Metapragmatic awareness in children with typical language development, pragmatic language impairment and specific language impairment

A thesis submitted to the University of Manchester for the degree of Doctor of Philosophy in the Faculty of Medical and Human Sciences

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Abstract

THE UNIVERSITY OF MANCHESTER

Abstract of thesis submitted in October 2013 by Anna Collins for the degree of Doctor of Philosophy in the Faculty of Medical and Human Sciences.

Metapragmatic awareness in children with typical language development, pragmatic language impairment and specific language impairment.

Metapragmatic awareness (MPA) is the ability to explicitly reflect upon the pragmatic rules that govern conversation. There is a paucity of research on how MPA develops in childhood and whether it is impaired in children with pragmatic impairments. Despite this, MPA is often cited as an intervention tool for children with pragmatic language impairments (cwPLI) and children with specific language impairments (cwSLI). There are currently no published assessments of MPA ability and practice would benefit from application of a formalised assessment methodology. This thesis reports the phases of development of a novel clinical assessment of MPA for school-aged children called the Assessment of Metapragmatics (AMP).

The AMP task is a set of 13 Video Items each depicting a conversation between pairs of school-aged children. Each Video Item portrays a different pragmatic rule violation. After viewing each AMP Video Item the participants were asked a set of Assessor Questions designed to measure MPA. The AMP Video Items were shown to 40 children with typical language development (cwTLD), 34 cwPLI and 14 cwSLI. Preliminary analyses revealed the AMP to be sensitive to age-related changes in MPA and to demonstrate good internal reliability. For the cwTLD there was a distinct developmental shift in MPA ability around seven years of age. At this age there was an increase in the child’s ability to use explicit metapragmatic vocabulary to describe a pragmatic rule violation. CwTLD demonstrated superior MPA ability in comparison to the cwPLI and the cwSLI. No differential impairment in MPA abilities was present between the cwPLI and cwSLI.

Considerable variability in MPA abilities occurred for both the cwPLI and cwSLI and this was associated with language ability. This suggests that where MPA is found to be impaired, the child’s language ability should be taken into account and that language ability should be remediated before MPA is targeted in intervention. Where MPA is impaired, raising awareness of pragmatic rule may be the first step for intervention. Where MPA is age-appropriate, the child’s ability to monitor their use of the pragmatic rule, or their motivation to use the pragmatic rule, may be a more effective target of intervention in order to change behaviour. The relationship between MPA and social understanding for the pragmatic rule violation is also discussed and further studies of MPA are considered.
Declaration

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<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ACE</td>
<td>Assessment of Comprehension and Expression</td>
</tr>
<tr>
<td>APA</td>
<td>American Psychiatric Association</td>
</tr>
<tr>
<td>ASD</td>
<td>Autistic Spectrum Disorder</td>
</tr>
<tr>
<td>CCC-2</td>
<td>Children’s Communication Checklist, 2nd Edition</td>
</tr>
<tr>
<td>CELF-4</td>
<td>Clinical Evaluation of Language Fundamentals, 4th Edition</td>
</tr>
<tr>
<td>CLS</td>
<td>Core Language Scale</td>
</tr>
<tr>
<td>CPM</td>
<td>Coloured Progressive Matrices</td>
</tr>
<tr>
<td>cwASD</td>
<td>Children who have Autistic Spectrum Disorder</td>
</tr>
<tr>
<td>cwHFA</td>
<td>Children who have High Functioning Autism</td>
</tr>
<tr>
<td>cwPLI</td>
<td>Children who have Pragmatic Language Impairment</td>
</tr>
<tr>
<td>cwSLI</td>
<td>Children who have Specific Language Impairment</td>
</tr>
<tr>
<td>cwTLD</td>
<td>Children who have Typical Language Development</td>
</tr>
<tr>
<td>DSM-IV</td>
<td>Diagnostic and Statistical Manual of the APA, Version 4</td>
</tr>
<tr>
<td>DSM-V</td>
<td>Diagnostic and Statistical Manual of the APA, Version 5</td>
</tr>
<tr>
<td>ELI</td>
<td>Expressive Language Index</td>
</tr>
<tr>
<td>GCC</td>
<td>General Communication Composite</td>
</tr>
<tr>
<td>HFA</td>
<td>High Functioning Autism</td>
</tr>
<tr>
<td>MPA</td>
<td>Metapragmatic awareness</td>
</tr>
<tr>
<td>NVIQ</td>
<td>Nonverbal IQ</td>
</tr>
<tr>
<td>PDD</td>
<td>Pervasive Developmental Disorder</td>
</tr>
<tr>
<td>PLI</td>
<td>Pragmatic Language Impairment</td>
</tr>
<tr>
<td>RLI</td>
<td>Receptive Language Index</td>
</tr>
<tr>
<td>SAT</td>
<td>Social Attribution Task</td>
</tr>
<tr>
<td>SCIP</td>
<td>Social Communication Intervention Project</td>
</tr>
<tr>
<td>SCQ</td>
<td>Social Communication Questionnaire</td>
</tr>
<tr>
<td>SIDC</td>
<td>Social Interaction Deviance Composite</td>
</tr>
<tr>
<td>SLI</td>
<td>Specific Language Impairment</td>
</tr>
<tr>
<td>SLT</td>
<td>Speech and Language Therapy/Therapist</td>
</tr>
<tr>
<td>SS</td>
<td>Standard Score</td>
</tr>
<tr>
<td>TLD</td>
<td>Typical Language Development</td>
</tr>
<tr>
<td>ToM</td>
<td>Theory of Mind</td>
</tr>
<tr>
<td>TROG-2</td>
<td>Test of the Reception of Grammar 2nd Edition</td>
</tr>
<tr>
<td>WM</td>
<td>Working Memory</td>
</tr>
</tbody>
</table>
1 Introduction

