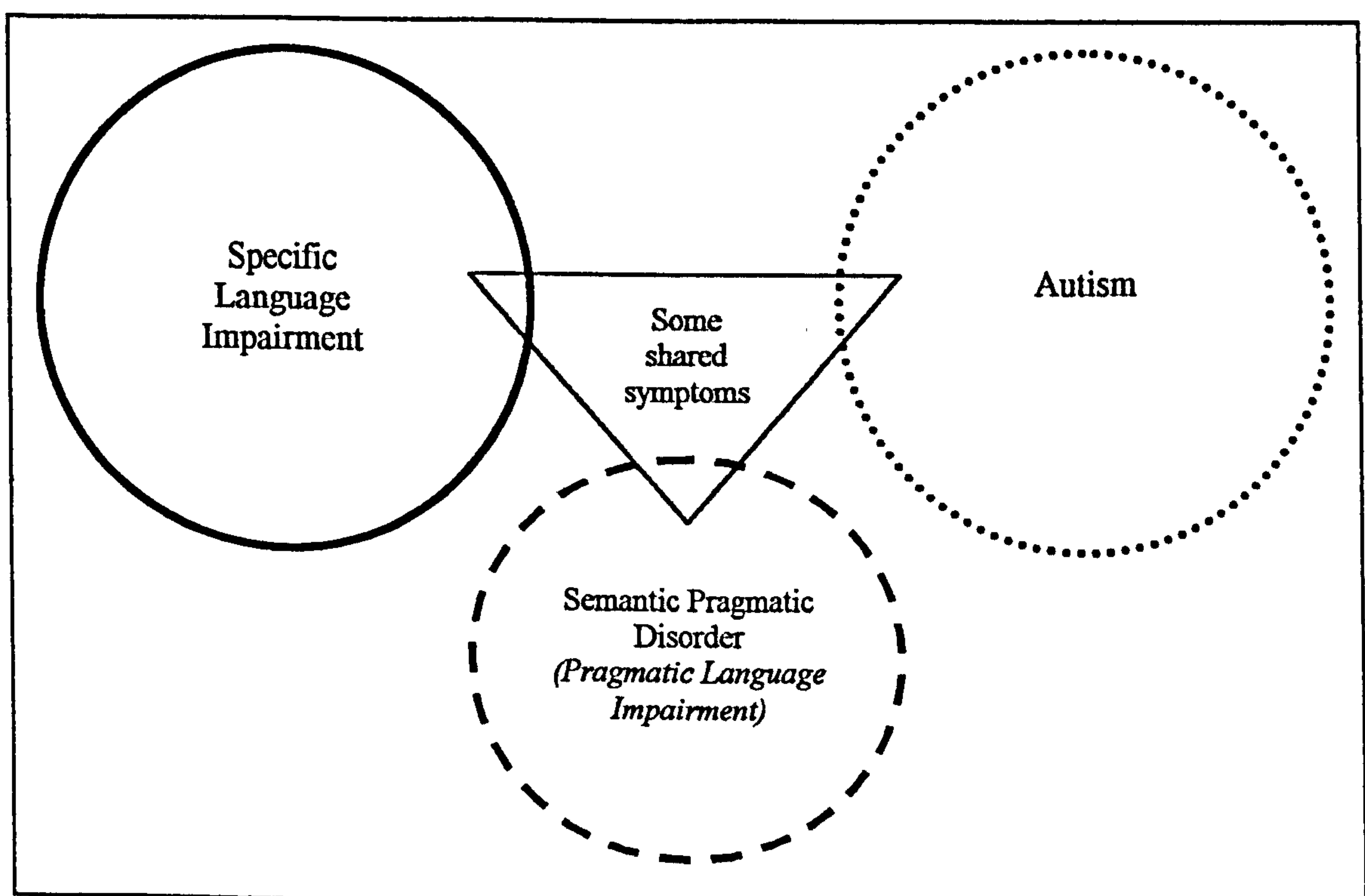
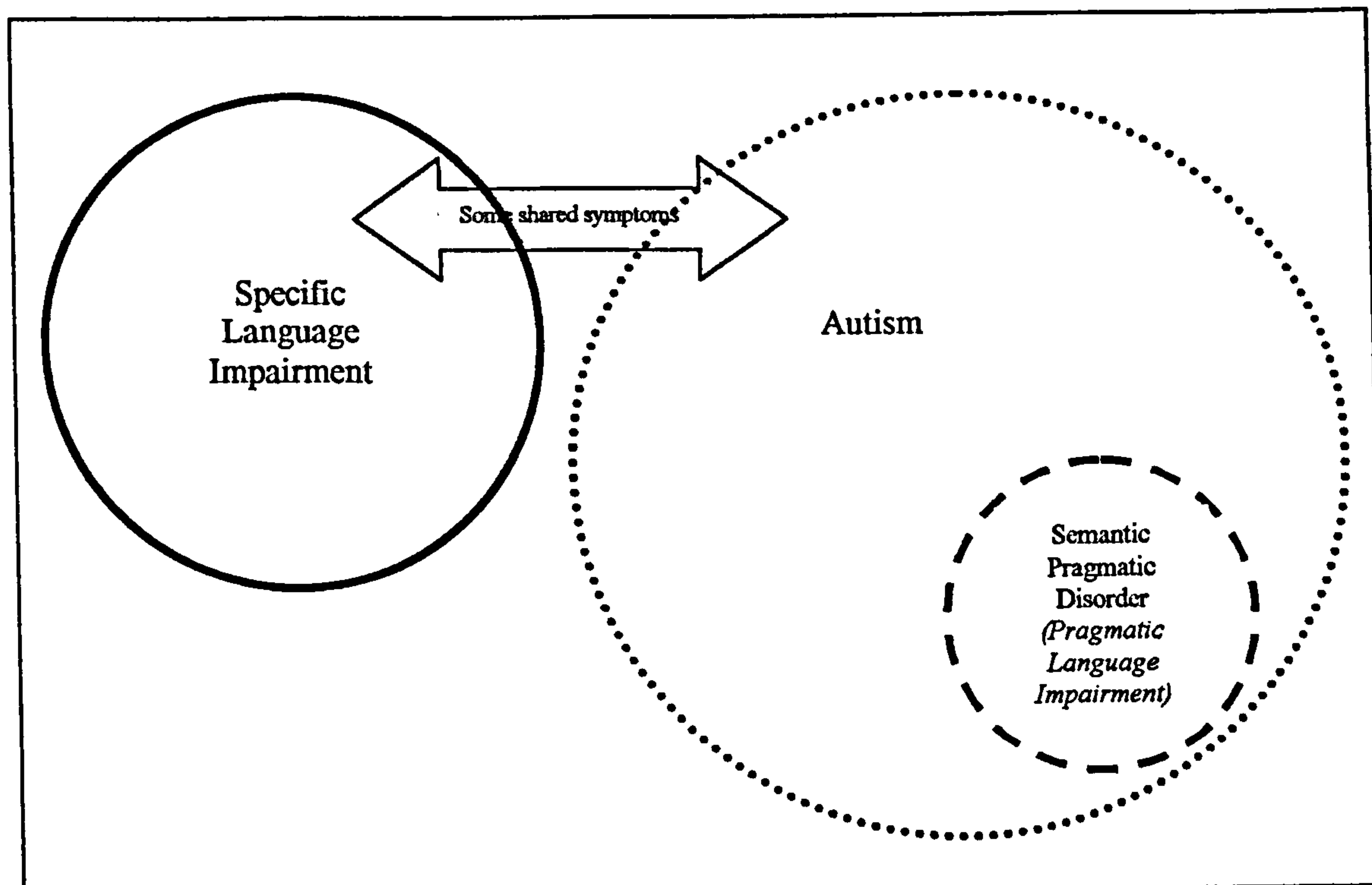


Figure I-3: A diagrammatic representation of SPD as a sub-type of autism.



In an early study that tries to address this classification issue, Adams and Bishop (1989) investigated the conversational characteristics of 14 children with SPD in comparison with 43 children with other language impairments and 67 control children. Language impaired children were aged between 8 and 12 years, with the control group aged between 4 and 12 years. Audiotapes of the children in a 5-10 minute conversation with an adult were transcribed and analysed. Children with SPD were found to produce more initiations than their comparison groups and many showed an increased tendency to interrupt their conversational partner. Adult interrupts and requests for clarifications were greater with the SPD group, possibly reflecting the difficulties in conversing and understanding such children. Despite these findings, Adam and Bishop did not feel that this study *'capture[d] the essence of what was abnormal about the language of children with semantic-pragmatic disorder'*. This appears to reflect how difficult it is to accurately define such a phenomenon, let alone use SPD as a valid clinical diagnostic category.

In trying to address this issue by investigating qualitative aspects of children's communicative impairment, Bishop (1998) developed the Children's Communication Checklist. This is a questionnaire comprising 70 items, which is broken down into 9 sub-scales and incorporates aspects of language structure, pragmatic language skills and behavioural factors associated with autism (social relationships and interests). Results from the development of this questionnaire have been used to help identify children with SPD and broadly supports the notion of overlapping disorders (Bishop, 1989; 1998)

A further study by Botting and Conti-Ramsden (1999) compared 10 children thought to have SPD with each other and a comparison group of children with a more typical SLI. Children with SPD were found to have developed first words earlier than the comparison group but showed impairments in stereotyped language, rapport and context. Social communication skills, as measured by the Children's Communication Checklist (Bishop, 1998) were similar across the two groups, but peer interactions were shown to be poorer for children with SPD. Interestingly, although strict criteria were used to select the SPD group, on preliminary comparison with autistic symptomatology, four of the 10 were thought best to be described as having an autistic spectrum disorder. Despite this, Botting and Conti-Ramsden (1999) conclude that pragmatic language difficulties can exist for some children without meeting criteria for autistic disorder, suggesting the notion of a separate classification for these children.

To complicate matters further, many of the studies described involve children across a wide range of ages, both within each study and when comparing across studies.

3.3 Autism and Verbal Communication

Autistic disorder is a pervasive developmental disorder that is characterised by a triad of impairments in social communication, social relationships and imagination (Wing and Gould, 1979). Since Kanner's (1943) and Asperger's (1944) seminal descriptions, it has long been acknowledged that such children display varying degrees of speech and language difficulty. However, rather than being seen as at the core of autism, speech and language difficulties tend to be viewed as consequences of a broader deficit of communication (Frith, 1989). Frith (1989) in a broad review of language and communication impairments of children with autism highlights the fact that all of the specific language problems associated with autism appear to relate to language use rather than problems of phonology (speech sounds) or grammar.

Foster-Cohen (1999) supports this view and highlights that many children with autism (particularly those deemed to be 'high-functioning') appear to progress through the normal stages of grammatical development (Tager-Flusberg, 1994), and that such a process seems to be unconnected to cognitive and pragmatic skills...*'which are typically poor in autistic children'*. In a similar vein, Tager-Flusberg (1999) states: *'By middle childhood, as in normally developing children, children with autism who develop some functional language generally have mature phonological systems...it is not surprising that researchers have identified pragmatics as the aspect of language that is most seriously impaired in autism'*.

With such a propensity for similarities in the language of children with autism and children with SPD, it is no wonder that attempts to classify them into distinct clinical

groups have proved difficult. However, pragmatic difficulties with language have been linked to problems in the acquisition of joint-attention skills and ultimately difficulties with the development of a theory of mind in children with autism (Loveland and Landry, 1986; Baron-Cohen, 1993), and may possibly be an area that is fruitful in determining a child with autism from a child with SPD.

To add to the confusion, while it is likely that children with SLI, by definition, rarely meet the full diagnostic criteria for autism, the picture may be complicated by the secondary consequences of the primary language disorder. For example, it seems plausible to assume that a difficulty in language ability is likely to affect a person's ability to communicate socially and form social relationships, core factors in the triad of impairments characterising autism. Similarly, in particular relation to the comparison between SPD and autism, Bishop (1989) states '*the child with the triad of social impairment will, by definition, be defective in the pragmatic aspects of language*'. Such assumptions, if accepted, may lend support to the notion of overlapping disorders as suggested by Bishop (2000). However, with such complex ambiguities, the difficulties in identifying valid sub-groups with a view to providing appropriately targeted interventions are clearly evident.

4 Non-verbal Communication

With this research and theoretical background, often focusing on the use of verbal language and communication and behaviour, a further question that arises is whether non-verbal aspects of language, and in particular gesture, could be helpful in clarifying the boundaries of autism, SPD and SLI?

4.1 Non-verbal Aspects of Communication in Children– The Use of Gesture

The use of gesture in communicating and particularly as an accompaniment to speech is a fundamental part of the human condition and can be observed throughout all cultures (Feyereisen & deLannoy, 1991). While previously being seen as largely independent to speech, following work by Kendon (1972) and McNeill (1992), it is now thought that not only is gesture an integral component of language, but that it is inextricably linked and integrated with the production of speech. If this is the case, the study of gesture may provide us with important clues in our understanding of disorders of speech and language.

Methods of non-verbal communication are present within the first year of life and can be described by actions such as eye gaze, facial expression and pre-linguistic gestures. Reaching and pointing are among the first gestures to be used around 6 to 9 months and precede verbal language (Foster-Cohen, 1999). Early in development, speech and gesture are thought to be largely independent from each other (Goldin-Meadow, 1998). However, in normally developing children as speech development gathers pace, the ability to use gestures coordinated with meaningful words becomes more complex and frequent (Wetherby, Cain, Yonclas & Walker, 1988). For children who have atypical development patterns however, the picture can be somewhat different.

4.2 Non-verbal Communication in Children with Autism

Difficulties in the understanding and use of non-verbal means of communication are widely observed in children with autism (American Psychiatric Association, 1994;

Bartak, Rutter & Cox, 1975; Ricks & Wing, 1976; Rutter, 1983). In particular, children with autism have been shown to display less frequent use of eye contact, facial expressions, pointing and expressive gestures (Attwood, Frith & Hermelin, 1988; Landry & Loveland, 1988; Langdell, 1981; Sigman, Mundy, Sherman & Ungerer, 1986; Stone, Ousley, Yoder, Hogan & Hepburn, 1997).

One such study by Mundy, Sigman, Ungerer and Sherman (1986) compared 18 children with autism aged between 34 and 75 months, with 18 children with 'mental retardation' and a control group of 18 children. All groups were matched on mental age and mother's level of education. The children were compared on measures of non-verbal communication skills and object play skills in both structured and non-structured settings. Non-verbal communication skills were grouped into three categories of behaviours: social interaction, indicating and requesting. Although children with autism displayed deficits in object play skills, deficits in non-verbal indicating behaviours such as pointing at an object to 'show it' to another person (protodeclarative pointing), appeared to be the most significant discriminating characteristic.

Some of the deficits in non-verbal communicative skills observed in children with autism have been explained in terms of difficulties in establishing and maintaining shared-attention and in the development of a theory of mind (Baron-Cohen, 1993; Loveland and Landry, 1986; Mundy, Sigman, Ungerer & Sherman, 1986; Sigman, Mundy, Sherman & Ungerer, 1986).

In contrast to this general view, a more recent study by Capps, Kehres and Sigman (1998) compared conversational abilities of 15 children with autism and 15 children

with developmental delays. The two groups were matched with regard to language age and each child was video recorded while engaged in an informal, semi-structured conversation over a period of 6 minutes. Two 'coders', one blind to group status, recorded non-verbal communication using the three categories of 'smiles', 'gestures' and 'head nods/shakes'. It was found that the groups did not differ in their use of head nods and shakes, however children with autism were less likely to use '*minimal encourager*' head nods (nodding while conversational partner is talking) than controls. More interestingly it was found that children with autism were as likely as comparison children to smile and use gestures. Of note is that the gestures used '*tended to enact an activity being described*'. With this in mind, Capps *et al.* (1998) concluded that the use of this form of expressive/iconic gesture by children with autism '*warrants further study*' and if proved significant '*may be a fruitful avenue for interventions designed to develop communication skills*'.

This study may be loosely criticised in its overly generalised use of the term 'gesture'. While it did seem to use coding criteria aligned with the notion of gesture as a communicative act commensurate with speech, rather than the concept of gesture measured simply as 'mime', more strict criteria in the analysis of the different levels of gesture used may provide more insight into the phenomena reported here. A further criticism of this study could be the omission of an age-matched or language-matched control group, consisting of children without developmental delay or disorder.

In support of these findings however, other studies, particularly those with an older age group have shown that children with autism do have the propensity to recognise and use some gesture. For example, Attwood, Frith and Hermelin (1988) investigated the use of

'interpersonal' gestures in 22 adolescents (aged 10-19) with autism compared to a group of similar age adolescents with Down's syndrome. A control group of forty-seven children aged between 3 and 6 years were also included in the comparison. In the first part of the study an experimenter enacted 8 simple 'instrumental' (Barten, 1979) or 'emblematic' gestures (Eckman & Friesen, 1969, 1972). These are gestures that are designed to influence the immediate behaviour of another person and often have a direct verbal translation. For example: A finger placed on the lips can indicate the command 'be quiet'. The participants were expected to respond to the gestures appropriately. There was no significant difference in terms of response to or understanding of the gestures between the three groups, even when IQ was accounted for.

The second part of the study asked the participants to initiate various gestures on verbal request. Although the autistic adolescents with an IQ below 52 were significantly poorer on this task than their comparison groups, those children with an average or near average IQ (in the range 60-94) were shown to be competent in their use of the gestures. This led Attwood *et al.* (1988) to conclude that '*comprehension of simple instrumental gestures is not specifically impaired in autistic children*'. Furthermore, whilst acknowledging the difficulties shown by children with autism in recognising others' mental states (c.f. theory of mind tasks), Attwood *et al.* (1988) were clear that these results support the notion that '*we should not expect autistic children to be impaired as regards gestures that do not presuppose a concept of mental states*'.

Nevertheless, this study can be criticised in that the context in which the children were expected to produce or recognise gestures appeared somewhat unnatural. To generalise these results to a child's the natural day-to-day communicative environment would be

somewhat questionable. In trying to address this, Attwood *et al.* (1988) carried out a further study in which similar groups of children were observed in more naturalistic surroundings, either in free-play or at the dinner table. The number of peer interactions, gestures, facial glances and speech acts were recorded over a short time period, and significantly, fewer adolescents with autism interacted than their comparison groups. Similarly, fewer produced gestures, facial glances or speech.

However, for those that did interact, the mean number of gestures per interaction was not significantly different across the three groups, but the *type* of gesture used was different. While producing similar numbers of pointing and instrumental gestures, adolescents with autism used significantly less 'expressive' gestures than the comparison groups. In other words, adolescents with autism did not use gestures deliberately expressing inner feeling states or as responses to feeling states in others.

Therefore, it may be suggested that the evidence is fairly persuasive that children with autism have difficulties in their use of non-verbal communication, including gesture. However, there is evidence to suggest that children with autism do possess the ability to use and understand some forms of non-verbal means of communication. In particular, for the person with autism, their frequency and use of gesture appears to be tempered by the age and intellectual level of the person, along with their language ability. This is in addition to their difficulties being limited to only certain areas of communication, generally those that presume a concept of mental state. What appears significant therefore is that in general many children with autism could actually use various forms of gesture because they have the cognitive functioning and motor skills to actually

perform the acts. However, the ability to initiate and use such gestures appropriately in a social setting appears to be somewhat diminished.

The evidence therefore, at times, appears somewhat less clear than many studies would propose. The wide variability in the presentation of children with autism along with variability in the classification procedures employed to determine the frequency and type of non-verbal communication used, is likely to hamper any attempts to define the non-verbal communicative skills of children with autism with any more clarity. Nevertheless, as recognised by Capps *et al.* (1998), it may be that a seemingly non-verbal 'enacting' of thoughts could allow children with autism to access their communicative potential more readily.

4.3 Non-verbal Communication in Children with SLI

For children with SLI the picture may be somewhat different. Rather than focussing purely on language form, recent ideas emphasise the importance of non-verbal communication as a factor that may help distinguish difficulties experienced by some children with SLI (Adams and Bishop, 1989, Bishop, 2000; Bishop, Chan, Adams, Hartley and Weir, 2000). Despite this, the use of gesture by children with SLI as a means of non-verbal communication appears to be an underdeveloped area of research.

Some of the literature that has examined children with specific language impairments in terms of their non-verbal behaviour seems to highlight difficulties for a number of them in their use of gesture and non-verbal communicative skills (Hill, 1998; Bishop *et al.*, 2000).

For example, Bishop *et al.* (2000) compared 18 children with SLI with 9 control children matched on age and non-verbal ability and 9 control children matched by language level. All the children were aged between 6 and 8 years and were videotaped in conversation with an adult. Their non-verbal responses were recorded only if the action was *not* accompanied by a verbal response. Children with SLI '*tended to have a very low rate of non-verbal response*'. Bishop *et al.* (2000) also identified a sub-group of children who were characterised as having pragmatic language impairment (comparable to SPD). These children were shown to use significantly less non-verbal response than the typical SLI or control groups. Bishop *et al.* (2000) conclude that '*children [with] SLI may have communicative difficulties that extend beyond verbal communication*'. A strength of this study may be its use of language and age-matched controls. However, by only including acts that were not accompanied by speech, it was felt that much of the non-verbal data was omitted.

In contrast, other studies show few differences between some children with SLI and age-matched controls in terms of their gestures (Landry & Loveland, 1988). To support this, in a more recent study using standardised diagnostic instruments (Bishop & Norbury, 2002), the lack of any significant difference between children with typical SLI and controls with respect to their use of non-verbal means of expression was noted.

However, to add to the confusion, a study by Fex and Mansson (1998) investigating the use of gesture as a compensatory strategy in adults with acquired aphasia and children with specific language impairment concluded that both groups appear to use gestures to compensate for their language difficulties. This study cited work by Mansson and Lunstrom (1996) who compared 8 children with specific language impairment with 8

controls (ages 3 to 6) with regard to their non-verbal communication. Video recordings of the children in a communicative interaction with an adult were analysed and the data appeared to indicate more use of gesture by children in the SLI group. Although this overall finding was not statistically significant, further analysis identified that when compared to controls, children with SLI used statistically less illustrative and regulatory gestures, but statistically more emblematic gestures (those with a direct verbal translation).

If this were the case then the use of gesture by children with SLI to compensate for their verbal language deficits may be a fruitful avenue to explore in helping to delineate the boundaries between SLI, SPD and ASD. This use of gesture to compensate for communication deficits is one that has been seen in children with other disabilities. For example, children with hearing difficulties have been shown to display such a phenomenon (Goldin-Meadow & Mylander, 1998).

Although an interesting area for research, there is further evidence, albeit based on parental report rather than direct observation, to refute Mansson and Lunstrom's claims. In a study by Lord and Pickles (1996), 51 children with autism and 43 children with language impairments were investigated in terms of their use of non-verbal 'social communicative' behaviours. All children were between the ages of 2 and 5 years old. The Autism Diagnostic Interview-Revised (ADI-R) (Lord, Rutter, & LeCouteur, 1994) was used with the mothers of the children to elicit the relevant data. It was found that children with more limited language were associated with more limited non-verbal communication skills. In addition, in investigating the children *without* autism, Lord

and Pickles did not find evidence for the use of non-verbal communication strategies as compensation for their language difficulties.

The evidence for specific patterns of gesture use in children with SLI again appears scarce and inconclusive. Clearly, comparisons of findings across studies is complicated by the different forms of data collection and the interpretation of what constitutes non-verbal communication. A further difficulty in comparing these results is the apparent lack of in-depth information about the use of non-verbal communication in a normative sample of children.

4.4 Comparing Children with SLI and Children with Autism in terms of Non-verbal Communication

As previously discussed there has been a continuing interest in the relationship between children with SLI, particularly those with pragmatic language impairments and/or non-verbal difficulties, and those on the autistic spectrum (Bishop, 1998; Botting and Conti-Ramsden, 1999; Bishop, 2000).

Studies directly investigating the relationship between children with autism and those with SLI, in terms of non-verbal communication are limited. Bartak, Rutter and Cox (1975) compared 19 children with autism and 23 children with specific receptive developmental language disorder in terms of their intellectual abilities, language, reading and social behaviour. Of particular interest here was an analysis of the participants' use of gesture.

Understanding of 'gesture' was tested by the experimenter performing a mime of an object, picture or activity and asking the participant to point to the

object/picture/activity being described, from a selection presented to them. Six objects, 5 pictures and 5 activities were described. The *use* of gesture was tested by presenting the child with an object/picture/activity and asking him/her to perform a mime describing its use.

The two groups differed significantly on these tests in that the autistic children scored lower on both understanding and production of gesture, even when age was controlled for. In analysing information from parental interviews, Bartak *et al.* (1975) reported that over 40% of children with receptive language difficulties (without autism) did not use any complex non-verbal communication in their home environments. However, this figure was good in comparison with parental reports that 89% of children with autism did not to use complex non-verbal communication at home.

Taken at face value, this lends support to the notion that autistic children use significantly less gesture than children with receptive language difficulties. However, it should be noted that the information supplied by the parental interviews relied on subjective interpretation of the term 'complex gesture' and as such it is difficult to deem this a reliable measure of children's use of gesture. A further criticism, partly acknowledged by Bartak *et al.* (1975) in their discussion, was that those methods used to measure understanding and use of gesture were not standardised in any way. In addition, it seems that the use of 'mime' seemed a somewhat distant concept from that of gesture as a form of communication relevant to everyday language and therefore this method of analysis could be deemed lacking in validity.

However, a further study by Loveland, Landry, Hughes, Hall & McEvoy (1988), does seem to support the findings presented by Bartak *et al.*, (1975). Loveland *et al.* (1988) compared 12 children with autism with 12 children with a developmental language delay (DLD) and a control group of 13 'normally developing' children. The autism group and DLD group were matched on non-verbal mental age and language level and the control group was matched to the two clinical groups on language level. Each child underwent a developmental evaluation followed by a 15-minute videotaped 'free-play' interaction with a parent. No significant differences were found in the number of verbalisations used, but the number of 'no responses', interactional initiations and the use of gesture were significantly lower in the autism group compared to the other two groups.

5 Assessment and Treatment: Are we missing something?

5.1 Assessment and Diagnostic Considerations

Clearly, although on the increase, there still appears to be a paucity of research into the informal conversational skills of children with both autism and SLI. In support of this Capps, Kehres and Sigman (1998) suggest that those studies that do investigate conversational skills are limited by their apparent focus on verbal behaviour and abilities rather than non-verbal skills. Capps *et al.* also acknowledge the inaccessibility of non-verbal information when only audiotapes are used and recognise the importance of using videotaped data in examining non-verbal communication skills. The value of videotaping to enhance understanding of non-verbal communication in children is a view also held by Bishop *et al.* (2000).

In trying to clarify the classification issues surrounding children with autism, specific language impairment or semantic pragmatic disorder, the research literature is, at best confusing and at worst wholly contradictory. In agreement with Capps *et al.* (1998), it is suggested that this is in part due to research often placing too much emphasis on the pragmatics of verbal language and communication, rather than the pragmatics of non-verbal language and communication, especially the use of gesture. While differences between groups in terms of non-verbal skills are still difficult to define, it is in this domain that there appears more room to explore an explanation for differing diagnostic classifications.

In summary, unsurprisingly it appears that there is a body of evidence supporting the notion that children with autism use significantly less gesture than control groups matched on mental age or language level. However, for some specific gestures (those that do not require a fully developed theory of mind or a notion of shared-attention e.g. instrumental gestures or protoimperative pointing), children with autism can be observed to perform comparatively with typically developing children.

However, for children with SLI the evidence is much less clear. Some studies support the theory that children with SLI use comparatively similar amounts of gesture to language matched controls (Landry & Loveland, 1988; Bishop & Norbury, 2002), whereas others appear to indicate potential difficulties with gesture encountered by children with SLI (Lord & Pickles, 1996; Hill, 1998). Furthermore, a few studies (Mansson & Lundstrom, 1996; Fex & Mansson, 1998) propose that children with SLI may actually compensate for their language difficulties by using more gesture.

With this somewhat confusing background with regards to the use of gesture in children with SLI, it is difficult to establish whether children with SLI use a pattern of gesture that would be able to accurately discriminate them from other clinical groups, or indeed aid in identifying sub-types within any heterogeneous SLI group.

Therefore, before any conclusions can be made about using measures of gesture as an aid to classify children with SPD, there should be a research focus on investigating the use of gesture in children with SLI in a naturalistic context. Furthermore, if clear distinctions can be made between children with SLI and children with autism in terms of their use of gesture, it may provide an insight into the classification debate surrounding the notion of SPD.

The following is a tentative prediction of one scenario that may afford more clarity in this area: As suggested earlier, children with autism appear to have specific difficulties in their use of gesture and clinical descriptions of SPD have included references to abnormalities of non-verbal communication (Rapin & Allen, 1987; Bishop & Rosenbloom, 1987). Therefore if, as seems plausible, children with SLI in general compensate for their difficulties in verbal language by using more gesture it may lend support to the notion that children with SPD are more aligned with any group of children with autism than children with SLI.

5.2 Directions for Future Research

Clearly, the ability to make comparisons across studies is hindered by a huge variation in the definitions of gesture and the measurement of gestures within differing contexts.

With the advent of videotaped analysis and an increasing research interest in the field of

gesture, it is hoped that such definition and measurement considerations should become clearer.

Bishop *et al.* (2000) have already noted the use of the '*non-verbal response mode*' as being a critical variable in distinguishing children with pragmatic language difficulties. However, given the apparent lack of clarity about the use of gesture in any general SLI population, it may be argued that the logical step of using this modality to enhance the definition of children with SPD would be a little premature.

Therefore, it is felt that future research using videotaped analyses of children in naturalistic surroundings should primarily focus on developing a clear understanding of the use of gesture in children with SLI, and how this differs, if at all, from that of children with autism or language and age-matched controls. Once this is established, only then does it seem sensible to try to use gesture as a tool in addressing the position of SPD with regards to SLI and autism.

What appears consistent throughout the literature is the commitment of researchers and clinicians to develop a clearer appreciation of the skills and difficulties encountered by these children and develop more effective ways of allowing them to reach their communicative potential. Ultimately, it is hoped that by developing an understanding of non-verbal communication abilities, and in particular the use of gesture, this commitment will be enhanced.

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Chapter II: Empirical Research Paper 1

From non-verbal cues to assessment clues: An investigation into the use of gesture by school-age children with high-functioning Autistic Spectrum Disorders and children with Specific Language Impairment.

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7 Abstract

The present study investigated the use of gesture in a sample of 14 children with high-functioning Autistic Spectrum Disorders (ASD) and 12 children with Specific Language Impairments (SLI) aged between 7 and 12 years and matched on non-verbal IQ and receptive language abilities. A control group of 68 typically developing children matched on chronological age was also included in the study. Gesture was analysed using video recordings of the children in semi-structured conversation with an adult, and then coded according to an adapted version of a system proposed by Eckman & Friesen, (1969). The results of this study suggest that there are marked, measurable and seemingly discriminating differences in the type and frequency of gesture used by children with SLI, children with ASD and typically developing children. In particular, children with SLI were shown to compensate for their language difficulties by using more gesture accompanying speech than their comparison groups. Children with ASD were shown to use less gesture than their comparison groups overall. However, there was evidence that for some types of gesture, children with ASD performed comparably to typically developing children. Clinical implications of these findings and areas for future research are discussed.

Keywords: Specific language impairment, autism, autistic spectrum disorders, gesture, assessment.

Abbreviations: SLI: Specific Language Impairment; ASD: Autistic Spectrum Disorders; SPD: Semantic Pragmatic Disorder.

8 Introduction

8.1 Why study Gesture?

'Gestures are movements of the body (or some part of it) used to communicate an idea, intention or feeling. Many of these actions are made with the arms/hands, but the face/head area is also used in gesturing. Some actions not normally considered gestures include self-touching, grooming, clothing adjustments and nervous mannerisms' (Knapp & Hall, 2002).

For many years, although considered relevant to vocalizations, gestures have usually been seen as separate entities from speech. That is, they have often been seen as accompanying, but not centrally involved in language (Iverson & Goldin-Meadow, 1998). However, more recently researchers such as Kendon, (1972, 1980) and seminal work by McNeil (1992) argues that not only are gestures linked to language, they form an integral part of the speech system. This has afforded some legitimacy to the study of gesture and its value in helping to increase our understanding of the complexities of human language and communication.

Gestures with speech have been shown to exist throughout the world, spanning cultural and language boundaries (Feyereisen and deLannoy, 1991). Furthermore, prior to the development of spoken language, gestures such as reaching, pointing, nodding and waving, form the basis of an infant's primary method of communication (Eisele & Aram, 1995; Foster-Cohen, 1999). As language development continues and speech becomes the preferred method of communication, the complexity and variation of

gesture use also increases and such abilities are maintained throughout life (Goldin-Meadow, 1998)

Given that speech and gesture are now thought to be part of an integrated system, it follows that research into the development and use of gesture in children with both normal and atypical language development may provide an insight into how we can use gesture within a clinical setting to maximise an individual's communicative potential. Indeed, Goldin-Meadow and Iverson, (1998) highlight that analysis of gesture may be used clinically as both a tool for early diagnosis and intervention.

A particular topic in which this may be a fruitful avenue of research, is the much-debated '*borderlands of autistic disorder and specific language impairment*' (Bishop & Norbury, 2002). Much of this debate has centred around the heterogeneity of specific language impairment (SLI) and attempts to define different sub-types, in particular semantic-pragmatic disorder (SPD: Bishop & Rosenbloom, 1987). SPD, or pragmatic language impairment (PLI) as it has been more recently termed (Bishop, 1998; Conti-Ramsden & Botting, 1999), has been conceptualised as 'intermediate' between autistic disorder and SLI (Bishop, 1989, 1998, 2000). Much of this research has focussed on the pragmatic use of language in the verbal modality, with little attention paid specifically to the use of gesture.

Therefore, it is argued that before the use of gesture can be used as a potential discriminating factor within any heterogeneous SLI group, we should first develop a better understanding of how children with SLI differ from autism in terms of their use of gesture.

8.2 Non-verbal Communication, Gesture and Autism

Autism is a pervasive developmental disorder characterised by a triad of impairments in social communication, social relationships and imagination (Wing & Gould, 1979). As one of the defining diagnostic markers for autism, research into the use of non-verbal communication in children with autism has been well documented. With this background, the Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition (DSM-IV, American Psychiatric Association, 1994) highlights a '*marked impairment in the use of multiple nonverbal behaviours*' in its criteria describing both children with Autistic disorder and Asperger's disorder. In particular, studies have shown that children with autism display less frequent use of eye contact, facial expressions, pointing and expressive gestures than typically developing children (Attwood, Frith & Hermelin, 1988; Bartak, Rutter & Cox, 1975; Landry & Loveland, 1988; Langdell, 1981; Ricks & Wing, 1976; Rutter, 1983; Sigman, Mundy, Sherman & Ungerer, 1986; Stone, Ousley, Yoder, Hogan & Hepburn, 1997).

However, this deficit model of description, as well as the broad nature of the term 'non-verbal communication', may in many ways fail to acknowledge the potential non-verbal skills that children with autism have been shown to possess. For example, studies have shown that children with autism, although impaired in their use of non-verbal communication, are comparable to controls in their use of specific gestures to request an object (e.g. protoimperative pointing) or to immediately influence another's behaviour (e.g. finger on the lips to indicate 'be quiet') (Baron-Cohen, 1989; Attwood, Frith & Hermelin, 1988). These differences have been explained in terms of difficulties encountered by children with autism in establishing and maintaining shared-attention

and in the development of a theory of mind (Baron-Cohen, 1993; Loveland and Landry, 1986; Mundy, Sigman, Ungerer & Sherman, 1986; Sigman, Mundy, Sherman & Ungerer, 1986). As such, joint attention gestures are seemingly thought to be less well developed in children with autism than in 'typically' developing children.

8.3 Non-verbal Communication, Gesture and Specific Language Impairment

The use of gesture in children with specific language impairment appears to be a relatively recent area of interest and as yet, an underdeveloped area of research. Some studies have reported difficulties in the use of gesture by children with SLI (Bartak, Rutter & Cox, 1975; Bishop, Chan, Adams, Hartley and Weir, 2000; Hill, 1998), but these studies have varied considerably as to their coding of 'non-verbal communication' and their data collection methods. However, generally it appears that in descriptions of children with SLI they are not portrayed as having specific difficulties in their use of gesture.

Indeed, it has been suggested that some children with SLI may in fact compensate for their difficulties in spoken language through their use of gesture (Fex & Mansson, 1998). This is a phenomenon seen in children with hearing difficulties (Goldin-Meadow & Mylander, 1998).

A study by Fex and Mansson (1998) investigating the use of gesture as a compensatory strategy in adults with acquired aphasia and children with specific language impairment concluded that both groups appear to use gestures to compensate for their language difficulties. This study cited work by Mansson and Lunstrom (1996) who compared 8 children with specific language impairment with 8 controls (ages 3 to 6) with regard to

their non-verbal communication. Video recordings of the children in a communicative interaction with an adult were analysed and the data appeared to indicate more use of gesture by children in the SLI group. Although this overall finding was not statistically significant, further analysis identified statistical differences in the type and frequency of gesture used by children with SLI when compared with controls.

8.4 Purpose of the Study & Hypotheses

With this somewhat conflicting overview, the following hypotheses are proposed:

8.4.1 Hypothesis 1

Children with Autistic Spectrum Disorder (ASD) diagnoses will display less gesture than children with SLI and an age-matched typically developing control group.

8.4.2 Hypothesis 2

Children with SLI will compensate for their difficulties in expressive language by using more gesture than both the ASD and typically developing control group.

Some children with SLI are educated within specialist language units that use sign language as a teaching tool to varying degrees and many have input from Speech and Language Therapists. Therefore, if Hypothesis 2 is supported, it may be argued that any compensation by children with SLI could be related to increased exposure to sign language through professional intervention.

If it is assumed that the older children are, the more specialist input involving sign language they would have received, it might be expected that in assimilating such

approaches, the children with SLI will consequently use more gesture as they get older. However, in contrast, it may also be argued that as children get older and receive more professional input, their language difficulties would diminish somewhat, negating the need for them to compensate with gesture.

From these tentative assumptions, third and fourth hypotheses are presented:

8.4.3 Hypothesis 3

'For children with SLI, gesture use will be positively correlated with age'.

8.4.4 Hypothesis 4

'For children with SLI, expressive and receptive language scores will be positively correlated with age'.

It is hoped that by increasing understanding of some of the abilities and difficulties experienced by children with regards to their non-verbal communication, this research will provide ideas that may advance assessment techniques and interventions for children with autism and specific language impairments.

9 Method

9.1 Participants

Three groups of children were selected; two clinical groups developing atypically and a control group of typically developing children attending a mainstream primary school (N=68). One clinical group comprised 14 children diagnosed with Autistic disorder,

Asperger's disorder or autistic spectrum disorder (ASD) and for brevity will be henceforth referred to as the 'ASD' group. The other clinical group included 12 children with specific language impairments (SLI). All children spoke English as their first language. The children were aged between 7 and 12 years at the time of inclusion and parental consent was obtained for all children who took part in the study. Although the mean age of the ASD group was slightly older than the other two groups, there was no significant difference in mean age across all 3 groups (Figure I-1). None of the children in the control group was receiving Speech and Language Therapy nor were they in receipt of a Statement of Special Educational Needs.

Children with ASD were drawn from existing clinical caseloads and had been diagnosed following a multi-disciplinary assessment using the criteria for Autistic disorder and/or Asperger's disorder, as outlined in the Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition (DSM-IV, American Psychiatric Association, 1994). Inclusion in the study required the children with ASD to have intelligible speech and a full scale IQ above 70, as measured by the Wechsler Intelligence Scale for Children (UK) – 3rd Edition (WISC-III(UK), Wechsler, 1991). In this respect they could be deemed to be children with 'high functioning' autism.

Children with SLI were recruited from language units specialising in provision for children with SLI and from Speech and Language Therapist caseloads across the region. Children with a co-morbid diagnosis of 'autism', 'Asperger's disorder', ASD, or probable 'autistic spectrum disorder' were excluded from this group, as well as those whose speech was unintelligible or who had major physical, emotional or behavioural characteristics that contributed significantly to their language difficulties.

9.2 Procedures

9.2.1 Standardised Assessments

The receptive and expressive language abilities of children in the ASD and SLI groups were measured using the Clinical Evaluation of Language Fundamentals-Revised (CELF-R: Semel, Wiig & Secord, 1987). The CELF-R is standardised on a representative sample of 2426 students. For the receptive and expressive language composite scores, test-retest reliability has been shown to be $r=0.63$ and $r=0.79$, respectively (Semel, Wiig & Secord, 1987). A score of 100 on the receptive and expressive composite scores is deemed to be 'average' in a typical population.

The Verbal, Performance and Full-scale Intelligence Quotients were measured using the Wechsler Intelligence Scale for Children (UK) – 3rd Edition. The WISC-III UK is validated using a sample of 824 UK test administrations and the Wechsler measures have been widely seen as the best measure of changes in cognitive abilities (Brand, Freshwater and Dockrell, 1989; Lynn & Mulherne, 1991). For a Full Scale IQ, split-half reliability has been shown to be $r=0.96$ across the age range 6-16, with a test-retest reliability of $r=0.95$.

9.2.2 Conversational Interactions

In addition to the standardised assessments applied to children in the SLI and ASD groups, all children who took part in the study were asked to enter into an informal, semi-structured conversation with a researcher. The conversation covered 5 main topics including favourite television programme, a recent film, places to visit, hobbies and friends. The interactions lasted approximately 10 minutes and were both audio and

video recorded. To maximise reliability, the same researcher interviewed all 94 children who took part in the study. The researcher also attempted to minimise any gestures, so as to reduce the risk of modelling behaviour.

9.2.3 Pilot analysis and Coding

In attempting to incorporate the detail of gesture into a coding system that was valid and reliable, but also manageable, a pilot study was carried out using the observational data from 48 randomly selected participants from the control group.

Following analysis of this data using a variety of trial coding systems, it was decided to use an adapted version of the classification system proposed by Eckman and Friesen, (1972). They suggest that the classification *'provides a good categorisation of gestures and...allows clinicians to describe the gestures of their patients in detail...[even] in the absence of the spoken word'*. The coding system highlights 5 different types of non-verbal behaviours that may be described as 'gestures', these are:

- Emblems (*non-verbal acts that have a direct verbal translation*)
- Illustrators (*movements tied directly to speech and serving to illustrate what is being said verbally*)
- Affect Displays (*displays of emotion (happy, other), primarily located in the face*)
- Regulators (*acts which maintain and regulate the back and forth nature of speaking*)
- Adaptors (*other movements used to satisfy self or bodily needs or manage emotions*).

Unsurprisingly, this is not the only classification of non-verbal skills available, with other systems having been proposed (for example; McNeil and Levy, 1982). However, it was felt to be the most manageable within the constraints of this research.

Despite this, during the pilot study, the precise use and definition of the categories was questioned and adapted so as to provide a coding system that would elicit the most useful data set. As a result, it was decided that the following six categories were to be used:

9.2.3.1 Emblems and Head nods

Emblems are non-verbal acts that have a direct verbal translation (e.g. head nod, thumbs up, waving goodbye). They are usually therefore culturally defined. Although a head nod to indicate 'yes' or 'no' could fall into the category of 'emblem', it is also deemed by Eckman and Friesen (1969) to be a 'regulator', an act that maintains the back and forth nature of conversation.

It was felt therefore that the two categories of 'head nod' would be included independently as they were distinct from emblems created with the hands, such as the 'thumbs up' sign and from other regulators as described later. Head nods were also plentiful throughout the data, and it was felt that their significance may be lost if included in a category with all other emblematic gestures or regulators. Furthermore, it was felt that head nods accompanying speech felt qualitatively different for the observer from those that were used without speech. 'Head nods with speech' were coded when the person nodded and said yes or no at the same time. 'Head nods without speech'

were coded when a participant responded yes or no, by using their head only. In this way, they were deemed to be acts in place of speech rather than tied to speech.