1.1 Overview of the thesis

An overview of the thesis structure will be given below. The main sections of the Introduction, Method, Results and Discussion will be outlined.

Introduction

The main body of the introduction begins at section 1.2 with a general overview of the aims and rationale for the thesis. Following this, section 1.3 presents a review of the literature on the development of pragmatics in childhood, including modular and contemporary accounts of pragmatic development. Clinical applications of these theoretical accounts are then described. Section 1.4 introduces what is currently known about the language and pragmatic abilities of children with clinical communication impairments, including pragmatic language impairment (PLI), specific language impairment (SLI) and autistic spectrum disorder (ASD). Section 1.5 provides a description of current metapragmatic interventions for cwPLI. In section 1.6 definitions of metacognition, metalinguistics and metapragmatics will be given. What is currently known about the development of metapragmatic awareness (MPA) in children who have typically developing language (cwTLD), children who have PLI (cwPLI) and children who have SLI (cwSLI) will then be described. The rationale for collecting developmental and clinical data on MPA will be discussed with specific emphasis on how the data may help to ascertain the relationship between metapragmatic awareness and other aspects of development such as language ability and pragmatic ability.

Research Aims

Section 2 outlines the research aims and hypotheses which will be investigated in this thesis.
Method and Results

Method
The methods section provides a description of the novel Assessment of Metapragmatics (AMP) that was designed as part of this thesis. The recruitment and testing procedures are outlined for each participant group. Methods and results for piloting and developing the AMP Video Items, Assessor Questions, task administration and scoring scheme are outlined.

Investigation of the reliability of the AMP as a measure of age-related changes in MPA
Methods and results for testing the reliability and sensitivity of the AMP as a measure of age-related changes in MPA are given.

Investigation of MPA in cwTLD
The AMP was used to collect data on MPA in school-aged cwTLD. Age-related differences in MPA are analysed including analysis of the levels of explicitation in MPA responses.

Comparison of MPA in cwTLD, cwPLI and cwSLI
The AMP was used to collect data on MPA in school-aged cwPLI and cwSLI. The MPA abilities of the cwPLI are compared to the MPA abilities of the cwTLD and cwSLI.

Discussion
In the discussion chapter there is an exploration and interpretation of the results with reference to the current theoretical and clinical literature. Methodological limitations of the current study are discussed along with suggestions for further studies of MPA.
1.2 General Introduction

Pragmatic ability refers to the use and understanding of language in context at the discourse level (Bishop, 1997). Metapragmatic awareness (MPA) refers to explicit reflection upon the pragmatic rules that govern discourse, such as reciprocity, verbosity and proximity. This includes pragmatic rules that apply to a broad range of forms of communication including narratives, debates or conversations. Conversational skills, including choosing what to say and how to say it based on who it is going to be said to, are fundamental to successful communication (Reed, McLeod & McAllister, 1999). For this reason speech and language therapists (SLTs) working with children with pragmatic impairments are likely to be interested in the use of pragmatic rules to communicate in conversations. The area of MPA of interest in this thesis is the ability to talk about the pragmatic rules of conversation. MPA in this sense refers to the ability to relate what has been said to the context in which it has been said (Bernicot & Laval, 1996). This requires the child to be aware that understanding the meaning of the utterance is derived from both the linguistic utterance and the discourse context in which the utterance occurs.