9.2.3.2 Illustrators

According to Eckman and Friesen (1969), illustrators are movements that are directly tied to speech and serve to illustrate what is being said verbally. They include beats and pointing movements, movements that draw 'pictures' to describe objects, spatial relationships or bodily action. During the pilot, the illustrator category appeared fairly consistent and robust and therefore was included in the analysis as described by Eckman and Friesen (1969).

9.2.3.3 Affect displays - Smiles

Affect displays are displays of emotion that are usually located in the face. Throughout the pilot study, the only affect displays that could be accurately detected in any significant numbers were smiles. Therefore, this category was restricted to coding 'smiles' only.

9.2.3.4 Regulators

As defined by Eckman and Friesen, these are '*acts which maintain the back-and-forth nature of speaking and listening between two or more interactants*'. The most common of these is the head nod, but this category can include slight postural shifts, eye movements and eyebrow raises. Eckman and Friesen propose that this category is reserved for those behaviours that do not fit into their other categories, and therefore during the pilot, it was very difficult to find a consensus between researchers as to what exact movements were to be included in this category. This was partly the reason for

viewing 'head nods' as independent categories. Nevertheless, it was felt important for this category to remain, as it included movements that had a 'socially' important element. Regulators were mainly observed to occur independently from speech.

9.2.3.5 Adaptors

Eckman and Friesen's final category describes movements that are thought to have been learned to '*satisfy self or bodily needs, perform bodily actions or to manage emotions*'. There are many such subtle movements, for example, those that are consistent with grooming (e.g. running the hands through the hair), blocking or adapting speech (e.g. hand to chin, licking the lips, or hand to face), nervous mannerisms (e.g. picking nails) or flirtatious movements (e.g. hair-flick). During the pilot, it became clear that these 'adaptive behaviours' were almost constantly displayed by most of the participants, especially by the way of nervous mannerisms. Therefore, it was not felt that this category would be particularly discriminating between the groups. It was decided to omit this category completely from the analysis.

9.2.3.6 Non-verbal acts with and without speech

On analysis, as well as the total number of non-verbal acts observed, two further sub-totals were created; 'Non-verbal acts performed with speech' and 'non-verbal acts performed independent of speech'. The first sub-total included summed data from the 'head nod with speech' and 'illustrator' categories, as these coded only movements that occurred with speech. The second sub-total included summed data from the 'head nod without speech', 'emblem', 'regulator' and 'smile' categories, as these were deemed to include acts that did not directly accompany speech.

9.2.4 Analysis of Interactions

Following the pilot, and with the adapted coding system in place, the main study could proceed. Each ten-minute conversation was converted from videotape onto the computer. The middle four minutes of each interaction was then identified using a computer-based video-editing package. The data was then analysed for non-verbal communication using the Observer computer software package (Noldus Information Technology), a specialised programme designed to analyse observational data. The following six categories of gesture were measured by counting the number of discrete non-verbal acts observed:

- Head nod with speech
- Head nod without speech
- Other emblems
- Illustrators
- Regulators
- Affect display-smiles only (coded as smiles)

To maximise reliability, two researchers, one blind to group status, rated the data independently.

10 Results

10.1 Reliability Data

10.1.1 Observer Drift

Observer drift was measured using the data from ten randomly selected participants, analysed by each researcher at the beginning and end of a three-month period.

Correlation coefficients were calculated for the means of all six sub-categories, as well as the mean total of all non-verbal acts. Using Spearman's rho (r_s) correlation coefficients for the sub-tests were in the range $r_s = 0.75 - 0.98$. For the non-verbal total score, there was a correlation coefficient of $r_s = 0.99$.

10.1.2 Inter-rater reliability

Inter-rater reliability was measured using data from ten randomly selected participants. Using Spearman's rho (r_s) inter-rater reliability correlation coefficients were in the range $r_s = 0.76 - 0.99$. For the non-verbal total score, there was an inter-rater reliability correlation coefficient of $r_s = 0.96$.

10.2 Background Data

Table II-1 shows data across the three groups with regards to participant gender, age, verbal and performance IQ, and receptive and expressive language scores.

Table II-1: Mean (SD) age, verbal IQ, performance IQ, expressive and receptive language scores for children in the Control, ASD and SLI groups

Group	Control N=68		ASD N=14		SLI N=12	
	Mean	SD	Mean	SD	Mean	SD
N (boys+girls)	36 +32		13+1		9+3	
Age (months)	115.84	14.11	118.57	21.92	112.10	18.18
Verbal IQ	~	~	97.07	13.32	85.25*	9.44
Performance IQ	~	~	91.00	17.11	89.92	13.03
Expressive Language Score	~	~	82.64	9.89	74.58*	8.82
Receptive Language Score	~	~	93.21	14.09	86.42	10.77

* $p < 0.05$

The three groups did not differ with respect to age ($F = 0.53$, $df = 2, 91$, $p = 0.59$). In comparing the ASD group with the SLI group using independent t-tests, there was no difference in performance (non-verbal) IQ ($t = 0.18$, $df = 24$, $p = 0.86$) as measured by the WISC-II UK, or receptive language score ($t = 1.36$, $df = 24$, $p = 0.19$) as measured by the CELF-R. However, the ASD group had a significantly higher verbal IQ ($t = 2.57$, $df = 24$, $p = 0.02$), and a significantly higher expressive language score ($t = 2.18$, $df = 24$, $p = 0.04$). In addition, there were marked differences between the groups in terms of gender, with the control group containing comparatively more females than the other two groups.

10.3 Non-verbal communication data – Hypotheses 1 & 2

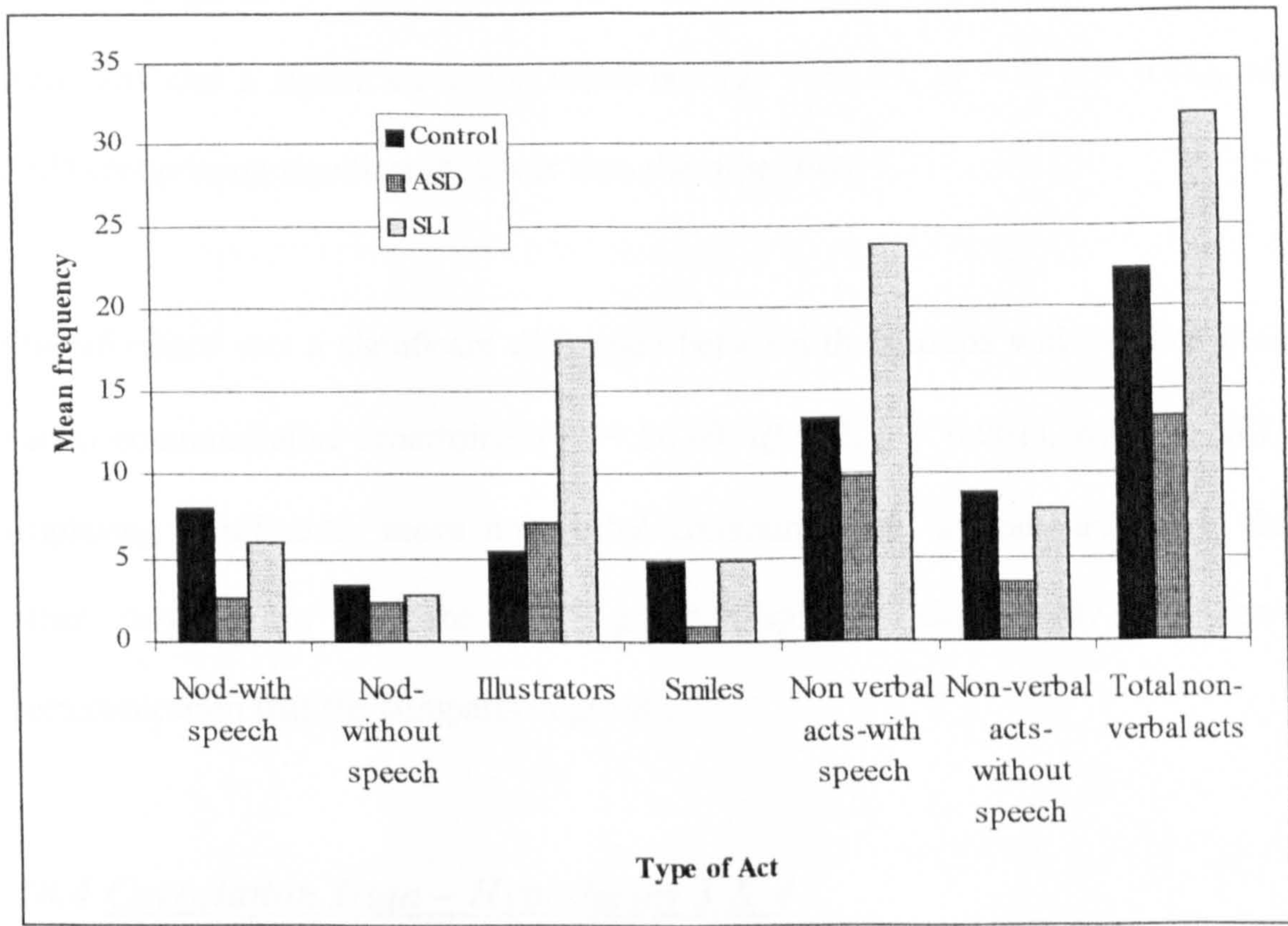
Following tests for skewness, it was felt that as much of the data violated the homogeneity of variance assumption, non-parametric statistical analysis would be carried out.

Table II-2: Mean (SD) incidences of non-verbal communication acts recorded

Type of Act	Control (N=68)		ASD (N=14)		SLI (N=12)	
	Mean	SD	Mean	SD	Mean	SD
Nod with speech	7.99	5.14	2.64**	2.31	6.00	5.58
Nod without speech	3.37	4.20	2.29	2.84	2.75	2.75
Emblems	<0.01	0.24	<0.01	0.27	0.00	0.00
Illustrators	5.37	7.03	7.21	7.85	18.08*	13.65
Regulators	0.63	1.26	0.21	0.58	0.33	0.65
Smiles	4.85	3.83	0.93**	1.33	4.83	3.33
Non-verbal acts performed with speech (Nod-with speech + illustrators)	13.35	8.29	9.86	6.99	23.83*	12.19
Non-verbal acts performed without speech (Nod-without speech, emblems, regulators, smiles)	8.88	5.79	3.50*	3.20	7.92	4.32
Total non-verbal acts	22.24	10.25	13.39	7.81	31.75**	12.56

* $p < 0.01$; ** $p \leq 0.001$

Figure II-1: A histogram showing mean incidences of non-verbal communication acts recorded by group



Statistical analysis using Kruskal-Wallis one-way analysis of variance and further exploration using the Mann-Whitney ‘*U*’, found no significant differences across the three groups with respect to ‘nod-without speech’, ‘emblems’ and ‘regulators’. However, there was a significant group effect with regard to ‘nod-with speech’ ($\chi^2 = 14.47$, $df = 2$, $p = 0.01$), and ‘smiles’ ($\chi^2 = 18.55$, $df = 2$, $p < 0.001$), with the ASD group producing significantly less than the other two groups on both of these non-verbal acts. The SLI group produced significantly more illustrators than the other two groups ($\chi^2 = 12.75$, $df = 2$, $p = 0.002$).

With respect to non-verbal acts that were produced with speech, there was a significant group difference ($\chi^2 = 11.46, df = 2, p = 0.003$), with the SLI group producing more of this type of gesture. When gestures that were performed without speech were analysed, there was also a significant group difference ($\chi^2 = 14.47, df = 2, p = 0.01$), with the ASD group being significantly lower than the other two.

Overall, there was a significant difference between the groups with regards their non-verbal communicative repertoires ($\chi^2 = 16.40, df = 2, p < 0.001$), with the SLI group displaying significantly more non-verbal communication, as measured here, than the other two groups and the ASD group displaying significantly less non-verbal communication than the comparison groups.

10.4 Correlation Data – Hypotheses 3 & 4

Hypotheses 3 and 4, which explored the relationships between age, gesture use and receptive and expressive language abilities within the SLI group were examined using Spearman's rho (r_s) correlation coefficients. Other variables included in the analyses were Verbal and Performance IQ scores. In addition, where possible a similar analysis was carried out for the ASD group and control group.

The results as shown by Figure II-2 indicate a significant *negative* correlation between age and non-verbal total for the SLI group ($r_s = -0.79, N=12, p < 0.01$) and therefore Hypothesis 3 cannot be supported. This finding was not mirrored in the ASD or control groups ($r_s = -0.30, N=14, p = ns; r_s = 0.11, N=68, p = ns$, respectively).

Furthermore, when the non-verbal total was broken down into sub-totals with- and without-speech there was a weak correlation between 'non-verbal acts-without speech' and 'age' for the SLI group ($r_s = 0.08$, $N=12$, $p = ns$), but a strong significant negative correlation between 'non-verbal acts-with speech' and age ($r_s = -0.80$, $N=12$, $p < 0.01$) – see Figure II-3. This finding is in contrast to the control group, who showed a tendency to use more non-verbal acts-with speech as age increased ($r_s = 0.25$, $N=68$, $p < 0.05$). Again, no strong correlations with regards 'non-verbal acts-with speech' and 'age' were observed in the ASD group ($r_s = -0.18$, $N=14$, $p = ns$)

Figure II-2: A scatter plot showing a significant negative correlation between age and non-verbal total within the SLI group.

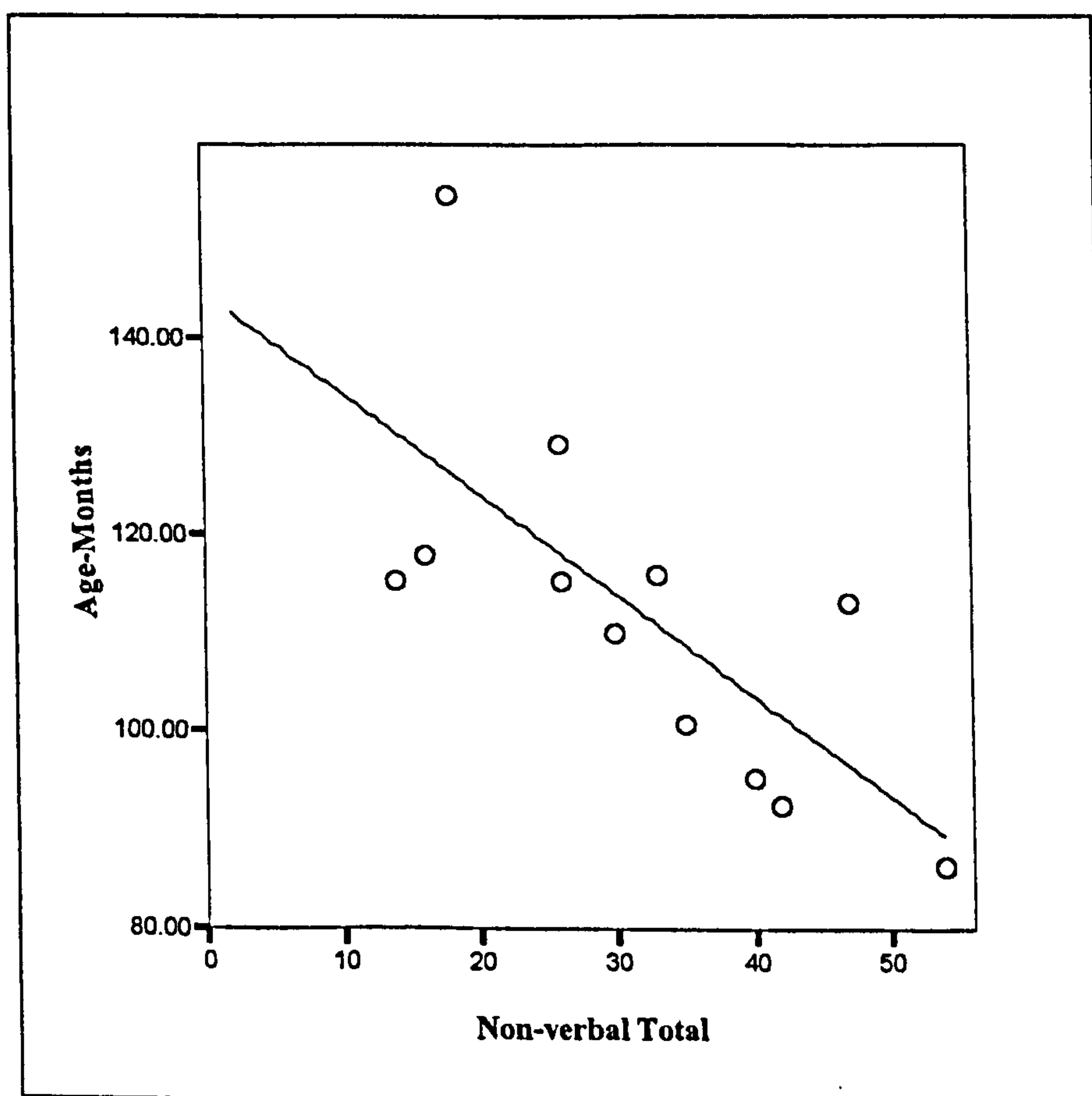
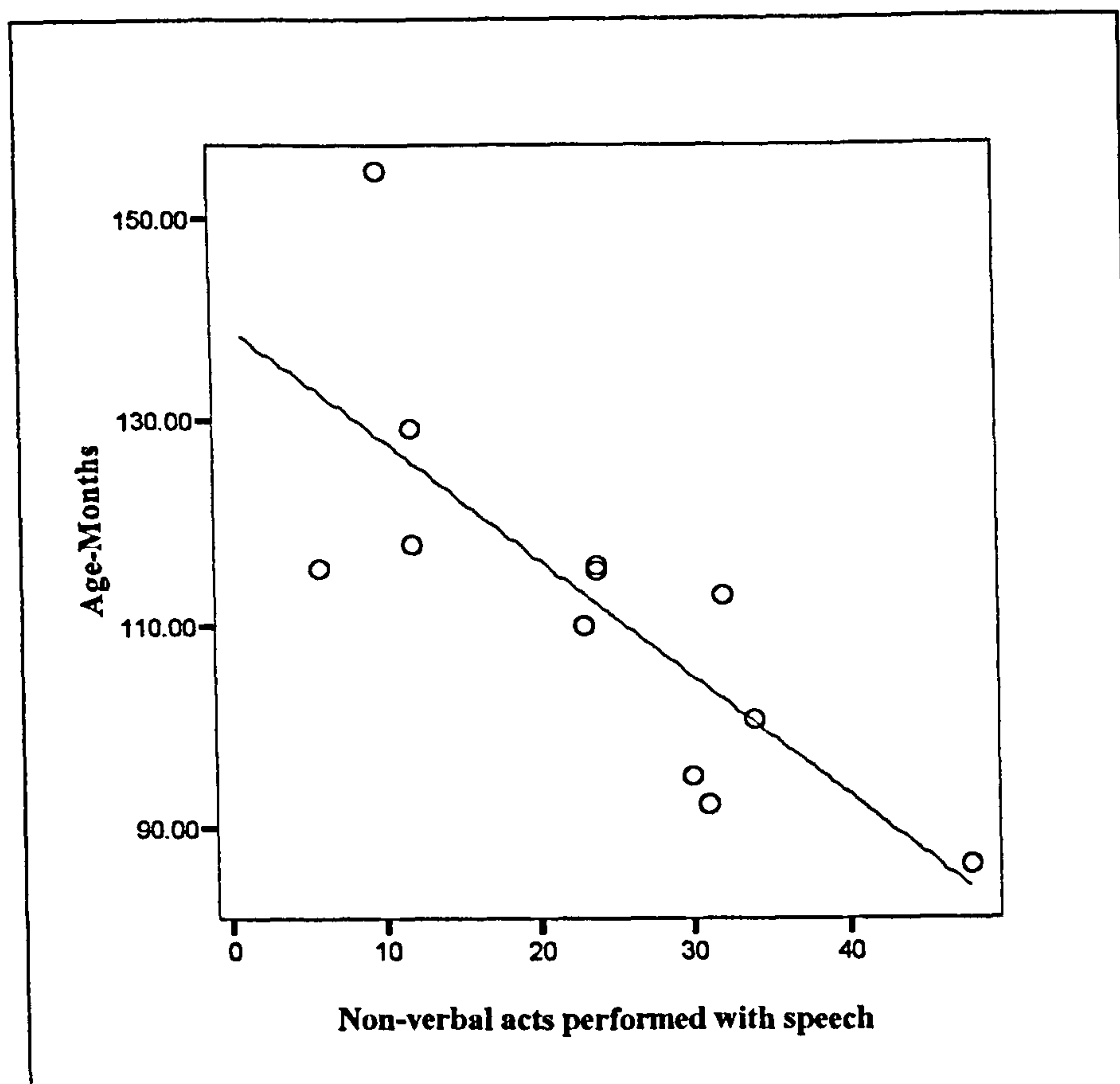


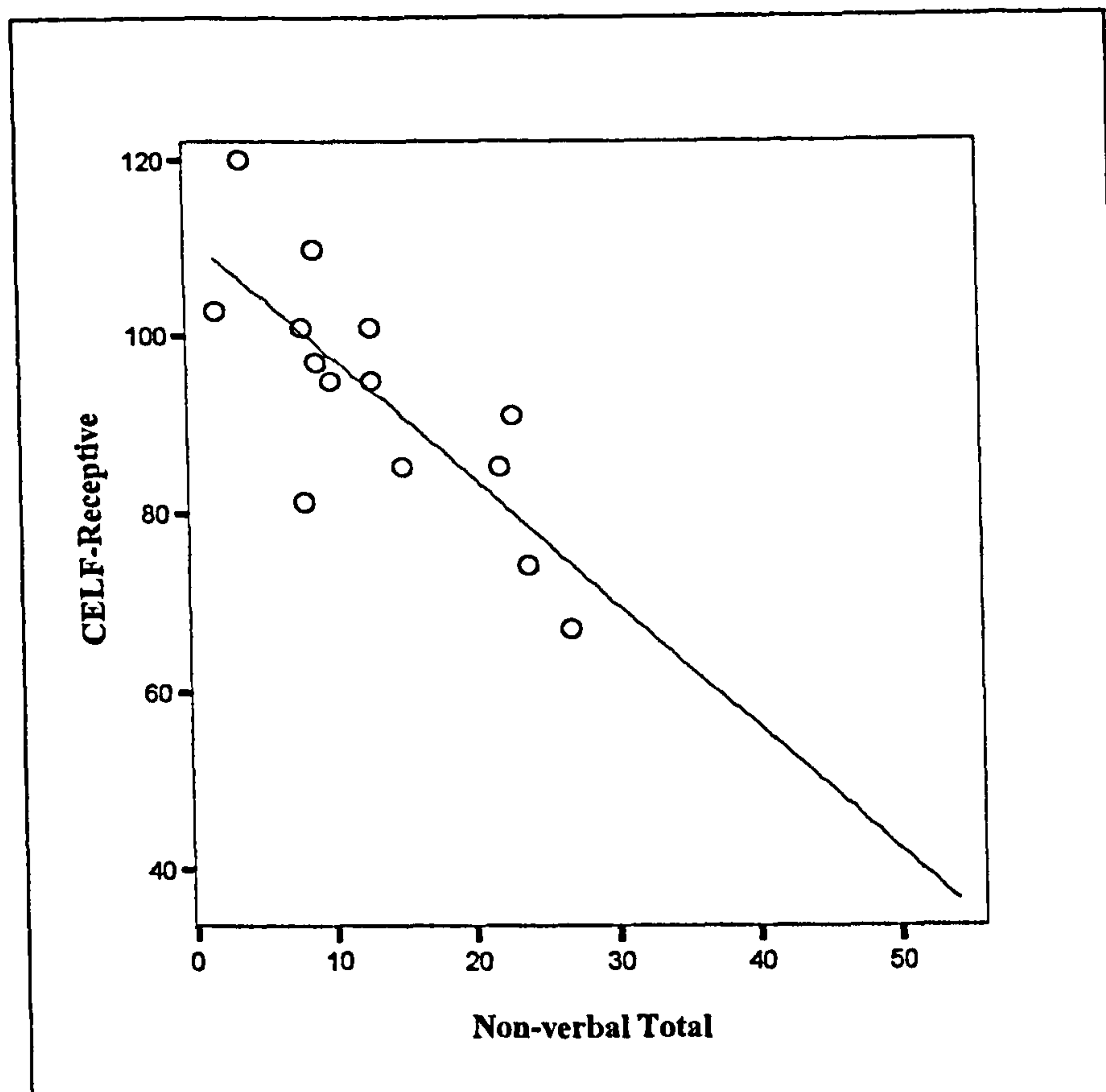
Figure II-3: A scatter plot showing a significant negative correlation between age and non-verbal acts-with speech within the SLI group.