Several experimental MPA tasks have previously been used to assess metapragmatics, including tasks which involve identifying pragmatic rules and pragmatic rule violations, judging the appropriacy of pragmatic behaviours and suggesting modifications to pragmatic behaviours (Axia & Baroni, 1985; Baroni & Axia, 1989; Bernicot & Laval, 1996; Bernicot, Laval, & Chaminaud, 2007; Creaghead, 1990; Paul & Norbury, 2012; Sachs, Donnelly, Smith, & Bookbinder, 1991; Walker, Schwartz, Nippold, Irvin, & Noell, 1994; Wilkinson & Milosky, 1987).

Despite the existence of experimental MPA tasks, there are no published clinical assessments of MPA. The lack of tools to systematically assess MPA has led to a dearth of information regarding the development of MPA in children with communication impairments (cwTLD). Knowledge of typical developmental norms would inform SLTs about the level of MPA that a child should possess at a certain chronological age. This information would enable them to ascertain if a child with communication impairment had developmentally appropriate levels of MPA. Furthermore, there is a lack of information regarding the development of MPA in children with clinical communication impairments (Meline & Brackin, 1987). As a
result, MPA is not well understood or consistently applied to assessment, diagnosis and intervention for these children.

The central aim of this thesis is to develop a reliable and sensitive clinical assessment of MPA in school-aged children and to report novel findings on the development of MPA in cwtLD and children with language impairments. These findings are then discussed in relation to our understanding of what MPA is and how it can be applied to clinical assessment and intervention.

1.3 Pragmatics

The study of linguistics has traditionally separated linguistic enquiry into components of language including phonetics, phonology, syntax, semantics and pragmatics (Huang, 2007). Here pragmatics is the branch of linguistics interested in the rules governing language use. The definition of pragmatics is inextricably linked to the aims of pragmatic theorists, and as such has tended to focus on aspects of pragmatics such as inference, presupposition, implicature, speech acts and illocutionary force (Levinson, 1983). Given the breadth of topics considered to fall within the scope of pragmatics, and the fact that researchers tend to focus on a specific topic within this scope, it is unsurprising that consensus on a precise definition of pragmatics is still to be reached. Levinson (1983) offered a precise definition, stating that pragmatics is the contribution of context to the understanding of language and to a certain extent this definition will be used in this thesis.

However, there is one important way in which the approach to pragmatics adopted in this thesis differs from this traditional view. Whilst this traditional view of pragmatics focuses on linguistic aspects of communication, contemporary approaches to pragmatics and pragmatic impairment have broadened the scope of pragmatics to include paralinguistic aspects of communication such as tone of voice or volume and non-verbal aspects such as proximity (Perkins, 2007). Furthermore, the scope of pragmatics has been broadened to include not just linguistic aspects such as reciprocity and verbosity but to also encompass cognitive abilities such as inference, social cognition and emotional awareness.
The historical development of pragmatic conceptualisation will be outlined in more detail in section 1.3.1 through descriptions of modular accounts of pragmatic development. Pragmatics in childhood has been extensively studied and provides insights into how children’s use of language emerges from the preschool years into adulthood. Section 1.3.2 reviews the literature on pragmatic development and leads into the contemporary theoretical accounts of pragmatic development outlined in section 1.3.3. Clinical frameworks of pragmatic impairment based on contemporary models of pragmatic development will then be outlined in section 1.3.4.