In examining Hypothesis 4, the results show no significant correlations between age, and expressive or receptive language scores for the SLI group ($r_s = 0.44$, $N=12$, $p = ns$; $r_s = 0.40$, $N=12$, $p = ns$). Hypothesis 4 was therefore not supported. No other significant correlations were observed for this group with regards expressive or receptive language scores.

When exploring relationships within the ASD group a significant negative correlation was observed between non-verbal total and receptive language score ($r_s = -0.74$, $N=14$, $p < 0.01$) – see Figure II-4. There were no other significant correlations for this group from the analysis.

Figure II-4: A scatter plot showing a significant negative correlation between receptive language score and non-verbal total within the ASD group.



11 Discussion

From analysis of the results, this study appears to support the notion that there are marked, measurable and seemingly discriminating differences in the type and frequency of gesture usage by children with SLI, children with ASD and chronological age-matched typically developing children.

In support of Hypothesis 2 and the study by Mansson and Lunstrom (1996), Children with SLI were observed to display noticeably more gesture overall in comparison to children with ASD and the control group. However on further analysis, it was a high dependence on gestures that accompanied speech (in particular illustrators) that appeared to characterise the SLI group most readily. Such gesture could be deemed to

be very descriptive and tends to present pictures or 'illustrations' of what is being said. The attempt to provide this apparently enhanced visual aid for the listener could be viewed as a sophisticated mechanism employed by children with SLI to compensate for deficits in the verbal modality. Such a finding is in contrast to some previous research (e.g. Bartak, Rutter & Cox, 1975; Bishop, Chan, Adams, Hartley and Weir, 2000; Hill, 1998, 2001) and it is argued that this may be as a result of the different coding mechanisms, levels of analyses and data collection methods used within these studies.

In contrast and somewhat unsurprisingly given previous research (e.g. Attwood, Frith & Hermelin, 1988; Bartak, Rutter & Cox, 1975; Landry & Loveland, 1988; Langdell, 1981; Ricks & Wing, 1976; Rutter, 1983), children in the ASD group were observed to display markedly less gesture overall than the comparison groups. This phenomenon, supporting Hypothesis 1, was observed particularly in the children's use of smiles and head nods that accompanied speech. However, in some categories of gesture use, namely 'illustrators' and 'head nods-without speech', children with ASD were shown to display amounts of non-verbal communication comparable to their age-matched counterparts. Interventions targeted at developing such gestural communications may be a fruitful avenue for future research.

The ASD group's use of illustrators was thought to be particularly interesting. Although not using as much illustrative gesture as the SLI group, the children with ASD clearly had some ability to use this type of gesture in getting their message understood. If we assume that the expressive language of the control group is indicative of the general population, it may be that the comparable performance of the ASD group in their use of illustrators is due to a similar 'compensation effect' observed in the children

with SLI. However, unlike children with SLI, the amount of compensation observed in children with ASD is likely to be tempered by deficits in shared attention skills, theory of mind development and broader communication skills.

In this study, although matched on receptive language, the ASD group had significantly greater expressive language skills overall than the SLI group. Therefore, it could be argued that with more advanced expressive language ability, the children with ASD had less need to compensate for their verbal deficits than the SLI group. Therefore, it may be that children with ASD actually have a greater potential for compensating than observed in this study and the proposed 'tempering' effect of their broader communication deficit, although prevalent, may be less significant. This is clearly an area for further research using groups matched on expressive language abilities.

Children use gesture that accompanies speech significantly less than adults (Mayberry, Jaques and DeDe, 1998), suggesting that gesture use tends to increase, or at least does not decrease, as children get older. Results from the control group would tentatively support this idea. However surprisingly and in support of the *null* Hypothesis 3, for the SLI group this study shows a strong significant *negative* correlation with age, indicating that gesture use *decreases* as children with SLI get older. A small sample and the limitations of correlation data mean that no firm conclusions can be drawn. However, if it is assumed that children have had more exposure to specialist sign language the older they are, such a pattern may question any notion that increased use of gesture is directly related to increased exposure to professional involvement using sign language. Furthermore, it seems sensible to assume that as the children's language becomes more sophisticated with age, their need for compensation diminishes and therefore their

gesture use reduces accordingly. The developmental course of gesture use, in both children with typical and atypical development patterns is one area that requires further investigation.

A particularly interesting finding was the strong negative correlation between frequency of non-verbal acts accompanying speech and receptive language score in the ASD group. This suggests that as children with ASD develop better receptive language skills, their use of gesture diminishes. It is thought that the use of gesture may play an active part in enhancing the thinking process (Goldin-Meadow & Iverson, 1998). Indeed, children have been observed to use most gestures when they are in difficult 'problem-solving' situations (Goldin-Meadow, 1998; Iverson, 1998). If this were to be the case, then it could be argued that if children with ASD do use some forms of gesture to accompany and even compensate for their language difficulties (although tempered by other factors associated with a broader communication deficit), the underlying reason for this may be to aid their *own* understanding of the conversation in some way, rather than to aid the listener in determining what they are trying to convey. It is possible therefore that this may indicate a different 'pathway to compensation' for children with ASD than for children with SLI. In other words, whereas children with SLI seemingly 'throw' all means of communication towards the listener, whether verbal or non-verbal, in an attempt to get their message to 'stick' and be understood, children with ASD may be using some gestures in an attempt to understand the message being conveyed to them in the first place.

From a qualitative perspective, the SLI group were deemed to be more animated and engaging than both the control group and ASD sample. This subjective opinion was

observed by both the researcher who had interviewed the children and a second researcher who analysed the data blind to group status. Clearly, such a phenomenon may be linked to increased use of gesture, but may also be due to more subtle non-verbal communications.

There are some limitations of this study, particularly in relation to the sample characteristics. Clearly, the sample sizes in this study are small, and therefore any conclusions drawn from the results can only be speculative. Accurate diagnoses are also difficult to determine, especially with differing subjective interpretations and co-morbid characteristics. For example, the use of the term 'high-functioning' with reference to the ASD group within this paper is one that is not clearly defined diagnostically and therefore the generalisability of these results to children with autism and below average IQ may be questioned.

A further limiting factor of the data may be the clear gender differences across the groups, particularly in relation to the control group, which included disproportionate numbers of girls compared to the two clinical groups. The decision to include approximately equal numbers of males and females in the control group was taken for two reasons. Firstly, it provided a reasonable sample size to enable further analysis to be undertaken regarding the developmental course of gesture in childhood. Secondly, the literature suggests that in general females gesture significantly more, and are more sensitive to non-verbal cues than males in a normal population (Hall, 1984, 1998). Therefore, as the control sample had proportionally more females, it would be expected to produce significantly more gesture overall than the SLI or ASD sample. In other words, by including proportionally more females in the control group it artificially

raised the overall level of gesture in the control sample in comparison to the clinical groups. Thus, the differences observed between the SLI group and the control group are more likely to be greater than this study reports, adding more credence to the notion that children with SLI compensate for their language difficulties by using increased amounts of gesture.

The coding system employed was also an area for bias, and further research may want to include non-verbal communications such as eye contact and more sophisticated facial expressions within the coding system.

Procedural biases could also be seen as limitations of this study. While every attempt was made to minimise the use of gesture by the researcher in the conversational interaction, there are likely to have been times when this was unavoidable. In addition, the researcher was a male and this may have contributed to any gender differences that were observed. The choice of topic for conversation in the semi-structured conversation may have been improved; in particular the subject of 'friends' was problematic at times. Nevertheless, the majority of children were able to develop their own topics of conversation adequately.

11.1 Clinical Implications and Conclusions

Clearly, if the findings of this investigation are supported, there are widespread clinical implications. From clinical experience the authors feel that although non-verbal communication skills are basic tenets of a child's overall communicative potential, and in some cases are recognised as fundamental in identifying children with particular

developmental difficulties, their importance is all too often underestimated, particularly within an assessment framework.

These results appear to support the notion that detailed analysis of patterns within a child's gestural repertoire can be used to identify children with specific difficulties. Although valuable in their own right, it is suspected that solely relying on traditional 'in-the-moment' observational techniques, professional or parent reports, or questionnaire data cannot achieve this level of analysis.

With this in mind, it is interesting to note that the researcher interviewed the children randomly and could not notice a discernable difference in terms of gesture use between individual children at the time of the interview, even with the pre-determined knowledge of the research theme. However, once the video-clips were grouped together and then analysed, the differences were stark. Therefore, if gesture is to be used as a reliable tool within a clinical setting, video recording of the child in conversation seems to be an essential requirement of any assessment process.

In terms of other assessment implications, it is proposed that analysis of the gesture of children with semantic-pragmatic disorder (SPD) may provide important information for the ongoing debate as to the position of SPD with respect to ASD and SLI. For example, if children with SPD do not display similar 'gestural compensation' as children with SLI appear to do, then it could be argued that they are more likely to be viewed within an autism framework. Clearly, further research is needed with this clinical group in comparison to children with ASD and SLI.

More emphasis placed on gestural development may also lead to the development of specific interventions targeted at promoting naturalistic gestural abilities in children with developmental and communication difficulties. This is in addition to more traditional sign language approaches sometimes used in a clinical setting. Again, further research is necessary.

As well as within a clinical setting the use of gesture as a teaching aid could also be beneficial within an educational arena. Indeed, some suggest that gesture may be able to help the learning process, particularly in the area of problem solving (Goldin-Meadow, Alibali & Church, 1993; Goldin-Meadow & Iverson, 1998).

In conclusion, it is hoped that this study will provide a springboard for further research that enables a greater understanding of how gesture may be used to supplement existing knowledge and provide advances in assessment and intervention, in order that children can be helped to reach their communicative potential.

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Chapter III: Empirical Research Paper 2

A key to unlocking the boundaries? - The use of the Children's Communication Checklist in the assessment of children with Specific Language Impairments and children with Autistic Spectrum Disorders.

Chapter word count (Excluding tables & references) : 3399

13 Abstract

This study investigated differences between children with Autistic Spectrum Disorders (ASD) and children with Specific Language Impairments (SLI) with regards to parent and professional ratings on the Children's Communication Checklist (CCC: Bishop, 1998). The CCC is a 70-item checklist, broken down into 9 sub-scales and is designed to assess pragmatic language abilities in children with communication impairments. A sample of 16 children diagnosed with ASD and 12 children with SLI matched on age and non-verbal IQ were recruited to the study. Parents and relevant professionals were asked to complete the CCC for each child and comparisons were made between the different scores. Parent and professional inter-rater agreement was shown to be poor for some sub-scales and a parent/professional combined score was deemed to be the most valid way of analysing scores from the CCC. Overall, children with ASD were shown to have a different *profile* of results to those with SLI. The CCC was deemed to be an effective and useful tool in supplementing other assessment methods to discriminate children with ASD from children with SLI.

Keywords: Children's Communication Checklist, language impairment, pragmatics, autism, autistic spectrum disorders, assessment.

Abbreviations: CCC: Children's Communication Checklist; SLI: Specific Language Impairment; ASD: Autistic Spectrum Disorders; SPD: Semantic Pragmatic Disorder; PLI: Pragmatic Language Impairment.

14 Introduction

Specific Language Impairment (SLI) is a heterogeneous classification which characterises children who have non-verbal intelligence scores within normal limits (Miller, Kail, Leonard & Tomblin, 2001), but are likely to display significant difficulties with language in the *absence* of neurological damage, hearing impairment, mental or physical handicap, or emotional difficulties (Leonard, 1998; Friel-Patti, 1999; Hill, 2001). Despite these defining characteristics, there seems to be no universally accepted process for the diagnosis of 'specific language impairment' (Ahmed, Lombardino & Leonard, 2001) and due a wide variability in presentation, clinicians and researchers have struggled to provide an effective means of sub-classifying children with SLI.

A particular sub-type of SLI that has produced much debate appears to describe children that have few difficulties with the complexities of language form (phonology and grammar), but have particular problems in their use of language in conversation (the pragmatics of language). This sub-type has been termed 'semantic-pragmatic syndrome' (Rapin & Allen, 1983), 'semantic-pragmatic disorder' (SPD: Bishop & Rosenbloom, 1987) or more recently 'pragmatic-language impairment' (PLI: Bishop, 1998). In recognising a debate continues as to the most appropriate label, this study will use both the term SPD and PLI interchangeably throughout.

One difficulty with such a classification is that children with a clinical profile of SPD often have characteristics similar to those with autism (Rapin & Allen, 1983, 1987). Therefore, its validity as a distinct sub-group, independent of high-functioning autism,

has been a topic of much debate (Bishop & Rosenbloom, 1987; Bishop, 1989; Bishop, 2000; Botting & Conti-Ramsden, 1999; Boucher, 1998a, 1998b).

Autism is a pervasive developmental disorder that is characterised by a triad of impairments in social communication, social relationships and imagination (Wing and Gould, 1979). Difficulties in the pragmatic use of language are therefore defining characteristics of children with autism. Although autism was originally conceptualised as a syndrome (Kanner, 1943), it is often thought of as a 'spectrum', consisting of related, but distinct subtypes including, for example, Asperger's disorder (Asperger, 1944; Wing, 1981). The term 'autistic spectrum disorder' (ASD), although not recognised diagnostically, has been used clinically to characterise such individuals and will be used throughout this paper.

In an attempt to clarify the position of Semantic-Pragmatic Disorder (SPD) in relation to specific language impairment (SLI) and Autistic Spectrum Disorder (ASD) and provide a useful clinical tool for considering the pragmatic language difficulties of children, Bishop (1998) developed the Children's Communication Checklist (CCC) – *see Appendix C*. The CCC assesses various aspects of language structure, pragmatic language skills and behaviour such as social relationships and interests and was devised using a sample of 76 children aged 7-9 years with identified language impairments. It comprises 70 statements, broken down into the following 9 sub-scales:

- A: Speech
- B: Syntax
- C: Inappropriate Initiation
- D: Coherence
- E: Stereotyped Language
- F: Use of Language: Context
- G: Rapport

- H: Social Relationships
- I: Interests

Respondents are asked to judge whether each statement *'does not apply'*, *'applies somewhat'*, or *'definitely applies'* to the child in question. For items where respondents have difficulty in providing an adequate opinion there is an additional answer of *'unable to judge'*. In order to achieve a valid and informed outcome, professionals completing the checklist are asked to have known the child for at least three months.

Each sub-scale is scored following a pre-defined scoring method, and a 'pragmatic composite' is generated from the totals of sub-scales C to G. A score of 132 or below on this composite score has been suggested to be indicative of children with significant pragmatic language difficulties, as opposed to children with more typical SLI (Bishop, 1998).

Some studies have subsequently used the CCC in an attempt to compare various clinical groups. In one such study by Botting and Conti-Ramsden (1999), 10 children with pragmatic language impairments (PLI) were compared with each other and a control group of 148 children with more typical specific language impairments on the CCC and various other tests of language. Particular differences between the groups were observed on the 'E: Stereotyped language', 'F: Use of language: context' and 'G: Rapport' sub-scales of the CCC, with many children with PLI scoring at least 2 standard deviations below the SLI mean on these items. However, despite the group of PLI children being identified by teachers and therapists as having primarily semantic-pragmatic difficulties, having CCC pragmatic composite ratings below the suggested cut-off of 133 and being independently rated by the researcher as having primarily

pragmatic language impairment, Botting and Conti-Ramsden conclude that 4 out of 10 of them may well be *'better described as having autism or Asperger's disorder'*. These results only seem to highlight the confusion that can exist when trying to describe such children within the clinical setting.

A further study by Bishop and Baird (2001) compared parent and teacher ratings on the CCC, with regards to children with different pervasive or specific developmental disorders. Inter-rater reliability coefficients between parent and professionals were in the range 0.30 to 0.58 across the 9 sub-scales, with a pragmatic composite coefficient of 0.46

When analysing parent and professional ratings on the pragmatic composite, children with autism had significantly lower scores than children with specific learning disabilities (including children with dyslexia and SLI), and these differences were not deemed to be due to age or IQ. Children in the other three clinical groups; Asperger's Disorder, Pervasive Developmental Disorder-Not Otherwise Specified (PDDNOS) and Attention-Deficit Hyperactivity Disorder (ADHD), had mean scores intermediary to the SLI and autism groups. Interestingly, combining parent and professional ratings on the pragmatic composite scale appeared to be most effective in discriminating the diagnostic groups.

While not advocating the CCC as a diagnostic tool, Bishop and Baird concluded that it can be a useful addition to other forms of assessment of children with language and developmental difficulties within a clinical setting.

In a further study, Bishop and Norbury (2002) used the CCC to identify a group of PLI children from a wider sample of children with SLI. These sub-groups were then compared to a group of children with high-functioning autism and a typically developing control group using various standardised diagnostic tools designed to assess children with social communication difficulties, including the Autism Diagnostic Observation Scale-Generic (ADOS-G: Lord *et al.*, 2000). Of particular interest was that no significant group differences were observed between the profile scores of the PLI sub-groups and the autism group taking into account all sub-scales of the CCC. However for the PLI group, high social and communication impairment scores on the ADOS-G showed a significant correlation with pragmatic composite scores on the CCC, lending some support to the validity of the CCC in assessing pragmatic language difficulties.

While recognising that the CCC was originally designed to supplement existing language tests and specifically to assess aspects of pragmatic language skills in children, it has been used in the studies reviewed to distinguish a sub-group of children with pragmatic language impairment (PLI) from a wider group of children with SLI. However, as indicated by Botting and Conti-Ramsden (1999) it may be argued that many children who are distinguished in this way, may actually be better described as within the context of the Autistic Spectrum.

Furthermore, with the position of PLI seemingly unresolved in relation to ASD and SLI, it seems appropriate that if the CCC is to be used along with other forms of assessment to identify children with PLI, then firstly a better understanding should be developed of whether it can be used to accurately discriminate between groups of children with SLI

and children with ASD. In some ways this has been addressed by Bishop (1998) and Bishop and Baird (2001), whose studies appear to indicate that pragmatic composite scores are best at discriminating children with SLI from children with ASD. However, it may be that in addition to comparing scores on the pragmatic composite, analysing the overall *profile* of children's scores would help with this process.

With this background, the current study was designed to develop the work of Bishop and Baird (2001) and compares parent and teacher ratings of children with SLI and children with Autistic Spectrum Disorders on the CCC, with an emphasis on the differences between the *profiles* of children between the two groups. Three hypotheses were developed:

14.1.1 Hypothesis 1

'Parent/Professional mean scores combined will be most effective in discriminating the ASD group from the SLI group'.

14.1.2 Hypothesis 2

'Children with ASD will have significantly lower mean pragmatic composite scores than children with SLI, as assessed by parents, professionals and parents/professionals combined'.

14.1.3 Hypothesis 3

'The overall profile of mean scores for children with ASD will be different to that of children with SLI'.