1.3.1 Modular accounts of pragmatics

1.3.1.1 Speech Act Theory

The scope of pragmatics as an applied construct in clinical communication has never been static in the literature. The traditional narrow view of pragmatics initially constrained research to speech acts (Austin, 1975; Searle, 1969). Speech acts comprise two component parts: (1) the proposition – what is said; (2) the illocutionary force – what is meant, including whether the utterance was meant as a question, comment, instruction etc. (Searle, 1969). Speech Act Theory (Searle, 1969) therefore acknowledged that when we use language not only do we express meaning but we are also doing something. Arguably the way in which we “do something” with language is fundamental for communicative success. The “doing something” is made possible because we have a shared understanding that what we say represents what we intend, think, believe or require i.e. language represents intention. This understanding goes beyond the basic assumption that what we say is true or relevant. In his discussion of speech acts Austin (1975) distinguished between three levels of meaning for each utterance: the sentence itself (locution), the speaker’s intention in producing the utterance/the “force” of the utterance (illocution) and the effect of the sentence on the listener (perlocution) e.g. to persuade, direct or inform. For the speech act to be successful the speaker’s illocution and the listener’s perlocution must complement each other. Where they do not, communication may break down.

The separation between proposition and illocutionary force highlighted the role of context in shaping the meaning of the utterance. Nevertheless, at the time that Speech
Act Theory was being formulated the domain of pragmatics was viewed purely in terms of the study of language use. What the Speech Act Theory failed to do was to take account of non-verbal and paralinguistic features of communication. In addition to the verbal speech act, the speaker’s meaning can be construed from non-verbal acts such as eye contact, facial expression, body language, positioning, gesture and paralinguistic acts such as tone of voice. Whilst linguistic speech acts are the main vehicle for communicating a message, later theories of pragmatics, such as Grice’s theory, argued that non-verbal acts could alter the illocutionary force of the speech act (Grice, 1989). For example, “that’s fine” said with a negative tone of voice or facial expression has a very different meaning to the same utterance said with a smile or a positive tone of voice and a different meaning again if there is a rising intonation at the end of the sentence. With an increased awareness of the role that context plays in attributing meaning to an utterance, there was a move away from purely linguistic theories of pragmatics, such as Speech Act Theory, towards cognitive theories of pragmatics. The earliest of these, modular theories of pragmatics, will now be introduced.

To watch an adult conversation it would appear that pragmatic rules of communication are a given, that the speaker and listener possess a shared understanding of the rules governing cooperative communication. As such pragmatic ability is seen as a form of mind-reading, necessitating the generation of inferences as to the speaker’s intentions and desires (Grice, 1989; Sperber & Wilson, 2002). The same sentence can be used in different contexts to convey different meanings, what is referred to as “the indeterminacy of language” (Milosky, 1992, p. 20). Therefore it is unlikely that listeners can presume to predict the meaning of a speaker’s utterance simply from what has been said all of the time. All modular theories of pragmatic interpretation tend to agree that there are “rules” or “principles” of pragmatics which in some sense govern the speaker’s and listener’s ability to communicate a shared message. Indeed, even within disordered systems of pragmatics it is assumed that a rule-based system is still in operation (Perkins & Howard, 1995). The purpose of these pragmatic rules or principles is to determine the linguistic meaning of the utterance via the use of contextual information to resolve ambiguities (Sperber & Wilson, 2002). This ability to use context to attribute meaning to the utterance is termed “pragmatic interpretation” by Sperber and Wilson (1995). This phrase is used to describe any cognitive or linguistic act in which extra-linguistic information (including context) is hypothesised to be used to determine the meaning of a linguistic utterance. The two main modular theories of how
the speaker and listener reach a pragmatic interpretation of the utterance are Grice’s Theory (Grice, 1975, 1989) and Sperber and Wilson’s Relevance Theory (Sperber & Wilson, 1995, 2002). Each modular theory will be described below.

1.3.1.2 Grice’s Theory of Maxims

Grice (1975) hypothesised that speakers aim to cooperate with each other using four pragmatic principles or maxims in order to create relevant and contextually comprehensible meanings. The four maxims are:

1. Maxim of quality: To aim to say what is true
2. Maxim of quantity: To aim to give the right amount of information as appropriate for the context
3. Maxim of relation: To aim to say what is relevant in the context
4. Maxim of manner: To aim to be unambiguous and succinct

Grice argued that speakers and listeners used these maxims to understand meaning within the context, either by upholding these maxims or by purposely violating the maxim such as by saying “It’s a lovely day” when it is raining (Grice, 1975). Upheld maxims direct the listener to the meaning in a straightforward fashion. Violated maxims, which are often signalled by additional nonverbal or paralinguistic devices, show the listener that another meaning must be interpreted within the context.