15 Method

15.1 Participants

The participants in this investigation were initially approached during a wider study investigating the use of gesture in children with Autistic Spectrum Disorders (ASD) and children with Specific Language Impairment (SLI) (Rogers, Knight & Williams, *in preparation*). This sample included 16 children with ASD and 12 children with SLI, for whom parental consent for participation had been obtained. The children with ASD were drawn from existing caseloads of practicing clinicians. Their diagnoses had been made following a multi-disciplinary assessment using the Diagnostic Interview for Social and Communication Disorders (DISCO), and employing the criteria for ASD suggested by Wing & Gould (1979).

Children with SLI were recruited from Specialist Language Units across the region and from the clinical caseloads of Speech and Language Therapists. Children with a co-morbid diagnosis of 'autism', 'Asperger's Disorder', 'Autistic Spectrum Disorder' or 'probable ASD' were excluded from this group, as well as those who had major physical, emotional or behavioural characteristics that were deemed to contribute significantly to their language difficulties.

Inclusion criteria stipulated that all of the participants had a full-scale IQ greater than 70, as measured by the Wechsler Intelligence Scale for Children (UK) – 3rd Edition (WISC-III(UK), Wechsler, 1991) and that their speech was intelligible.

15.2 Procedures

All participants were assessed as to their verbal and performance IQ using the WISC-III(UK), (Wechsler, 1991) and their expressive and receptive language skills were measured using the Clinical Evaluation of Language Fundamentals-Revised (CELF-R: Semel, Wiig & Secord, 1987).

Parents and a relevant professional (Specialist Teacher or Speech and Language Therapist) were asked to complete the Children's Communication Checklist (CCC) (Bishop, 1998), which as described earlier, was originally designed as a preliminary attempt to help to distinguish children with specific pragmatic language difficulties from children with more typical SLI.

A 'pragmatic composite score' is calculated from 5 of the 9 sub-scales and where two professionals assess the same child, this pragmatic composite scale has been estimated to have inter-rater reliability of approximately $r = 0.80$, with reliability coefficients across the 9 sub-scales ranging from $r = 0.62 - 0.83$ (Bishop, 1998). Inter-rater reliability between a parent and a professional for the pragmatic composite has been shown to be $r = 0.46$, with reliability coefficients across the 9 sub-scales ranging from $r = 0.30 - 0.64$ (Bishop and Baird, 2001).

For some participants a full data set was not available due to non-return of at least one questionnaire. With reference to the SLI group, 3 parent CCC's were missing (N = 9) and 2 professional CCC's were missing (N = 10). For the ASD group, there was a full set of parent CCC's (N = 16), with 1 professional CCC missing (N = 15).

16 Results

16.1 Background Data

As illustrated in Table III-1, statistical analysis using t-tests for independent samples indicates no significant differences between the two groups with regard to mean age, performance IQ or receptive language scores. However, there were significant group differences in verbal IQ ($t = 2.94$, $df = 26$, $p < 0.01$) and expressive language skills ($t = 2.177$, $df = 26$, $p = 0.04$), with the ASD group displaying greater ability overall. These analyses were also performed taking into account missing data. For each of these separate analyses a similar pattern was observed to that of the overall sample.

Table III-1: Mean age, verbal IQ, performance IQ, expressive and receptive language scores across the ASD and SLI groups.

	ASD	SLI
<i>N</i>	<i>16</i>	<i>12</i>
Age (months)	122.34	112.10
Verbal IQ**	99.44	85.25
Performance IQ	91.88	89.92
Expressive language score*	82.64	74.58
Receptive language score	93.21	86.42

* $p < 0.05$; ** $p \leq 0.01$

16.2 Inter-rater Reliability Data

Pearson's r correlation coefficients were calculated to provide a measure of inter-rater reliability between parent and teacher ratings for each sub-scale of the CCC. The results of the current study were compared with those from a previous study by Bishop and Baird (2001) and are shown in Table III-2.

Table III-2: Parent/Professional inter-rater reliability coefficients (using Pearson's correlations) for the current study, and compared to a previous study by Bishop & Baird, 2001.

Sub-scale	Current Study (N=22)	Bishop & Baird (2001)	
	<i>r</i>	<i>R</i>	N
A: Speech	0.69*	0.58	82
B: Syntax	0.36	0.64	76
C: Inappropriate Initiations	0.44*	0.42	81
D: Coherence	0.25	0.58	81
E: Stereotyped Language	0.18	0.35	78
F: Use of Context	0.10	0.30	80
G: Rapport	0.29	0.43	81
H: social Relationships	0.50*	0.44	68
I: Interests	0.45*	0.43	55
Pragmatic Composite	0.16	0.46	82

* $p \leq 0.05$

As can be seen from Table III-2, significant correlations were observed in only 4 of the 9 sub-scales; A: Speech, C: Inappropriate Initiations, H: Social Relationships and I: Interests. The pragmatic composite did not reveal a significant correlation coefficient.

16.3 Analysis of CCC Profiles – Hypotheses 1, 2 & 3

Parent, professional and 'parent/professional' combined mean scores on each of the 9 sub-scales and the pragmatic composite were calculated for the two clinical groups and are shown in Table III-3.

Table III-3: Parent, Professional and Combined Mean scores on the CCC with regard to clinical group.

CCC Sub-scale	ASD			SLI			Sig.
	N	Mean	SD	N	Mean	SD	P
<u>A: Speech</u>							
Parent	16	32.69	4.44	9	29.67	4.12	Ns.
Professional	15	34.87	2.47	10	29.20	5.05	0.001**
Combined	15	33.63	3.34	7	29.00	4.64	0.014*
<u>B: Syntax</u>							
Parent	16	30.81	1.47	9	29.56	1.59	Ns.
Professional	15	31.73	0.59	10	29.00	2.40	0.000**
Combined	15	31.23	0.80	7	29.36	1.73	0.002**
<u>C: Inappropriate Initiations</u>							
Parent	16	22.25	3.19	9	23.33	4.00	Ns.
Professional	15	26.13	3.27	10	28.10	2.38	Ns.
Combined	15	24.27	2.81	7	25.57	2.59	Ns.
<u>D: Coherence</u>							
Parent	16	28.00	4.27	9	26.89	4.31	Ns.
Professional	15	31.40	3.87	10	28.30	3.40	Ns.
Combined	15	29.53	3.10	7	27.43	3.56	Ns.
<u>E: Stereotyped Language</u>							
Parent	16	22.00	3.69	9	23.44	3.36	Ns.
Professional	15	25.40	3.92	10	28.50	1.43	0.026*
Combined	15	23.57	2.68	7	26.14	1.82	0.033*
<u>F: Use of Context</u>							
Parent	16	22.00	3.37	9	24.89	4.01	Ns.
Professional	15	25.40	4.07	10	26.80	2.44	Ns.
Combined	15	23.50	2.79	7	26.14	1.57	0.031*
<u>G: Rapport</u>							
Parent	16	25.25	3.51	9	28.22	4.20	Ns.
Professional	15	27.60	3.68	10	31.10	2.96	0.020*
Combined	15	26.17	1.99	7	29.50	3.96	0.015*
<u>H: Social Relationships</u>							
Parent	16	24.25	4.25	9	28.33	4.85	0.039*
Professional	15	26.93	4.88	10	29.80	3.68	Ns.
Combined	15	25.40	3.85	7	29.64	3.29	0.021*
<u>I: Interests</u>							
Parent	16	27.25	2.24	9	29.78	2.33	0.014*
Professional	15	27.93	2.87	10	31.60	2.12	0.002**
Combined	15	27.47	1.81	7	30.79	2.06	0.001**
<u>Pragmatic Composite</u>							
Parent	16	119.50	13.29	9	126.78	13.67	Ns.
Professional	15	135.93	13.51	10	142.80	8.73	Ns.
Combined	15	127.07	9.59	7	134.79	8.28	Ns.

* $p \leq 0.05$; ** $p \leq 0.01$

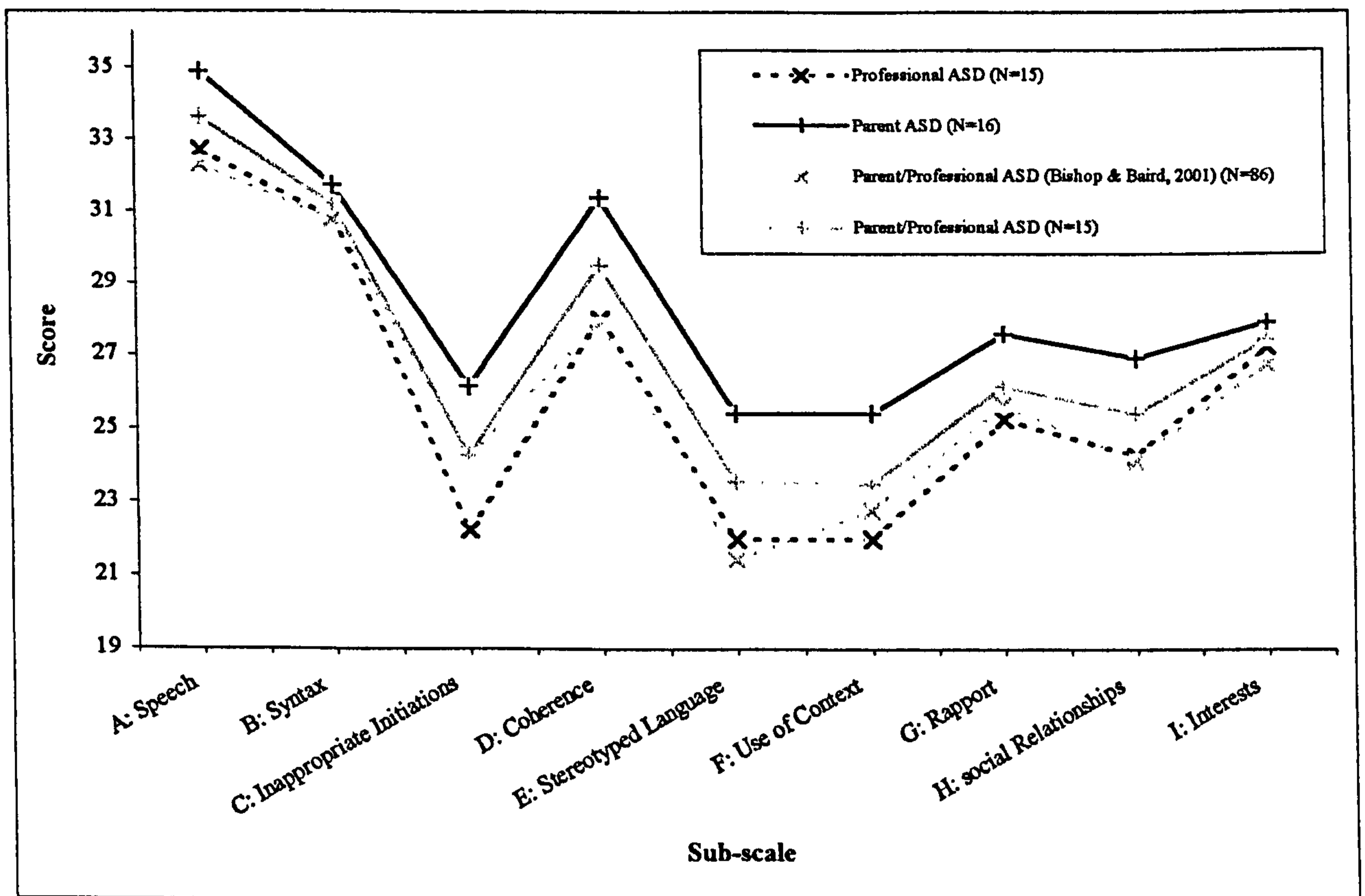
Following analysis using the t-test for independent samples, significant group differences on parental ratings were observed for 2 of the 9 sub-scales. For professional

ratings, significant group differences were found for 5 of the 9 sub-scales, and when the parent and professional scores were combined, significant group differences were found for 7 of the 9 sub-scales. Therefore in support of hypothesis 1, the parent/professional combined score was most effective in discriminating the SLI group from the ASD group.

In examining hypothesis 2, although the results approached significance, no significant group differences were established by parent, professional or combined ratings on the pragmatic composite. However, taking into account that the power of the statistical analyses was particularly low due to the small sample size, the pattern indicated that the ASD group scored lower than the SLI group on the pragmatic composite across all three ratings. With a larger sample size this may lend some support for hypothesis 2. Mean scores on sub-scales C: Inappropriate Initiations and D: Coherence were not shown to significantly discriminate the groups using either parent, professional or combined ratings.

An analysis of within-group differences for the ASD group showed that the mean pragmatic composite score provided by parents ($\mu = 119.50$) was significantly lower than that suggested by professionals ($\mu = 135.93$), ($t = -3.91$, $N = 15$, $p < 0.01$). However, the *profiles* of all of the sub-scale scores are noticeably similar between the parents and professionals consulted for this study – see *Figure III-1*.

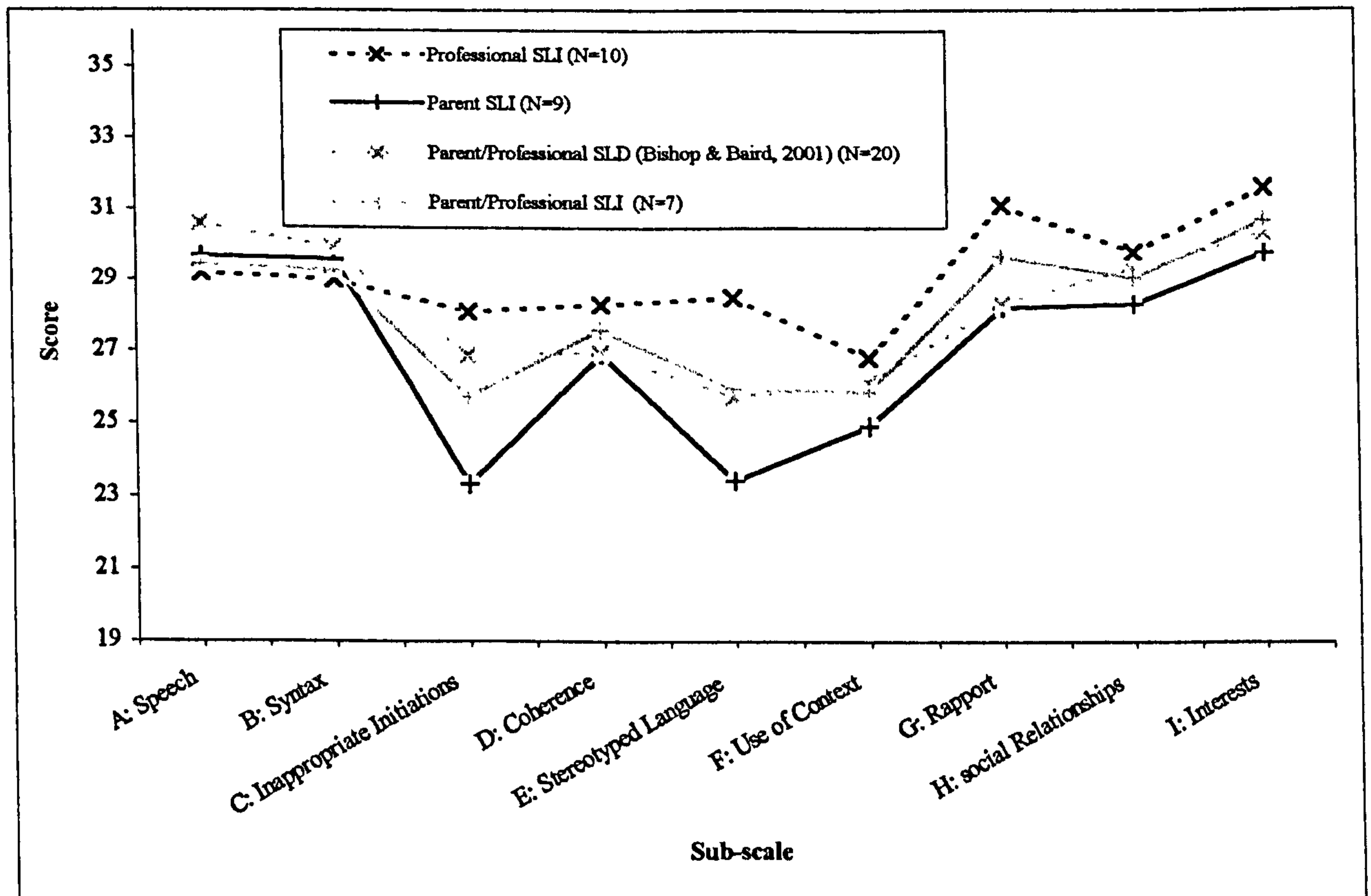
Figure III-1: Parent, Professional and combined mean sub-scales scores for the ASD group in comparison with findings from Bishop & Baird, 2001.



From a similar study by Bishop & Baird (2001) the combined parent and professionals' mean scores for children in both their autism and Asperger's syndrome groups were calculated and this is also compared to the results of the current study in Figure III-1. Again a similar profile is observed to the results for the ASD group in this study.

Although not statistically significant, a similar analysis of within-group differences for the SLI group showed a pattern indicating that that the mean pragmatic composite score provided by parents ($\mu = 126.78$) was lower than that suggested by professionals ($\mu = 142.80$), ($t = -2.22$, $N = 7$, $p = 0.068$). However, the *profiles* of all of the sub-scale scores, as can be seen in Figure III-2, are somewhat less similar between parents and professionals for this group in comparison to the ASD group.

Figure III-2: Parent, Professional and combined mean sub-scales scores for the SLI group in comparison with findings from Bishop & Baird, 2001.



Again, comparison with the combined parent/professional mean sub-scale ratings in the study by Bishop and Baird (2001) of a group of children with specific learning disabilities (SLD: a group that includes children with SLI or dyslexia), are also shown in Figure III-2. These profiles seem to indicate a markedly different, ‘flatter’ profile for children with language impairments compared to that of children with ASD.

17 Discussion

It may be suggested that the results of this study support the position that the CCC can be an effective and useful tool in supplementing other assessment methods to discriminate children with ASD from children with SLI. However, it is suggested that

analysis of the *profile* of scores as well as taking into account the pragmatic composite scores is essential in providing the most effective means of assessment.

Parent and professional inter-rater reliabilities were surprisingly poor given the findings of previous studies, and in particular the low correlation observed for the pragmatic composite score was disappointing. However, the sample size was small and therefore the results should be viewed with some caution. Nevertheless, the two lowest correlation scores were observed for sub-scales E: Stereotyped language and F: Use of context, a finding similar to that in the Bishop and Baird study (2001). This may suggest that these two sub-scales provide the most scope for respondent misunderstanding and therefore their composition may be an area to be reviewed.

Despite relatively low correlation coefficients across some of the sub-scales, comparisons of the parent, professional and combined parent/professional mean scores on the CCC for each group support Hypothesis 1 and the notion that the 'combined' scores were the most effective in discriminating the ASD from the SLI group. This finding also appears to corroborate the conclusions of Bishop and Baird (2001) who state that '*validity [of the CCC] is enhanced by combining information from parents and professionals*'.

However, with reference to the pragmatic composite, neither parent, professional nor parent/professional combined mean scores were significantly different across the two groups and the *null* Hypothesis 2 could not be rejected. Despite this, scores for the ASD group were lower than for the SLI group across all three respondent groups and it may be that with a larger sample size this difference would approach significance.

In examining hypothesis 3 it was interesting to note that when the *profiles* of results across the 9 sub-scales were displayed in graphical form, it appeared that children with ASD have a profile of results that is similar whether assessed by a parent or professional (see *Figure III-1*). This profile was also compared with the results of a combined autism + Asperger's group from Bishop and Baird's (2001) study and a similar pattern emerged.

For children with SLI the profiles were less consistent, possibly indicating the heterogeneity of this classification. However, the parent/professional combined profile of children with SLD from the study by Bishop & Baird (2001) appeared somewhat different to that of those with ASD, a result that tentatively supports Hypothesis 3.

Such results seem to indicate that for the ASD group parents and professionals rated relative strengths and weaknesses in a similar, consistent fashion, but assigned different weight to their scores. Therefore it may be argued that the *profile* of children's CCC scores is the vital factor rather than a cut-off point, in helping to discriminate children with ASD from children with more specific language difficulties.

Clearly, with the relatively low sample sizes and the significantly higher verbal IQ and expressive language ability of the ASD group compared to those in the SLI group, these results should be viewed with some caution. Diagnostic ambiguity, missing data for some participants and low inter-rater reliabilities could also have significantly influenced the data.

Nevertheless, the results appear to mirror some findings from the earlier Bishop and Baird study (2001) and seem to enhance the usefulness of the CCC in the assessment of pragmatic language difficulties in children with a range of clinical presentations. This is not to suggest that the CCC should be used as a diagnostic tool, rather as a supplement to clinical observations and other standardised assessments. Further research using the CCC is evidently the way forward, and in particular it may be useful to investigate the CCC profile of children with ASD, SLI or PLI in comparison with other clinical groups and typically developing children using a variety of language and non-verbal indicators. In this way, particular similarities and differences across clinical groups can be identified and the continuing development of appropriate interventions for children with language difficulties can be enhanced.

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Chapter IV: Reflective Research Review

Chapter word count (Excluding tables & references) : 2710

19 Introduction

My journey through the research process may be best described as an adventure story, with many highs and lows and twists and turns, all leading, (hopefully) to the mythical and metaphorical promised land of qualified clinical psychologist status. As the write-up period draws to an end, my reflections on the research seem to be dominated not by clinical implications of the research or methodological considerations, nor by any ethical dilemmas that may have arisen, but by one simple question: Why have I done this research? This is not an enquiry posed to question the topic of my research or to elicit obvious answers such as 'so that you can qualify'; rather it is a question as to the place that research is afforded within my chosen profession of clinical psychology.