However, precisely how the listener undergoes this process of inference from maxim to meaning is unclear. Furthermore, this theoretical account of pragmatics provides little clinical insight into the processes which might underlie the development of pragmatic behaviours. Grice believed that these maxims were learned in childhood (Grice, 1989) but he offered no explanation as to how they were learned or how the speaker and listener generated these inferences (Huang, 2007). For clinicians to truly understand the nature of pragmatic impairments a fuller explanation of these underlying processes is required. Such information about typical pragmatic processing would support clinicians in understanding atypical pragmatic processing.
1.3.1.3 Sperber and Wilson’s Relevance Theory

Relevance Theory (Sperber & Wilson, 1995, 2002) offers one explanation of the processes underlying pragmatic processing. Sperber and Wilson (1995) reduce the four maxims into one pragmatic principle: the principle of relevance. The principle states that in all communicative acts the speaker aims to make their contribution maximally relevant to the listener. The authors see relevance as an intrinsic cognitive process that listeners automatically apply to each heard utterance in order to select which aspects of the supplied linguistic and contextual information are most relevant, and therefore most likely to be processed, to achieve comprehension.

Relevance Theory argues that to understand an utterance the explicature (the meaning of the utterance) and the correct implicature (the implications of the utterance) must be deduced using inference. The listener must first deduce the speaker’s intended propositional meaning of the utterance (the explicature) using the principle of relevance. The theory argues that the listener implicitly expects the speaker to express their message in the most relevant way and assumes that the information provided by the speaker was intended to interact with the listener’s pre-existing knowledge. This enables the listener to identify the implicature which is most quickly deduced and also matches the context of the proposition.

Relevance Theory predicts that the contexts for comprehension are generated from information already possessed by the listener’s short- and long-term memory and by information in the immediate environment. The choice of implicature drives the listener to look for a context that enables this assumption to be processed with minimal processing effort (Sperber & Wilson, 1995). According to the theory, we only use information in the utterance or context that is relevant to understanding the implicature, with irrelevant information processed and screened out before the implicature is created. Therefore, the listener must be able to process linguistic, contextual and world knowledge at speed, with varying complexity. Whilst holding this information in working memory the listener must simultaneously retrieve information from long-term memory to both access a context for comprehension and create a given implicature (Sperber & Wilson, 1995, 2002).
In Relevance Theory’s original formulation deductions were said to be governed by central cognitive processes, a general mind-reading module (Sperber & Wilson, 1995). The inferential processes involved in the pragmatic interpretation of the utterance were not conceptualised as specialised linguistic or perceptual processes. However, in a more recent version the authors suggest that a specialist metacommunicative module might have evolved out of a more general mind-reading module (Sperber & Wilson, 2002). The authors argue that this specialist module is required to explain why 2-year-olds cannot perform simple metarepresentation tasks such as theory of mind (described in section 1.6) but they can perform the multi-level metarepresentation required to understand communication. However, even in Sperber and Wilson’s (2002) later conceptualisation of Relevance Theory the precise cognitive mechanisms underlying the specialised sub-module are not explicitly specified.

In summary, the central themes of Relevance Theory (Sperber & Wilson, 1995) are that (i) pragmatics is the interaction between language and context and (ii) pragmatics involves inference. Pragmatic interpretation is seen as a process of inference generation that occurs with risk as there is no guarantee that the inferences drawn by the listener are those intended by the speaker (Sperber & Wilson, 2002). Sperber and Wilson’s (1995, 2002) conceptualisation of pragmatics as a process of relevance moved away from a traditional linguistic conception of pragmatics and towards a broader view of pragmatics which involves the generation of inferences within the linguistic context of the utterance. However, the modular accounts of pragmatics make sparse claims about how pragmatic ability develops in children. The development of pragmatic ability in childhood will now be summarised in section 1.3.2.
1.3.2 Pragmatic development

Pragmatic development begins in early infancy and continues well into adolescence and early adulthood, with evident increases in the sophistication of pragmatic behaviours and awareness of behaviours, emotions and beliefs (Nippold, 1993, 2010). Some of the origins of communication, such as being attuned to the facial expressions and tone of voice of caregivers, occur in the first few weeks of life (Locke, 1993). Children as young as 7 months can interact in proto-conversations with caregivers (Snow, 1977) and by the end of the first year many children are vocalising with intentionality (Harding & Golinkoff, 1979).

Pragmatic development appears to accelerate during the second year of life when children can initiate and take turns in verbal and non-verbal communication (Garvey & Berninger, 1981; Wellman & Lempers, 1977). Attention-getting devices such as gaze direction, pointing and questions are also present (McTear, 1985). When making a request children begin to demonstrate social awareness of politeness (Ervin-Tripp, 1977) and awareness of contextual information or background knowledge (O'Neill, 1996). At this age, children also respond to requests for clarification and begin to request clarification themselves (Gallagher, 1981).

In the school years children become more sophisticated in their ability to make requests using more subtle forms of communication such as hints (McTear & Conti-Ramsden, 1992). The use of discourse markers such as “so” and “but” are firmly in use by 7 years (Kyratzis & Ervin-Tripp, 1999) and continue to develop in sophistication throughout the school years (Ripich & Griffith, 1988). The development of pragmatic competence continues into adolescence and beyond, with the use of negotiation strategies, non-literal language and slang becoming more sophisticated during this period (Nippold, 1993).

The literature reviewed so far in this section has focused on the child’s use of language. The next section will describe how children develop their ability to comprehend the meaning of an utterance which goes beyond linguistic meaning and can only be disambiguated with pragmatic knowledge. The child may learn to disambiguate linguistic meaning based on either the use of or violation of a pragmatic principle. For example, saying “isn’t it a lovely day” in a sarcastic tone of voice when it is raining
implies that the speaker does not think it is a lovely day. The listener is able to infer this meaning through the assumption that the principle of quality (to say what is true) has been violated on purpose and the principle of relation (to say what is relevant) has been upheld. Furthermore, the child may learn to use meaning conveyed by a pragmatic device (such as indirect requests or non-literal language) to understand the illocutionary force of an utterance i.e. the underlying meaning intended by the speaker. For example, requesting a train ticket can be achieved in various ways e.g. “Can I have a ticket to Manchester?” or “One ticket to Manchester” etc. These utterances have different linguistic forms but the intended meaning (I want you to sell me a train ticket) is the same.

Research in this area has tended to focus on specific pragmatic devices, such as comprehension of directives and non-literal language. Pragmatic devices such as direct and indirect speech acts are understood from the age of 2 or 3 years (Bucciarelli, Colle, & Bara, 2003; Shatz, 1977). Comprehension of directive questions (e.g. “Can I talk to him?”) has been demonstrated at 4 years (Ervin-Tripp, 1977). The comprehension of non-literal devices has been the focus of several studies of pragmatic development. Idioms and irony are comprehended by 6 years and continue to develop into adolescence (Bucciarelli et al., 2003; Gardner, Winner, Bechhofer, & Wolf, 1978; Nippold & Rudzinski, 1993; Prinz, 1983). Non-literal comprehension for hints, idioms, sarcasm and semantic inference implicatures has also been investigated (Bernicot, Laval & Chaminaud, 2007). A semantic inference implicature goes beyond the propositional meaning of the linguistic utterance and must be derived via pragmatic inference. For example, if a person is offered a coffee and replies “I will be up all night” the semantic inference is that they do not want a coffee. Bernicot et al. (2007) found that semantic inference implicatures were the earliest non-literal form to be comprehended, being understood by 6 years. Hints were understood by 8 years and idioms were understood by 10 years. Comprehension of sarcasm was difficult even at 10 years.

The research on pragmatic comprehension described above has focused on comprehension of language relating to the here and now. As the child develops s/he also becomes skilled at using and understanding language in decontextualized situations such as conversations about past or future events (Bishop, 1997). During these conversations, children use knowledge from long-term memory, including general knowledge and prior linguistic context to support pragmatic comprehension at a
discourse level (Milosky, 1992). Bishop (1997) argued that during discourse level comprehension we construct a mental model of the event called an event representation. Children as young as 2 years begin to develop event representations of the world around them, drawing on their social and cultural experiences to provide a “cognitive context” for the way in which they process communicative interactions (Nelson, 1986; Nelson & Gruendel, 1981). The relative contributions of linguistic and contextual knowledge within these event representations change during development. As the child’s linguistic ability increases, previously relied upon basic contextual event representations become more redundant. Furthermore, by 5 years the child’s ability to use context to support comprehension becomes more sophisticated, allowing children to use more subtle and complex contextual information (Ryder & Leinonen, 2003).