Throughout training I have maintained the belief that as a clinical psychologist I will not perceive myself as primarily a psychological therapist, a view that has sometimes led to disagreements with some of my peers. Instead, I have always felt it necessary to stress the importance of research as an active, ongoing process throughout the career of a clinical psychologist, if not throughout life. For me this view is backed up by the Core Purpose and Philosophy of the Profession which states that: *'Clinical psychologists are more than psychological therapists...While many do practise psychotherapy at a high level this is not a skill unique to clinical psychologists...The background and training of clinical psychologists is rooted in the science of psychology, and clinical psychology may be seen as one of the applications of psychological science to solve human problems. The ability to design and carry out applied research is a skill developed to a doctoral level...and one that is becoming more and more valuable in the drive towards evidence-based practice'* (Division of Clinical Psychology, British

Psychological Society, 2001). Recent thoughts and reflections about the research process however, have helped me to explore this view a little further and find comparisons with Kelly's (1955) personal construct theory, which views the person as a scientist, constantly engaged in the process of hypothesising, testing and evaluating the perceived world in which s/he lives.

It now appears uniformly accepted that research should play a part in the training and clinical practice of clinical psychologists (Barker, Pistrang and Elliot, 1994) and as such, is integral to our profession. However, in practice there often seems to be *'a gap between the rhetoric and reality: many clinical psychologists do not do research once they have qualified'* (Barker, Pistrang and Elliot, 1994).

From a personal point of view, my seemingly flawed and idealistic perception of the concept of research is that it is a vehicle for advancing knowledge, a process of understanding and a means of satisfying our need for curiosity about the world in which we live. In this way, it is integral to the learning process. With an acknowledged degree of naivety, I would also like to think that research within a clinical psychology context provides a way of helping us to promote psychological well being within ourselves, our clients and the complex milieu that is 'general society'. However, although this affords me some idea as to what research is for, it does not define what research actually is or how it is done.

While Theodorson & Theodorson (1969) suggest research is *'any honest attempt to study a problem systematically or to add to man's knowledge of a problem'*, The Oxford English Dictionary defines it as: *'A search or investigation directed to the discovery of*

some fact by careful consideration or study of a subject; a course of critical or scientific enquiry' (Simpson & Weiner (Eds.), 1989)

What struck me from these two definitions is the notion of research as a 'systematic, considered' process – something that requires method and structure. Furthermore, its relation to science, defined in the Collins Shorter Dictionary (1995) as '*a systematic study and knowledge of natural or physical phenomena*', is difficult to ignore. Therefore, the two concepts of science and research appear to be inextricably linked. It is suggested therefore that Clinical psychologists, if carrying out research, should at least recognise that in so doing they are subscribing to the notion of science; at its most basic level a process of finding solutions for (or at least trying to gain knowledge and understanding about) problems. With the concepts of scientist-practitioner and evidence-based practice constantly ringing in my ears, this recognition should be nothing new.

However, these thoughts about the terms 'research' and 'science' provided one relatively simple answer to my original question that I had not previously considered: Research is fundamental to the training of a clinical psychologist because the process of research is in many ways a direct reflection of the process of psychological therapy and as such, experience of one can be used to complement the other. To illustrate this, our core skills as clinical psychologists are deemed to be those of assessment, formulation, intervention and evaluation (Division of Clinical Psychology, British Psychological Society, 2001). However, these do not seem so different from those procedures involved in the research process such as the identifying and gaining available knowledge about a problem (assessment), integrating this knowledge into questions and

generating hypotheses (formulation), producing methods to test these hypotheses (intervention) and a discussion of the results (evaluation).

It is suggested therefore that although many qualified clinical psychologists may be criticised for not carrying out 'research', actually in the course of their clinical practice, by working therapeutically with people, they are in fact conducting vast quantities of relevant research. The criticism may be more appropriately that they just do not write up what they have found!

With this view of research as an essential, on-going, career-long process, allied to Kelly's (1955, 1991) ideas of the person as scientist, other more conventional ideas, thoughts and reflections specific to my research thesis will be addressed.

20 Methodological Considerations

While there are many methodological considerations that were discussed during the research process, and too many to mention here, I have highlighted two that produced the most anxiety.

20.1 Sampling and Recruitment

Whilst ideas for the research were initially prompted by my own clinical observations, following discussions with experienced researchers and previous trainees, one of the main factors influencing my choice of research topic was the accessibility of participants, particularly with reference to clinical populations. In this respect, I was lucky in that local clinicians with whom I already had a working relationship were

interested in my broad ideas and were willing to help me with the recruitment process by identifying potential participants from their established case loads. The usefulness of existing relationships with people working within the proposed research environment has been well documented (Taylor & Bogdan, 1998)

Despite this, recruitment was still one of the most difficult aspects of the research and the final sample sizes were not as great as initially thought. As suggested in the empirical papers, the relatively small size of the clinical groups is likely to reduce the reliability of any of the findings. However, I feel that without extensive local clinician involvement, the process of recruitment would have been hindered further and may have jeopardised the project to an extent where it would have been deemed unviable.

20.2 Diagnosis and Co-morbidity

Problems of diagnosis and co-morbidity relating to autism and developmental language disorders are discussed throughout the literature (for example: Bishop, 1989; Frith, 1989; Gillberg & Coleman, 1992; Lord & Rutter, 1994; Boucher, 1998; Howlin, 1998), and therefore it is necessary to recognise that despite every effort to the contrary, there was some potential for error in assigning children to their appropriate clinical group, particularly where co-morbid difficulties were present. As an interesting side note, it seems in some ways ironic that in trying to provide an understanding of differences between different diagnostic groups, this research is likely to have been biased by the very thing it is trying to address.

21 Ethical Considerations

While the following are not meant as an exhaustive overview of the ethical dilemmas encountered during the research process, Barker *et al.*, 2002 suggest that the major ethical principles in clinical psychology research are:

- *Informed Consent*
- *Avoidance of Harm*
- *Privacy*
- *External Ethical Review*

21.1 Informed consent

The notion of informed consent appears to imply that participants are in receipt of all available information about the study so that they can make a free and informed decision as to their participation. However, in the present study the participants were children and this posed some basic ethical obstacles.

Firstly, while parents have legal responsibility for their children, it is the children themselves who would actually be taking part in the study. Therefore, it was felt ethically important that informed consent was required from both parents and children. While parental consent was gained by providing them with full written information and the opportunity to ask direct questions, obtaining consent from children with autism and/or language difficulties, many of whom had difficulty understanding some aspects of language, proved more of a challenge. The difficulties associated with obtaining informed consent with children taking into account their competence to make decisions

are well reported (BPS, 2000; Bersoff & Bersoff, 1999; Koocher & Keith-Spiegel, 1998).

Secondly, as well as understanding, it was felt that the child's choice to participate is unlikely to have been free from outside pressures such as parental opinion, adult-child-professional power differentials and situational factors.

Nevertheless, for this study written parental consent was sought in the first instance and then the researcher explained verbally to the child about the study, hopefully in a way that was more accessible for them to understand. The child's understanding was checked by asking them to explain what they thought the study was about. Even if they then agreed to participate, the child was given regular opportunities to withdraw from the study.

While these safeguards were designed to give the child as much free choice as possible, I still feel that it would be naïve to think that many children participated *'because they wanted to'*, but rather because *'mum and dad said so'*. However, as the researcher I never felt that any participant objected to being involved in the research.

21.2 Avoidance of Harm

The British Psychological Society (BPS) Code of Conduct (2000) states: *'Investigators have a primary responsibility to protect participants from physical and mental harm during the investigation'*. While 'harm' is a difficult concept to assess, it was felt that generally participation in this research could not be deemed to be harmful. Nevertheless, care was taken to provide opportunity for the participants to debrief and

ask questions following their involvement and at any times when participants were thought to be tired or distressed (particularly during some of the psychometric assessments), they were given the opportunity to have a break or withdraw from the study altogether.

21.3 Privacy/Confidentiality

In some ways, invasion of a person's privacy or breaking of confidentiality could be seen as a way of causing harm. In the case of this research, given that video recordings were being used, protection of confidentiality was a particular concern. My concern was heightened further following negative publicity in the national media about the use of video cameras in schools. Despite this, and somewhat surprisingly, it seemed that my anxieties were not shared to the same extent by parents and they rarely questioned issues of confidentiality. This lack of questioning and seemingly 'trusting' approach may have been due to the thorough nature of the information provided to parents, or by a general expectance that confidentiality would be observed. However, it did occur to me how little the public seem to question professional practice.

Nevertheless, despite the lack of questions and probably to allay my own anxieties to some extent, it was stressed to both parents and participants that data would be held securely and when transferred onto computer for analysis, was protected by password. It was also agreed that all data would be destroyed following completion of the research, except where particular consent had been given for its use in presenting the research findings.

21.4 External Ethical Review

While for many it seemed that obtaining ethical approval for their research was a long, drawn out process, my own experience was that it was relatively straightforward. This may be due to the fact that I purposely made an effort to produce an extensive research proposal with a clear emphasis on ethical issues, but it also could be due to the fact that generally the research methods employed did not deviate from established assessment procedures within a clinical setting. Whether such procedures are actually 'ethical' – for example the use of psychological tests to assign levels of intelligence – is a topic for further debate.

22 Personal and Professional Reflections

As I reflect on the research process and the broader course of my training as a clinical psychologist, I feel a sense of satisfaction that despite all the trials and tribulations, I have come to a position where I can say 'I have enjoyed myself'. However, at this point I am reluctant to say this too loud, for there could yet be a twist in the tale.

I wrote earlier about research as being like an adventure journey, and I feel this metaphor gives some idea as to the feelings that are encountered along the way. From excitement through despair and frustration, interspersed by a sense of determination, anxiety and hope and ending with a sense of tired relief, the process has not been a trek along a single pathway, but a crawl, sometimes in the dark, through a web of corridors. Some corridors require you to turn back and others seem to go on forever, but the overriding sense that I began to develop was one of 'trust in the process'. Where obstacles were placed in the way, often due to the necessity to rely on other people to

get things done, somehow with time, patience, persuasion and a little effort, they were resolved.

I also learned, to my cost at times, that procrastination and avoidance are the deadliest of enemies (something as therapists we are often highlighting for our clients). Problems that if tackled earlier would have been small, became perceived as major obstacles as my motivation stuttered. Actually, it wasn't that the problems got bigger, but that by procrastinating, they just *seemed* to get bigger.

Pressure of time was the most difficult thing to manage, especially when I had to rely on others and events were not within my own control. For example, waiting for ethical approval or for clinicians to carry out specific assessments. However, with experience I learned that during these times rather than wait and complain, I should explore other parts of the web of corridors and return to the one that was blocked later. This way, there was always a sense of moving forward – just like I would rather be travelling slowly along the longer road to my destination than sit in a traffic jam on the shorter route.

Despite regular frustrations with having to rely on others so that practical aspects of the research could proceed, I recognise that without the support of those people I would not be in a position to complete my research. Similarly practical and emotional support from family and friends has been vital in helping me along my journey. It with this in mind that I think the process of doing 'successful research' relies as much on the interpersonal skills and flexibility of the researcher and the knowledge and understanding of those around him/her, than on any practical or methodological factors.

23 Conclusions

What these reflections seem to suggest to me is that throughout the course of this research project I have learned much more than just 'how to write a literature review', 'how to analyse data', or indeed 'how to do research'. In fact I have been able to learn a lot about the way I work and the part research may play in my future career. However, above all I have learned that by placing 'trust in the process' in addition to effective planning, inspiration, motivation, determination, and the support of those around you, what initially seems impossible, can in fact be achievable.

In the words of Hannibal, leader of the A-Team: *'I love it when a plan comes together'!*

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Appendices

Appendix A: Ethical Approval

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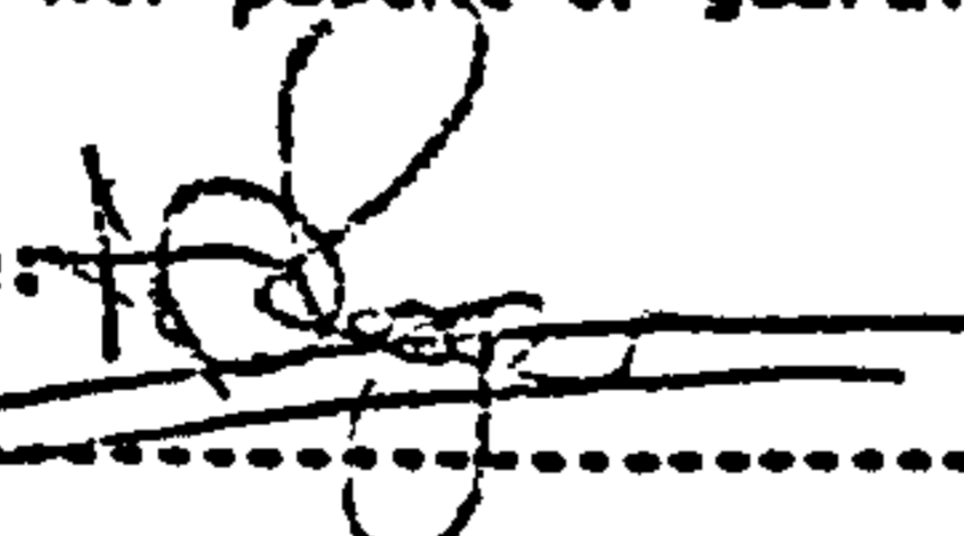
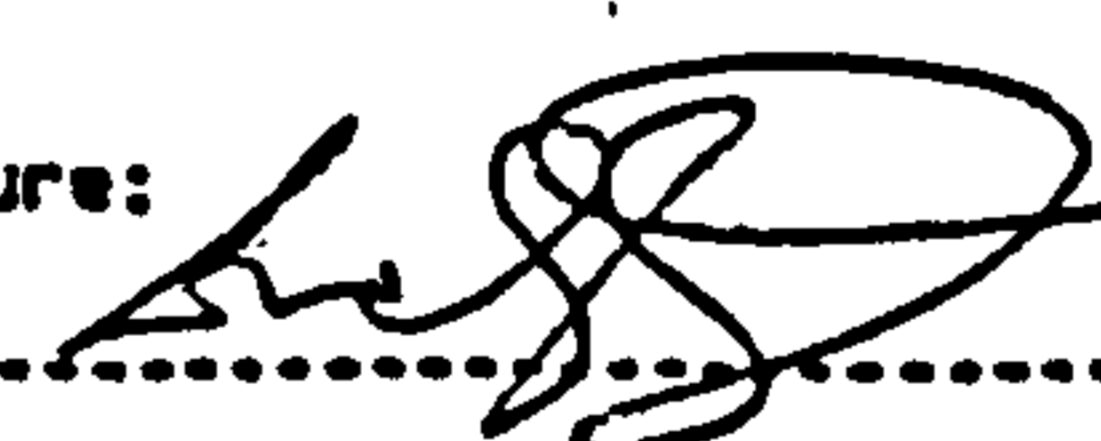
Variable print quality

STUDENT SUBMISSION TO SCHOOL RESEARCH ETHICS COMMITTEE

1. Student's name: **ANDREW ROGERS** 2. Course: **DOCTORATE IN CLINICAL PSYCHOLOGY**
 3. Title of project: **THE USE OF NON-VERBAL COMMUNICATION BY CHILDREN WITH SPECIFIC LANGUAGE IMPAIRMENT AND CHILDREN WITH HIGH-FUNCTIONING AUTISM**
 4. Summary of the project in jargon-free language and in not more than 120 words: **PHASE ①: NORMATIVE DATA**

Sample: PHASE ① 100 PRIMARY SCHOOL CHILDREN AGED 7-11 YEARS WITH NO RECOGNISED LANGUAGE DIFFICULTIES (NORMATIVE SAMPLE)
Research site: THE MEADOWS PRIMARY SCHOOL, HARLECH RD, COVENTRY, SHROPSHIRE
Design (e.g. experimental):
Methods of data collection:
 THE CHILDREN WILL BE VIDEO RECORDED DURING A 10 MINUTE INTERACTION WITH THE RESEARCHER. THIS WILL INVOLVE THE CHILDREN BEING ASKED ABOUT THINGS THEY ENJOY SUCH AS HOBBIES/HOLIDAYS ETC.
 NON-VERBAL COMMUNICATION WILL BE RECORDED (TYPE → FREQUENCY) ACCORDING TO ECHMAN & FRIESEN'S (1969) CLASSIFICATION.
 INFORMED CONSENT WILL BE OBTAINED AND VIDEOS WILL BE DESTROYED FOLLOWING DATA COLLECTION.
Access arrangements (if applicable):
 c/o THE MEADOWS PRIMARY SCHOOL

5. Will the project involve patients(clients) and/or patient(client) data? Yes []; No [x]
 6. Will any invasive procedures be employed in the research? Yes []; No [x]
 7. Is there a risk of physical discomfort to those taking part? Yes []; No [x]
 8. Is there a risk of psychological distress to those taking part? Yes []; No [x]
 9. Will specific individuals or institutions (other than the University) be identifiable through data published or otherwise made available? Yes []; No [x]
 10. Is it intended to seek informed consent from each participant (or from his or her parent or guardian)? Yes [x]; No []

Student's signature:  Supervisor's signature:  Date: **6-12-01**

FOR COMMITTEE USE:
 Immediate approval [x] Referral to full School Committee []
 Referral to local Hospital Ethics Committee [] Decision pending receipt of further information (specify below) []

Committee Member's signature: **David Coles** Date: **7/12/01**

STUDENT SUBMISSION TO SCHOOL RESEARCH ETHICS COMMITTEE

1. Student's name: ANDREW ROGERS 2. Course: DOCTORATE IN CLINICAL PSYCHOLOGY
 (BLOCK CAPITALS)
3. Title of project: THE USE OF NON-VERBAL COMMUNICATION BY CHILDREN WITH SPECIFIC LANGUAGE IMPAIRMENT AND CHILDREN WITH HIGH-FUNCTIONING AUTISM. PHASE 2 CLINICAL SAMPLE.
4. Summary of the project in jargon-free language and in not more than 120 words:

Sample: PHASE 2. 2 GROUPS OF 40 CHILDREN AGED 7-11 YEARS. GROUP 1 - CHILDREN WITH HIGH-FUNCTIONING AUTISM; GROUP 2 - CHILDREN WITH SPECIFIC LANGUAGE IMPAIRMENT

Research site: CHILD & FAMILY THERAPY SERVICE, WORCESTER COMMUNITY & MENTAL HEALTH NHS TRUST.

Design (eg experimental):

Methods of data collection:
THE CHILDREN WILL BE VIDEO RECORDED DURING A 10 MINUTE INTERACTION WITH THE RESEARCHER. THIS WILL INVOLVE THE CHILDREN BEING ASKED ABOUT THINGS THEY ENJOY, SUCH AS HOBBIES/HOLIDAYS ETC. NON-VERBAL COMM WILL BE RECORDED (TYPE & FREQUENCY) ACCORDING TO ECKMAN & FRIESEN'S (1969) CLASSIFICATION. PARENTS & TEACHERS WILL BE ASKED TO COMPLETE A QUESTIONNAIRE RELATING TO THE CHILD'S BEHAVIOUR & A QUESTIONNAIRE RELATING TO THE CHILD'S COMMUNICATION. THE CHILDREN (AS PART OF THEIR CLINICAL ASSESSMENT) WILL UNDERGO A TEST OF RECEPTIVE & EXPRESSIVE LANGUAGE AND A GENERAL IQ TEST.

Access arrangements (if applicable):
CHILDREN WILL BE SELECTED FROM THE CASELOADS OF PRACTITIONERS WORKING WITHIN WORCESTER COMMUNITY & M.H. NHS TRUST. TONERS

5. Will the project involve patients(clients) and/or patient(client) data? Yes No
6. Will any invasive procedures be employed in the research? Yes No
7. Is there a risk of physical discomfort to those taking part? Yes No
8. Is there a risk of psychological distress to those taking part? Yes No
9. Will specific individuals or institutions (other than the University) be identifiable through data published or otherwise made available? Yes No
10. Is it intended to seek informed consent from each participant (or from his or her parent or guardian)? Yes No

Student's signature: [Signature]

Supervisor's signature: [Signature]

Date: 27/02/02

FOR COMMITTEE USE:

Immediate approval
 Referral to local Hospital Ethics Committee

Referral to full School Committee
 Decision pending receipt of further information
 (specify below)

Committee Member's signature: [Signature]

Date: 27/02/02

Isaac Maddox House
Shrub Hill Road
Worcester
WR4 9RW

Tel: 01905 760000
Fax: 01905 26159
DX 709431 Worcester 7

**WORCESTERSHIRE
LOCAL RESEARCH ETHICS COMMITTEE**

Chairman:
Mrs Carol Thompson B.Sc.

Mr Andrew Rogers
C/o Doctorate Course in Clinical Psychology
School of Health and Social Sciences
Coventry University
Priory Street
Csoventry CV1 5FB

Our ref: KG/
Your ref:
25 February 2002

Direct Line: (01905) 760091
Fax Line: (01905) 617051

E-mail Number:
Kath.Garrad@wha.worcester-ha.wmids.nhs.uk

Dear Mr Rogers

Re: LREC: 02/01 (please use in all correspondence)

**The use of non-verbal communication by children with specific language impairment
and children with high-functioning autism
(Local researchers: Mr Andrew Rogers)**

Papers reviewed:

- ***LREC application form received 12th February 2002***
- ***CV for Mr Andrew Rogers, undated***
- ***Letter to Parent/Carer dated 2nd February 2002***
- ***Parent/Carer Information Sheet, version 2 dated 2nd February 2002***
- ***Consent Form, version 2 dated 2nd February 2002***
- ***Coding Sheet***
- ***Children's Communication Checklist***
- ***Child Behaviour Checklist for ages 4-18***
- ***Teacher's Report Form for ages 5-18***

Following the meeting of Worcestershire Local Research Ethics Committee on 21st February 2002, I write to confirm that, with the additional information now received, the Committee had no objection to the above research proceeding, so long as the following matters are taken into account:

❖ THIS APPLICATION HAS BEEN GIVEN A UNIQUE REFERENCE NUMBER. PLEASE QUOTE THIS ON ALL CORRESPONDENCE.