As children become more sophisticated users and comprehenders of language they learn to use and understand linguistic and paralinguistic devices to convey specific meanings; social rules of informal speech; formal rules of politeness and conversational rules (Adams, 2005). However, it is important to remember that these pragmatic devices can have different illocutionary consequences dependent on cultural norms and sensitivities. For example, silence in response to an utterance might be perceived as rude in a standard English speaker, as a sign of respect or thoughtfulness in a Native American speaker and as sign of unfamiliarity in an African-American speaker (Paul & Norbury, 2012). The research reviewed above has not tended to focus on comparisons between cultures and therefore only general statements about expected developmental milestones for pragmatics can be made which may not be suitable for all cultures. For a review of the cultural differences in pragmatics see Paul and Norbury (2012, chapter 5).

Furthermore, the literature reviewed above has tended to focus on specific pragmatic devices using a small number of children in each experiment. Although the cross-sectional study carried out by Bucciarelli et al. (2003) did use a large cohort there have so far been no large scale longitudinal studies of the development of children’s ability to use or understand language across a wide range of pragmatic devices. What the developmental literature therefore fails to do is provide specific milestones for these aspects of pragmatic development which could be used by clinicians. Clinicians are therefore reliant upon a vague notion of pragmatic development, in addition to a theoretical and clinical understanding of pragmatic behaviour.
The modular theories of pragmatics (section 1.3.1) focus only on specific aspects of pragmatics, and as such are too narrow to explain either the developmental progression of each pragmatic device or the array of behaviours characteristic of children with pragmatic impairments. The issue of development itself is not dealt with satisfactorily by these theories and is therefore of limited clinical usefulness for SLTs working with developmental disorders of language and communication (Perkins, 2007). Only recently have theoretical approaches to communication development focused on the process of development itself (Roy & Chiat, 2008). Contemporary views of human development (Smith & Thelen, 2003) and more specifically of pragmatic development (Adams, 2005) conceptualise development as an emergent product of local interactions between multiple dynamic systems. Two contemporary accounts of communication development that form the theoretical basis for the thesis will now be discussed: neuroconstructivist models of development (Karmiloff-Smith, 1998, 2009; Thomas et al., 2009) and an emergentist model of pragmatic development (Perkins, 2007).

1.3.3 Contemporary accounts of pragmatics

In this section, contemporary neuroconstructivist models of development (Karmiloff-Smith, 1998, 2009; Thomas et al., 2009) and an emergentist model of pragmatic development (Perkins, 2007) will be described in order to explore the processes which may underlie pragmatic development. First neuroconstructivist models of general development will be discussed, followed by a discussion of the emergentist model of pragmatic development.

1.3.3.1 The neuroconstructivist model of general development

The neuroconstructivist approach seeks to apply an understanding of typical development to an explanation of the mechanisms underpinning atypical development. The approach conceptualises cognitive development not as a collection of innate modules, but as a process which emerges out of multidirectional interactions between cognitive, genetic, biological, behavioural and environmental systems (Karmiloff-Smith, 2009). In atypical development impairments are not thought to be modular. Instead, small changes in the initial cognitive system are believed to result in more significant changes to the final system, so that the appearance of deficits in specific
modules or functions could plausibly emerge from the interaction of lower level more general cognitive processing deficits.

The timing of and interaction between gene expression and environmental experience is also seen as important in the eventual later establishment of cognitive modules. Unlike the modular view, these cognitive modules are not expressions of innate pre-determined cognitive processes, but end-products which emerge from the gradual interaction between genes, environment and experience (Karmiloff-Smith, 1998). Therefore, the neuroconstructivist view of development does not rule out the notion of cognitive modules per se, rather it argues that these modules are not innately pre-specified but emerge as part of the dynamic nature of development. The notion of brain plasticity in development does indeed support the idea that development, both typical and atypical, is a dynamic emergent process (Huttenlocher, 2002; Thomas, 2003). Evidence of relative linguistic impairments in childhood and relative linguistic strengths in adulthood for people with Williams’ syndrome also challenges the simplified notion of intact or impaired innate modules (Patterson, Brown, Gsodl, Johnson, & Karmiloff-Smith, 1999).