Chairman: Mrs Jacqueline M Cravos
Chief Executive: Mrs Pat Archer-Jones



Conditions of approval

- Satisfactory Indemnity arrangements being in place.
- You will no doubt realise that, whilst The Committee has no objection to the study on ethical grounds, it is still necessary for you to obtain approval from the relevant Clinical Directors and/or bodies in which the work will be carried out.
- In keeping with the Committee's protocol and in line with the Good Clinical Practice guidelines, would you please inform us of the results of the study when it is completed. If this is not within twelve months, please inform us of progress on an annual basis.
- Active approval is required until the study has been completed.
- Compliance with the Data Protection Act.
- The Committee would wish to be kept informed of serious adverse events, amendments and any other modifications to patient information sheets and patient consent forms.

ICH GCP Compliance

Worcestershire LREC is fully compliant with the International Committee on Harmonisation/Good Clinical Practice (ICH) Guidelines for the Conduct of Trials Involving the Participation of Human Subjects as they relate to the responsibilities, composition, function, operations and records of an Independent Ethics Committee/Independent Review Board. To this end it undertakes to adhere as far as is consistent with its Terms of Reference, to the relevant clauses of the ICH Harmonised Tripartite Guideline for Good Clinical Practice, adopted by the Commission of the European Union on 17th January 1997.

LREC Membership

Please find attached, for information, a list of members of the LREC.

The Committee did, however, ask for the following:

- Patient/Carer Information Sheet:
 - Page 19 – last sentence – to read “.... Worcestershire Local Research Ethics Committee have also approved it ...”
- Consent Form:
 - Page 20 – point 1 – “Have you read the Parent Information Sheet?” - please add the version number and date.

Please would you forward an amended copy of the above papers for our file.

If the project continues after THREE YEARS from the date of this letter Worcestershire Local Research Ethics Committee will wish to re-examine it.

Mr A Rogers
25 February 2002
3

Would you please communicate this approval immediately to all members of the investigating team and, where appropriate, the sponsoring commercial company.

In the meantime, we look forward to receiving the amended papers outlined above.

Yours sincerely



Kath Garrad

Administrator, Worcestershire Local Research Ethics Committee

Enc: List of LREC members

Appendix B: Instructions to Authors

Autism

Notes for Authors

1. The aim of the journal is to publish original research or original contributions to the existing literature on autism. Papers should not previously have been published or be under consideration elsewhere.
2. Each paper submitted will be refereed by at least two anonymous referees.
3. *Length of papers.* Brief reports (up to 3000 words) and more substantial reports (between 5000 and 8000 words) will be considered for the journal. There is scope for longer papers to be published on an occasional basis but please consult with the Editors before submission.
4. When submitting papers for consideration, please supply *four* paper copies. If the paper is accepted for publication, then a copy of the final version will be required on disk. *The author is responsible for guaranteeing that the final hard copy and diskette versions of the manuscript are identical.*
5. The Editors welcome contributions to the Letters to the Editors section of the journal. In the interests of saving space, or to protect confidentiality, for example, the Editors may edit letters for publication.
6. *Unsolicited manuscripts will not be returned to authors if rejected.*
7. *Blind peer review.* Authors should provide two title pages, one containing names, affiliations, full mailing address plus telephone, fax, email address, and one containing the title only.
8. Please number all pages except the title pages, in the following order: abstract (100-150 words), keywords (up to five), address for correspondence; main text; appendices; acknowledgements; notes; references; tables; figure captions; figures. Each of the above sections should start on a fresh page.
9. Articles submitted for publication must be typed (or word processed) in double spacing *throughout (especially all notes and references)*, on one side only of white A4 or US standard paper, with generous left- and right-hand margins but without justification. Pages should *not* be stapled. Titles and section headings should be clear and brief with a maximum of three orders of heading.
10. *Quotations.* Lengthy quotations (exceeding 40 words) should be displayed and indented in the text.
11. American or UK spelling may be used, to the author's preference. Indicate italics by underlining and use single quotation marks. Dates should be in the form '9 May 1995'. Delete points from 'USA' and other such abbreviations.
12. *Tables and figures* should have short, descriptive titles, and be clearly numbered. All footnotes to tables and their source(s) should be typed below the tables. Column headings should clearly define the data presented. Camera-ready artwork must be supplied for all figures. The location of tables and figures in the text should be given by a note 'Table/Figure X about here' on a separate line in the text.
13. *References in the text* should be presented in the Harvard system, i.e. the author's name and year of publication in brackets, together with the page number, e.g. 'As Hobson (1989, pp. 22-3) has observed...', or, in a more general reference:

'Scott (1985) appears to be saying that...'
14. *Reference list.* The references should be listed alphabetically in full at the end of the paper, typed double-spaced for ease of editing, in the following style:

Happé, F. (1995) *Autism: An Introduction to Psychological Theory*. Cambridge, MA: Harvard University Press.

Hobson, R.P. (1989) 'Beyond Cognition: A Theory of Autism', in G. Dawson (ed.) *Autism: Nature, Diagnosis and Treatment*, pp. 22-8. New York: Guilford.

Sigman, M.D., Kasari, C., Kwon, J. & Yirmiya, N. (1992) 'Responses to the Negative Emotions of Others by Autistic, Mentally Retarded and Normal Children', *Child Development* 63(3): 796-807.

In multi-authored articles, the names of all authors should be given in the reference list. In the text, if there are more than two names, please give the first name and et al.

NB: (eds) as a contraction but (ed.) as an abbreviation.

15. *Language and terminology*. Jargon or unnecessary technical language should be avoided as should the use of abbreviations (such as coded names for conditions). Please avoid the use of nouns as verbs (e.g. to access), and the use of adjectives as nouns (e.g. autistics, normals or retardates). Wherever possible use phrases such as 'children with autism' rather than 'autistic children'. Language that might be deemed sexist or racist should be avoided.

16. *Abbreviations*. As far as possible, please avoid the use of initials, except for terms in common use. Abbreviations that are common enough to be in the dictionary, e.g. IQ and USA, are acceptable, but AS (for Asperger syndrome) and SPS (for semantic pragmatic syndrome) are not. Please provide a list, in alphabetical order, of abbreviations used, and spell them out (with the abbreviation in brackets) the first time they are mentioned in the text.

17. Authors will receive proofs of their papers and 25 offprints of the published version, plus one copy of the printed journal.

18. *Copyright*. On acceptance of their paper, authors will be asked to assign copyright to Sage Publications Ltd and The National Autistic Society, subject to retaining their right to reuse the material in other publications written or edited by themselves, and due to be published preferably at least one year after initial publication in the journal. Authors are responsible for obtaining permission from copyright holders for reproducing any illustrations, tables, figures or lengthy quotations previously published elsewhere.

19. *Typescripts*. Authors should retain one copy of their typescript and send *four copies*, each fully numbered and legible, together with all figures and tables and a covering letter. Authors from outside the Americas should send their typescripts to: Submissions Editor, *Autism: The International Journal of Research and Practice*, The National Autistic Society, 393 City Road, London, EC1V 1NG, UK. Fax: 144 [0]171 833 9666; email: autism@nas.org.uk. Authors from the Americas should send their typescripts in the first instance to: Mohammad Ghaziuddin, Division of Child Psychiatry, Taubman Center, Box 0390, University of Michigan Medical Center, 1500 East Medical Center Drive, Ann Arbor, MI 48109-0390, USA. Fax 11[313]936 8907; email: mghaziud@umich.edu

20. *Reviews*. Books and suggestions should be sent to the Reviews Editor: Tony Charman, The Behavioural Sciences Unit, Institute of Child Health, 30 Guilford Street, London WC1N 1EH. Email: t.charman@ich.ucl.ac.uk

21. *Covering letter*. Please attach to every submission a letter confirming that all authors have agreed to the submission and that the article is not currently being considered for publication by any other print or electronic journal.

The Journal of Child Psychology and Psychiatry and Allied Disciplines

Author Guidelines

Notes for Contributors

Contributions from any discipline that further knowledge of the mental life and behaviour of children are welcomed. Papers are published in English, but submissions are welcomed from any country. Contributions should be of a standard which merits presentation before an international readership.

Papers may assume either of the following forms:

- *Original articles*
These should make an original contribution to empirical knowledge, to the theoretical understanding of the subject, or to the development of clinical research and practice.
- *Review articles*
These will survey an important area of interest within the general field and may be offered or commissioned. All papers in the Annual Research Review, Annotations and Practitioner Reviews are usually commissioned.
- *Announcements*
The Journal will normally publicize details of forthcoming *international* meetings and conferences only. Send copy to the Journal Secretary to arrive at least *6 months* prior to the meeting deadline to ensure inclusion in an appropriate issue.

General

1. Submission of a paper to the *Journal* will be held to imply that it represents an original contribution not previously published (except in the form of an abstract or preliminary report); that it is not being considered for publication elsewhere; and that, if accepted by the Journal, it will not be published elsewhere in the same form, in any language, without the consent of the Editors. When submitting a manuscript, authors should state in a covering letter whether they have currently in press, submitted or in preparation any other papers that are based on the same data set, and, if so, provide details for the Editors.

Ethics

2. Authors are reminded that the *Journal* adheres to the ethics of scientific publication as detailed in the *Ethical principles of psychologists and code of conduct* (American Psychological Association, 1992). These principles also imply that the piecemeal, or fragmented publication of small amounts of data from the same study is not acceptable.

3. Papers should be submitted online. For detailed instructions please go to:

<http://acpp.manuscriptcentral.com> Previous users can *Check for existing account*. New users should *Create a new account*. Papers can also be submitted to the Joint Editors, care of:

The Journal Secretary

St Saviour's House

39/41 Union Street

London SE1 1SD, UK

Telephone: +44 (0)20 7403 7458

Faxline: +44 (0)20 7403 7081

E-Mail: jcpp@acpp.org.uk

Upon acceptance of a paper, the author will be asked to transfer copyright to the ACP.

Manuscript Submission

1. The manuscript should be typed clearly on one side only of white A4 (8 x 11 inches or 210 x 297 mm) paper, and double-spaced throughout including references and tables, with wide margins. Sheets should be numbered consecutively. A letter giving the name, telephone and fax number, and email address of the author to whom communication should be addressed should accompany the submission. Authors not submitting online should send 2 copies of the manuscript together with a 3.5 floppy disk containing all relevant files. The preferred file formats are MS Word or WordPerfect, and should be PC compatible. If using other packages the file should be saved as Rich Text Format or Text only.

2. Papers should be concise and written in English in a readily understandable style. Care should be

taken to avoid racist or sexist language, and statistical presentation should be clear and unambiguous. The *Journal* follows the style recommendations given in the *Publication manual of the American Psychological Association* (4th edition, 1994), available from the Order Department, APA, P.O. Box 2710, Hyattsville, MD 20784, USA.

3. The *Journal* is not able to offer a translation service, but, in order to help authors whose first language is not English, the Editors will be happy to arrange for accepted papers to be prepared for publication in English by a sub-editor.

Layout

1. Title

The first page of the manuscript should give the title, name(s) and short address(es) of author(s), and an abbreviated title (for use as a running head) of up to 80 characters. Authors requesting masked review should provide a first page with the title only and adapt the manuscripts accordingly.

2. Abstract

The abstract should not exceed 300 words and should be structured in the following way with bold marked headings: Background; Methods; Results; Conclusions; Keywords; Abbreviations. The abbreviations will apply where authors are using acronyms for tests or abbreviations not in common usage. Any questions regarding the new structure should be addressed to the Editors.

3. Headings

Articles and research reports should be set out in the conventional format: Methods, Results, Discussion and Conclusion. Descriptions of techniques and methods should only be given in detail when they are unfamiliar. There should be no more than three (clearly marked) levels of subheadings used in the text.

4. Acknowledgements

These should appear on a separate sheet, double spaced, at the end of the body of the paper, before the References.

5. Correspondence to:

Full name, address, phone, fax and email details of the corresponding author should appear on a separate sheet of paper at the end of the manuscript, before the References.

Referencing

The *Journal* follows the text referencing style and reference list style detailed in the *Publication manual of the American Psychological Association* (5th edition).

(a) References in text.

References in running text should be quoted as follows:

Smith and Brown (1990), or (Smith, 1990), or (Smith, 1980, 1981a, b), or (Smith & Brown, 1982), or (Brown & Green, 1983; Smith, 1982).

For up to five authors, all surnames should be cited in the first instance, with subsequent occurrences cited as et al., e.g. Smith et al. (1981) or (Smith et al., 1981). For six or more authors, cite only the surname of the first author followed by et al. However, all authors should be listed in the Reference List. Join the names in a multiple author citation in running text by the word 'and'. In parenthetical material, in tables, and in the References List, join the names by an ampersand (&).

References to unpublished material should be avoided.

(b) Reference list.

Full references should be given at the end of the article in alphabetical order, and not in footnotes.

Double spacing must be used.

References to journals should include the authors' surnames and initials, the full title of the paper, the full name of the journal, the year of publication, the volume number, and inclusive page numbers. Titles of journals must not be abbreviated and should be italicised.

References to books should include the authors' surnames and initials, the full title of the book, the place of publication, the publisher's name and the year of publication.

References to articles, chapters and symposia contributions should be cited as per the examples below:

Kiernan, C. (1981). Sign language in autistic children. *Journal of Child Psychology and Psychiatry*, 22, 215-220.

Thompson, A. (1981). *Early experience: The new evidence*. Oxford: Pergamon Press.

Jones, C.C., & Brown, A. (1981). Disorders of perception. In K. Thompson (Ed.), *Problems in early childhood* (pp. 23-84). Oxford: Pergamon Press.

Use Ed.(s) for Editor(s); edn. for edition; p.(pp.) for page(s); Vol. 2 for Volume 2.

Tables and Figures

All Tables and Figures should be supplied on separate sheets, not included within the text, and have their intended position clearly indicated in the manuscript. They should be constructed so as to be intelligible without reference to the text. Figures should be supplied as high quality original artwork and any lettering or line work should be able to sustain reduction to the final size of reproduction. Tints and complex shading should be avoided and colour should not be used. Figures supplied on disk must be accompanied by a hard copy and should be originated in a drawing package and saved as an EPS or TIFF file. Halftones should only be included when essential and must be prepared on glossy paper and

have good contrast. Table and figure legends should be typed on a separate page.

Nomenclature and symbols

Each paper should be consistent within itself as to nomenclature, symbols and units. When referring to drugs, give generic names, not trade names. Greek characters should be clearly indicated.

Refereeing

The *Journal* has a policy of anonymous peer review and the initial refereeing process seldom requires more than three months. Authors may request that their identity be withheld from referees and should follow the procedure for masked review, as above. Most manuscripts will require some revision by the authors before final acceptance. Manuscripts, whether accepted or rejected will not be returned to authors. The Editor's decision on the suitability of a manuscript for publication is final.

Proofs

Proofs will be sent to the designated author only. These will be sent via email as a PDF file, therefore a current email address must be provided with the manuscript. Only typographical or factual errors may be changed at proof stage. The publisher reserves the right to charge authors for correction of non-typographical errors.

Offprints

The designated author will receive a PDF file of their article. If they would prefer to receive 25 offprints in place of the PDF file, they should notify the publisher using the form they will receive with their proofs. Additional offprints may also be purchased using this form. The designated author should undertake to forward copies of the PDF file to their co-authors.

Liability

Whilst every effort is made by the publishers and editorial board to see that no inaccurate or misleading data, opinion or statement appears in this journal, they wish to make it clear that the data and opinions appearing in the articles and advertisements herein are the sole responsibility of the contributor or advertiser concerned. Accordingly, the publishers, the editorial board and editors, and their respective employees, officers and agents accept no responsibility or liability whatsoever for the consequences of any such inaccurate or misleading data, opinion or statement.

International Journal of Language & Communication Disorders

Instructions for Authors:

[Click here to check your article status](#)

*****Note to Authors:** please make sure your contact address information is clearly visible on the **outside of all packages** you are sending to Editors.***

Submitting a paper

Manuscripts (four copies) for consideration should be sent to the Editor:

Chris Code

School of Psychology
Washington Singer Labs
University of Exeter
Exeter
EX4 4QG
UK

Tel: +44 (0)1392 264626

Fax: +44 (0)1392 264623

General Guidelines

Please read these Guidelines with care and attention: failure to follow them may result in your paper being delayed. Note especially the referencing conventions used by ***International Journal of Language & Communication Disorders*** and the requirement for gender-, race-, and creed-inclusive language, and for adherence to the Ethics of Experimentation.

International Journal of Language & Communication Disorders considers all manuscripts at the Editor's discretion; and the Editor's decision is final.

International Journal of Language & Communication Disorders considers all manuscripts on condition they are the property (copyright) of the submitting author(s) and that copyright will be transferred to the Royal College of Speech & Language Therapists, if the paper is accepted.

International Journal of Language & Communication Disorders considers all manuscripts on the strict condition that they have been submitted only to ***International Journal of Language & Communication Disorders***, that they have not been published already, nor are they under consideration for publication, nor in press elsewhere. Authors who fail to adhere to this condition will be charged all costs which ***International Journal of Language & Communication Disorders*** incurs, and their papers will not be published.

- Please write clearly and concisely, stating your objectives clearly and defining your terms. Your arguments should be substantiated with well reasoned supporting evidence.
- In writing your paper, you are encouraged to review articles in the area you are addressing which have been previously published in the journal, and where you feel appropriate, to reference them. This will enhance context, coherence, and continuity for our readers.
- For all manuscripts, gender-, race-, and creed-inclusive language is mandatory.
- Ethics of Experimentation: Contributors are required to follow the procedures in force in their countries which govern the ethics of work done with human subjects. The Code of Ethics of the World Medical Association (Declaration of Helsinki) represents a minimal requirement.
- Abstracts are required for all papers submitted and should precede the text of a paper; see below, 'Abstracts'
- Manuscripts should be printed on one single side of A4 or 8 x 11 inch white good quality paper, double-spaced throughout, including the reference section.
- Accepted manuscripts in their final, revised versions, should also be submitted as electronic word processing files on disk; see 'Electronic Processing'.

- Authors should include telephone and fax numbers as well as e-mail addresses on the cover page of manuscripts.
- Bionotes should be contained on a separate sheet and be located at the beginning of a paper.

Abstracts

Structured abstracts are required for all papers, and should be submitted as detailed below, following the title and author's name and address, preceding the main text.

For papers reporting original research, state the *primary objective* and any hypothesis tested; describe the *research design* and your reasons for adopting that methodology; state the *methods and procedures* employed, including where appropriate tools, hardware, software, the selection and number of study areas/subjects, and the central *experimental interventions*; state the *main outcomes and results*, including relevant data; and state the *conclusions* that might be drawn from these data and results, including their implications for further research or application/practice.

For review essays, state the *primary objective* of the review; the reasoning behind your literature selection; and the way you critically analyse the literature; state the *main outcomes and results* of your review; and state the *conclusions* that might be drawn, including their implications for further research or application/practice.

The abstract should not exceed 400 words.

Notes on style

All authors are asked to take account of the diverse audience of *International Journal of Language & Communication Disorders*. Clearly explain or avoid the use of terms that might be meaningful only to a local or national audience. However, note also that *International Journal of Language & Communication Disorders* does not aspire to be international in the ways that McDonald's restaurants or Hilton Hotels are 'international'; we much prefer papers that, where appropriate, reflect the particularities of each higher education system.

Some specific points of style for the text of articles, research reports, case studies, reports, essay reviews, and reviews follow:

1. *International Journal of Language & Communication Disorders* prefers US to 'American', USA to 'United States', and UK to 'United Kingdom'.
2. *International Journal of Language & Communication Disorders* uses conservative British, not US, spelling, i.e. colour not color; behaviour (behavioural) not behavior; [school] programme not program; [he] practises not practices; centre not center; organization not organisation; analyse not analyze, etc.
3. Single 'quotes' are used for quotations rather than double "quotes", unless the 'quote is "within" another quote'.
4. Punctuation should follow the British style, e.g. 'quotes precede punctuation'.
5. Punctuation of common abbreviations should follow the following conventions: e.g. i.e. cf. Note that such abbreviations are not followed by a comma or a (double) point/period.
6. Dashes (M-dash) should be clearly indicated in manuscripts by way of either a clear dash (-) or a double hyphen (- -).
7. *International Journal of Language & Communication Disorders* is sparing in its use of the upper case in headings and references, e.g. only the first word in paper titles and all subheads is in upper case; titles of papers from journals in the references and other places are not in upper case.
8. Apostrophes should be used sparingly. Thus, decades should be referred to as follows: 'The 1980s [not the 1980's] saw ...'. Possessives associated with acronyms (e.g. APU), should be written as follows: 'The APU's findings that ...', but, NB, the plural is APUs.
9. All acronyms for national agencies, examinations, etc., should be spelled out the first time they are introduced in text or references. Thereafter the acronym can be used if appropriate, e.g. 'The work of the Assessment of Performance Unit (APU) in the early 1980s ...'. Subsequently, 'The APU studies of achievement ...', in a reference ... (Department of Education and Science [DES] 1989a).

10. Brief biographical details of significant national figures should be outlined in the text unless it is quite clear that the person concerned would be known internationally. Some suggested editorial emendations to a typical text are indicated in the following with square brackets: 'From the time of H. E. Armstrong [in the 19th century] to the curriculum development work associated with the Nuffield Foundation [in the 1960s], there has been a shift from heurism to constructivism in the design of [British] science courses'.

11. The preferred local (national) usage for ethnic and other minorities should be used in all papers. For the USA, African-American, Hispanic, and Native American are used, e.g. 'The African American presidential candidate, Jesse Jackson...' For the UK, African-Caribbean (not 'West Indian'), etc.

12. Material to be emphasized (italicized in the printed version) should be underlined in the typescript rather than italicized. Please use such emphasis sparingly.

13. n (not N), % (not per cent) should be used in typescripts.

14. Numbers in text should take the following forms: 300, 3000, 30 000. Spell out numbers under 10 unless used with a unit of measure, e.g. nine pupils but 9 mm (do not introduce periods with measure). For decimals, use the form 0.05 (not .05).

Mathematics

Special care should be taken with mathematical scripts, especially subscripts and superscripts and differentiation between the letter 'ell' and the figure one, and the letter 'oh' and the figure zero. If your keyboard does not have the characters you need, it is preferable to use longhand, in which case it is important to differentiate between capital and small letters, K, k and x and other similar groups of letters. Special symbols should be highlighted in the text and explained in the margin. In some cases it is helpful to supply annotated lists of symbols for the guidance of the sub-editor and the typesetter, and/or a 'Nomenclature' section preceding the 'Introduction'.

For simple fractions in the text, the solidus / should be used instead of a horizontal line, care being taken to insert parentheses where necessary to avoid ambiguity, for example, $1/(n-1)$. Exceptions are the proper fractions available as single type on a keyboard.

$$\frac{61+5h+q}{n}$$

Full formulae or equations should be displayed, that is, written on a separate line. Horizontal lines are preferable to solidi, for example: $3n + 3yz^2$

But:

$$P = \frac{a/b + c/d + a/d}{(a^2 + b^2)(c^2 + d^2)}$$

The solidus is not generally used for units: ms⁻¹ not m/s, but note electrons/s, counts/channel, etc.

Displayed equations referred to in the text should be numbered serially (1, 2, etc.) on the right hand side of the page. Short expressions not referred to by any number will usually be incorporated in the text.

Symbols should not be underlined to indicate fonts except for tensors, vectors and matrices, which are indicated with a wavy line in the manuscript (not with a straight arrow or arrow above) and rendered in heavy type in print: upright sans serif \mathbf{r} (tensor), sloping serif \mathbf{r} (vector) upright serif \mathbf{r} (matrix).

Typographical requirements must be clearly indicated at their first occurrence, e.g. Greek, Roman, script, sans serif, bold, italic. Authors will be charged for corrections at proof stage resulting from a failure to do so.

Braces, brackets and parentheses are used in the order $\{[()]\}$, except where mathematical convention dictates otherwise (i.e. square brackets for commutators and anticommutators)

Citations in text

1. Ibid. (and the like) are not used when repeating citations. Simply repeat the original citation verbatim, e.g. (Orwell 1945).

2. Citations should be included in prefatory material to quotes (wherever possible) rather than placing them at the end. Thus, for example, 'Orwell (1945: 23) reduces the principles of animalism to seven commandments, namely, ...' is preferred to 'Orwell reduced the principles of animalism to seven commandments, namely, ... (Orwell 1945: 23)'.

3. Multiple citations within parentheses should be divided by a comma, not a semi-colon, and there should be no use of '&' within such multiple references. References to works published in the same year should be cited as, e.g. (Smith 1991a, b).

4. Multiple citations within a text should be ordered by date, not alphabetically by author's name, e.g. (Smith 1902, Jones and Bower 1934, Brown 1955, 1958a, b, Green 1995).

5. *et al.* may be used in citations within the text when a paper or book has three or more authors, but note that all names are given in the reference itself.

6. Page spans in references should be given in full, e.g. 'Sedgewick (1935: 102-103; emphasis added) outlines them as follows:'

Notes on tables and figures

Artwork submitted for publication will not be returned and will be destroyed after publication, unless you request otherwise. Whilst every care is taken of artwork, neither the Editor nor Taylor & Francis shall bear any responsibility or liability for non-return, loss, or damage of artwork, nor for any associated costs or compensation. You are strongly advised to insure appropriately.

The same data should not be reproduced in both tables and figures. The usual statistical conventions should be used: a value written 10.0 ± 0.25 indicates the estimate for a statistic (e.g. a mean) followed by its standard error. A mean with an estimate of the standard deviation will be written 10.0 SD 2.65. Contributors reporting ages of subjects should specify carefully the age groupings: a group of children of ages e.g. 4.0 to 4.99 years may be designated 4 +; a group aged 3.50 to 4.49 years 4 ± and a group all precisely 4.0 years, 4.0.

1. Tables and figures should be referred to in text as follows: figure 1, table 1, i.e. lower case. 'As seen in table [or figure] 1 ...' (not Tab., fig. or Fig).

2. The place at which a table or figure is to be inserted in the printed text should be indicated clearly on a manuscript:

Insert table 2 about here

3. Each table and/or figure must have a title that explains its purpose without reference to the text.

4. All figures and tables must be on separate sheets and not embedded in the text.

Thus tables and figures must be referred to in the text and numbered in order of appearance. Each table should have a descriptive title and each column an appropriate heading. For all figures, original copies of figures should be supplied. All figures should allow for reduction to column width (7.5cm) or page width (16 cm). Photographs may be sent as glossy prints or negatives. The legends to any illustrations must be typed separately following the text and should be grouped together.

Acknowledgements

Any acknowledgements authors wish to make should be included in a separate headed section at the end of the manuscript.

Book reviews

1. The following header material should appear in all reviews in the following order (note also the punctuation):

Student Engagement and Achievement in the American Secondary School.

Edited by Fred M. Newmann (Teachers College Press, New York, 1992), 240 pp., \$38.00 (hbk), ISBN 8077-3183-8, \$17.95 (pbk), ISBN 8077-3182-X.

2. Page references within reviews should be given as follows: (p. 337) or (pp. 36-37).

References

International Journal of Language & Communication Disorders uses the following conventions for references:

1. *To a book:*

BANDLER, R. and GRINDER, J. 1979, *Frogs into Princes: Neuro-linguistic Programming*, (Moab, Utah: Real People Press).

2. To a chapter in a book:

BENJAMIN, B. J., 1988, Changes in speech production and linguistic behaviours with aging. In B. B. Shadden (Ed.) *Communication Behaviour and Aging. A Sourcebook for Clinicians* (Baltimore: Williams & Wilkins), pp. 162-181.

3. To an article in a journal:

BIEVER, D. M. and BLESS, D. M., 1989, Vibratory characteristics of the vocal folds in young and adult geriatric women. *Journal of Voice*, **3**, 120-131.

4. To a technical report and to unpublished literature

DOCKRELL, J. E. LINDSAY, G., 1998, Factors guiding the classification of children with specific speech and language disorder. (In preparation).

WATSON, J. M. M., 1997, Sibilant-vowel coarticulation in the perception of speech by children with phonological disorder. Ph.D. Thesis, Queen Margaret College, Edinburgh.

5. Reference to a newspaper or magazine

RICHARDS, H., 1996, Republican lite? *The Times Higher Education Supplement*, 1 November, 16.

6. Reference to an Internet source

Give the universal resource locator in full:

<http://acsinfo.acs.org/instruct/instruct.html>

7. Reference to a personal communication

BRANNEN, J. 1996 Personal communication.

8. Reference to a case in law

In text, italicize names of plaintiffs and defendants:

Miranda v. Arizona 1974

9. Reference to government legislation

US Congress, Senate Committee on Foreign Relations, 1956, *The Mutual Security Act of 1956*, 84th Congress, second session, report 2273.

US Congress, House Committee on Banking & Currency, 1945, *Bretton Woods*

Other points to note

1. References to multi-authored books and papers should be fully spelled out in the references, i.e. *et al.* should not be used. The '&' should not be used except for publisher's names.

2. References to chapters in edited books must include the page references for any chapter being cited. Such references should include the full page span (e.g. 212-252, NOT 212-52). Note that a single editor is indicated by (ed.) - with a point/period - and multiple editors by (eds) - without a point/period.

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Appendix C: Children's Communication Checklist

Children's Communication Checklist (CCC)
Research version 1.1
 by D.V.M. Bishop

Child's name or code number: _____ Sex _____

Date of birth: _____ Today's date: _____

Your name (person completing the checklist) : _____

Your relation to the child (i.e. parent, teacher, speech therapist, etc.): _____

(For respondents other than parents)
 How long have you known this child? _____

School attended by child: _____

Is child receiving any special educational provision? YES NO
 If YES, please give further details here: _____

Has the child ever had a permanent hearing loss diagnosed? YES* NO

Has the child any permanent physical handicap or chronic illness? YES* NO

Is English the main language spoken at home? YES NO

*If YES, please give further details: _____

INSTRUCTIONS

Many aspects of behaviour that are important for understanding children's developing communication are not covered by conventional assessments. This checklist aims to assess such behaviours by capturing the impressions of people who see the child on a daily basis.

This checklist contains a series of statements describing aspects of children's behaviour. For each statement, you are asked to judge whether the statement DOES NOT APPLY, APPLIES SOMEWHAT or DEFINITELY APPLIES. Please tick ONE box per item, choosing the response that, in your judgement, best describes the child named above. Please do not write in the [] boxes on the far right of each item.

Please read each item carefully. Some items describe positive aspects of communication, in which case "definitely applies" indicates that the child is a mature and competent communicator. Other items describe communication difficulties, in which case "definitely applies" will be checked only if the child is having some problems communicating.

Do not leave any items blank. If you are unable to answer the question, please tick the box labelled "Unable to judge".

The checklist cannot capture every child's behaviour perfectly, so do not worry if you feel that none of the response alternatives is exactly appropriate; tick the one you think comes closest, and, if necessary, add an explanatory comment.

for office use	
A: 30-[] = _____	
B: 30-[] = _____	
C: 30-[] = _____	
D: 30-[] = _____	
E: 30-[] = _____	
F: 30-[] = _____	
G: 30-[] = _____	
H: 30-[] = _____	
I: 30-[] = _____	
total C to G	<div style="border: 1px solid black; width: 40px; height: 30px; margin: 0 auto;"></div>

	does not apply	applies somewhat	definitely applies	unable to judge	
1. people can understand virtually everything he/she says	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	- []
2. people have trouble in understanding much of what he/she says	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
3. seldom makes any errors in producing speech sounds	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	- []
4. mispronounces one or two speech sounds but is not difficult to understand; e.g. may say "th" for "s" or "w" for "r"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
5. production of speech sounds seems immature, like that of a younger child, e.g. says things like: "tat" for "cat", or "chimbley" for "chimney", or "bokkle" for "bottle"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
6. seems unable to produce several sounds; e.g. might have difficulty in saying "k" or "s", so that "cat" and "sat" are both pronounced as "tat"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
7. leaves off beginnings or ends of words, or omits entire syllables (e.g. "bella" for "umbrella")	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
8. it is much harder to understand when he/she is talking in sentences, rather than just producing single words.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
9. speech is extremely rapid	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	- []
10. seems to have difficulty in constructing the whole of what he/she wants to say: makes false starts, and repeats whole words and phrases; e.g., might say "can I- can I- can- can I have an - have an ice-cream"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
11. speech is clearly articulated and fluent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	- []
12. speech is mostly 2 to 3 word phrases such as "me got ball" or "give dolly"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
13. can produce long and complicated sentences such as: "When we went to the park I had a go on the swings"; "I saw this man standing on the corner"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	- []
14. tends to leave out words and grammatical endings, producing sentences such as: "I find two dog"; "John go there yesterday" "My grandma cat been ill"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
15. sometimes makes errors on pronouns, e.g. saying "she" rather than "he" or vice versa	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
16. talks to anyone and everyone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
17. talks too much	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
18. keeps telling people things that they know already	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
19. talks to himself/herself in public	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
20. talks repetitively about things that no-one is interested in	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
21. asks questions although he/she knows the answers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
22. it is sometimes hard to make sense of what he/ she is saying because it seems illogical or disconnected	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
23. conversation with him/her can be enjoyable and interesting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	- []
24. can give an easy-to-follow account of a past event such as a birthday party or holiday	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	- []
25. can talk clearly about what he/she plans to do in the future (e.g. tomorrow or next week)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	- []
26. would have difficulty in explaining to a younger child how to play a simple game such as "happy families", "snap" or "go fish"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]

does not apply applies to some-what definite-ly applies unable to judge

27. has difficulty in telling a story, or describing what he/she has done, in an orderly sequence of events	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
28. uses terms like "he" or "it" without making it clear what he/she is talking about	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
29. doesn't seem to realise the need to explain what he/she is talking about to someone who doesn't share his/her experiences; for instance, might talk about "Johnny" without explaining who he is	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
30. pronounces words in an over-precise manner: accent may sound rather affected or "put-on", as if child is mimicking a TV personality rather than talking like those around him/her	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
31. makes frequent use of expressions such as "by the way", "actually", "you know what?", "as a matter of fact", "well, you know" or "of course"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
32. will suddenly change the topic of conversation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
33. often turns the conversation to a favourite theme, rather than following what the other person wants to talk about	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
34. conversation with him/her tends to go off in unexpected directions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
35. includes over-precise information in his/her talk, e.g. will give the exact time or date of an event. E.g., when asked "when did you go on holiday" may say "13th July 1995" rather than "in the summer"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
36. has favourite phrases, sentences or longer sequences which he/she will use a great deal, sometimes in inappropriate situations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
37. sometimes seems to say things that he/she does not fully understand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
38. tends to repeat back what others have just said	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
39. his/her ability to communicate clearly seems to vary a great deal from one situation to another	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
40. takes in just one or two words in a sentence, and so often misinterprets what has been said	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
41. can understand sarcasm (e.g., will be amused rather than confused when someone says "isn't it a lovely day!" when it is pouring with rain)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-[]
42. tends to be over-literal, sometimes with (unintentionally) humorous results. For instance, a child who was asked "Do you find it hard to get up in the morning" replied "No. You just put one leg out of the bed and then the other and stand up." Another child who was told "watch your hands" when using scissors, proceeded to stare at his fingers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
43. gets into trouble because he/she doesn't always understand the rules for polite behaviour, and is regarded by others as rude or strange	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
44. may say things that are tactless or socially inappropriate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
45. treats everyone the same way, regardless of social status: e.g. might talk to the head teacher the same way as to another child	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]

does not apply applies some-what definite -ly applies unable to judge

46. ignores conversational overtures from others (e.g. if asked "what are you making?" just continues working as if nothing had happened)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
47. seldom or never starts up a conversation; does not volunteer information about what has happened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
48. doesn't seem to read facial expressions or tone of voice adequately and may not realise when other people are upset or angry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
49. poor at using facial expression or gestures to convey his/her feelings; he/she may look blank when angry, or smile when anxious	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
50. makes good use of gestures to get his/her meaning across	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-[]
51. seldom or never looks at the person he/she is talking to: seems to actively avoid eye contact	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
52. tends to look away from the person he/she is talking to: seems inattentive or preoccupied	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
53. smiles appropriately when talking to people	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-[]
54. is popular with other children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-[]
55. has one or two good friends	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-[]
56. tends to be babied, teased or bullied by other children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
57. is deliberately aggressive to other children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
58. may hurt or upset other children unintentionally	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
59. a loner: neglected by other children, but not disliked	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
60. perceived as odd by other children and actively avoided	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
61. has difficulty making relations with others because of anxiety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
62. with familiar adults, he/she seems inattentive, distant or preoccupied	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
63. overly keen to interact with adults, lacking the inhibition that most children show with strangers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
64. uses sophisticated or unusual words; e.g. if asked for animal names might say "aardvark" or "tapir"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
65. has a large store of factual information: e.g., may know the names of all the capitals of the world, or the names of many varieties of dinosaurs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
66. has one or more over-riding specific interests (e.g. computers, dinosaurs), and will prefer doing activities involving this to anything else	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
67. enjoys watching TV programmes intended for children of his/her age.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-[]
68. seems to have no interests: prefers to do nothing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]
69. prefers to do things with other children rather than on his/her own	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-[]
70. prefers to be with adults rather than other children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[]

Appendix D: Information for Participants

Parent / Carer Covering Letter

April 2002

Dear Parent / Carer,

RE: Research project investigating the use of non-verbal communication by children with specific language impairment and children with high-functioning autistic spectrum disorder.

I am sending you an invitation for your child to be involved in a research study investigating children's use of gesture and non-verbal communication. I am a Clinical Psychologist in Training, currently working with children and their families in the West Midlands Region. The research is to be presented as a Doctoral Thesis in Clinical Psychology at Coventry University and the University of Warwick in the summer of 2003.

The study is important because it will help us to understand how the use of non-verbal communication develops in children. It will also allow us to investigate how children with and without communication difficulties use non-verbal skills when they interact with other people. Finally, it is hoped that the research will provide us with valuable ideas, so that we may be able to help children cope more effectively with any social or communication difficulties they may have.

I hope you will take the time to read and consider the enclosed information about the research. Please be aware that your child does not have to take part in the study if you are unwilling for him/her to.

With best wishes,

Andrew Rogers
Clinical Psychologist in Training
Principal Researcher

Parent / Carer Information Sheet

How can we help?

Background to the study

For many children the development of language and communication skills is a task that occurs without difficulty throughout their school life and into adulthood. However, for some (estimates suggest between 5-10%), this is not the case. When such problems with language development occur, it is important that they are recognised early so that the appropriate help can be accessed. This study aims to increase our understanding of how non-verbal communication skills may allow us to identify specific language difficulties in a more efficient way and develop better strategies to help children with such difficulties.

The Research Team

- **Mr. Andrew Rogers**, Clinical Psychologist in Training, Coventry University & The University of Warwick Doctorate in Clinical Psychology.
- **Dr. Eve Knight**, Clinical Psychologist, Coventry University. (*Research Supervisor*)
- **Dr. Bryn Williams**, Clinical Psychologist, Worcester Community and Mental Health Trust. (*Research Supervisor*)
- **Ms. Shauna Walsh**, Speech and Language Therapist, Worcester Community and Mental Health Trust.

How can I contact the researcher?

We would encourage you to contact us if you would like to discuss the study.

We can be contacted via The Pear Tree Centre, Redditch on: 01527-488650

Or via Coventry University on: 02476-888328

It may not be possible for us to take your call immediately, but please give details of how we may contact you and we will return your call as soon as possible.

However, if you would like independent advice about taking part in this study, you can contact the Community Health Council at:

Burgage Lodge, 184 Franche Road, Kidderminster, DY11 5DA – Tel: 01562-69243.

Or Red House, Church Green West, Redditch, B97 4BG – Tel: 01527-61375.

Or Severn House, 10 The Moors, Worcester, WR1 3EE – Tel: 01905-22715.

What do I/we have to do?

If you would like your child to be involved in the study you will be asked to sign a written consent form. You will also be asked to complete a short questionnaire relating to your child's behaviour and communication skills. In addition to this, your child's teacher will be asked to complete a similar questionnaire. It is important to note however, that you will be able to withdraw from the study at any time without affecting the service that you or your child receives.

What does my child have to do?

If you have agreed for your child to be included in the study, he/she will be asked to talk with the researcher about school and hobbies for a period of approximately 10 minutes. It is hoped that your child will find participating in this an enjoyable experience. A member of the research team will videotape this conversation so that the type and frequency of non-verbal communication can be recorded. Once the information has been collected, the videotapes will be destroyed. In addition, he/she may also be asked to attempt a general test of intelligence and an assessment of his/her language skills. These should take no longer than 1½ hours to complete and often form part of the regular comprehensive assessment process for children with language difficulties.

Does my child have to take part in the study?

No. You are free to decide whether or not to provide information to us. Your decision will in no way affect the services you and your child receive.

What happens if I do not wish my child to continue with the study?

You may withdraw your child from the study at any time. You do not have to explain why. This will in no way affect the services you or your family receive in the future. If you agree initially and then decide to withdraw, please contact Dr. Bryn Williams at The Pear Tree Centre on: 01527-488650 or Andrew Rogers at Coventry University on 02476-888328.

What do you hope to find out from this study?

The study will help us to understand how the use of non-verbal communication develops in children. It will also allow us to investigate how children with and without communication difficulties use non-verbal skills when they interact with other people. Finally, it is hoped that the research will provide us with valuable ideas, so that we may be able to help children cope more effectively with any social or communication difficulties they may have.

How long will the study last?

The research project is to be completed by September 2003, but your child's involvement will be limited to his/her videotaped conversation with the researcher and the general assessment process. In total this should take no longer than 2-3 hours.

Ethical Approval and Confidentiality

The information collected will only be available to your respective clinician and the research team who are directly involved in the study. All of the data will be held securely and your personal details will not be passed on to any third party. As such, all

data collected will be held in accordance with the Data Protection Act (1998). Once the videotapes are destroyed, the information about each child will be coded to maintain confidentiality. **Therefore, it will not be possible to identify you or your child in any research report.**

A copy of the final research report will be available on its completion (September 2003), and all participants will receive a summary of the results. Coventry University Research Ethics Committee and Worcestershire Local Research Ethics Committee have approved the details of this study.

If you agree for your child to be involved in the study can you please complete the attached consent form and return it in the stamp addressed envelope supplied.

Appendix E: Consent Form

WRITTEN INFORMED CONSENT FORM

RE: Research project investigating the use of non-verbal communication by children with specific language impairment and children with high-functioning autistic spectrum disorder.

Please complete the following section yourself:

- | | | |
|---|------------------------------|-----------------------------|
| 1. Have you read the Parent Information Sheet –
(Version 3, dated 22 nd April 2002)? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 2. Have you had the opportunity to ask questions and discuss the study? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 3. Have you received satisfactory answers to your questions? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 4. Do you understand that you and your child are free to withdraw from the study? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| • At any time? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| • Without giving a reason? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| • Without affecting the service that you receive? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 5. Do you understand that you and your child's personal details will remain confidential and will not be disclosed to any other person or referred to by name in any research report? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 6. Would you be willing for your child to be videotaped talking to one of the research team? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 7. Would you be willing for your child to complete an assessment of his/her verbal and non-verbal abilities? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |

You should only agree to take part in this study when all of your answers to the previous questions are YES.

Do you agree for you and your child to take part in this study? Yes No

Child's name:..... Date of birth:.....

Parent/Carer's name:.....

Signature:.....

Date:.....

Name of Researcher/Clinician:.....

Signature of Researcher/Clinician:.....

Please keep the Information Sheet for future reference:

- If you are willing for you and your child to take part in the study, please complete the enclosed form and return it in the stamped addressed envelope supplied to:

Dr. Bryn Williams – Clinical Psychologist
Child and Adolescent Mental Health Services
The Pear Tree Centre
Smallwood House
Church Green West
REDDITCH
Worcestershire, B97 4BD

Tel: 01527-488650

Thank you for your time.