The neuroconstructivist approach also argues that behavioural impairments may have different underlying causes. For example, it is argued that the language and literacy difficulties which occur in both dyslexia (specific literacy impairment) and SLI (SLI is described in section 1.4.1) may have different underlying cognitive causal mechanisms and are best understood via application of a multi-factorial model of potential causes of impairment (Bishop & Snowling, 2004). Evidence of multi-factorial causes for developmental communication disorders such as SLI and ASD also supports this view (Bishop, 2008). Furthermore, where behaviours appear to be “intact” in atypical development they may be achieved via different underlying cognitive processes or adaptive mechanisms (Karmiloff-Smith, 1998). The notion that impairment is not just about lack of skills but also about the child’s adaptation to the demands of communication and interaction is elaborated upon by Perkins’ (2007) emergentist clinical model of pragmatics.
1.3.3.2 The emergentist model of pragmatic development

The emergentist model of pragmatics (Perkins, 2007) is intended to be a clinical model of pragmatic development which can be used to understand pragmatic impairment. The approach is heavily influenced by several theoretical models of development in which internal processes interact to drive development. These models include the neuroconstructivist approach to development (Karmiloff-Smith, 1998), Conversation Analysis (Goodwin, 1995; Schegloff, 2003), Relevance Theory (Sperber & Wilson, 1995) and cognitive science (Clark, 1997). The emergentist model gives equal weight to the interactions between the child’s emerging cognitive, linguistic and sensorimotor systems (i.e. the intrapersonal domain) and the interactions between the speaker and interlocutor (i.e. the interpersonal domain). In this emergent view pragmatic ability and disability are seen as secondary consequences of the low-level interactions between the systems outlined above. Pragmatics itself is therefore not a module or a process; it is the sum-of-parts of many other processes. Perkins (2007) outlines several semiotic, cognitive, motor and sensory elements of pragmatics. These are listed in Table 1 below which has been reproduced from Perkins (2007, p. 63):

<table>
<thead>
<tr>
<th>Semiotic</th>
<th>Cognitive</th>
<th>Motor</th>
<th>Sensory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phonology</td>
<td>Theory of mind</td>
<td>Vocal tract</td>
<td>Vision</td>
</tr>
<tr>
<td>Morphology</td>
<td>Executive function</td>
<td>Face</td>
<td>Hearing</td>
</tr>
<tr>
<td>Syntax</td>
<td>Memory</td>
<td>Eyes</td>
<td></td>
</tr>
<tr>
<td>Semantics</td>
<td>Inference</td>
<td>Body</td>
<td></td>
</tr>
<tr>
<td>Prosody</td>
<td>Emotion</td>
<td>Hands</td>
<td></td>
</tr>
<tr>
<td>Discourse</td>
<td>Attitude</td>
<td>Arms</td>
<td></td>
</tr>
<tr>
<td>Gesture</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gaze</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facial expressions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Posture</td>
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</tr>
</tbody>
</table>

The model makes no theoretical claims about whether these elements are modules or processes. Perkins (2007) simply lists these elements to illustrate that different semiotic, cognitive, motor and sensory elements might be involved in pragmatic competence and
impairment. The aspects of pragmatic competence associated with each element in the model are listed below:

- Semiotic elements: enable the encoding and decoding of meaning
- Cognitive elements: interpret what has been communicated and the manner in which it has been communicated
- Motor elements: enable the transmission of the message
- Sensory elements: enable the message to be received

Pragmatic competence is seen as the outcome of a set of “choices” motivated by an interpersonal communication goal. These choices include what is said to whom, when, where and why. The speaker must select appropriate syntax, vocabulary, phonology and paralinguistic aspects such as prosody, volume, pitch, tempo, and non-verbal methods of communication such as facial expression and gesture to express a specific meaning. Such choices are not necessarily accessible to conscious awareness. The ability to select the appropriate modes of communication to achieve pragmatic goals involves access to not just linguistic systems but to memory and inference systems as well.

According to the emergentist model, pragmatic impairment occurs when impairment in one or more elements restricts these “choices” causing disequilibrium. Where the child compensates for impairment the system is said to be in a state of compensated equilibrium in which more effort or attention is placed on another element of the system. For example, word-finding strategies may compensate for lexical impairments. Gesture and non-verbal communication may compensate for syntactic or phonological impairments. Compensation is not thought to be conscious and the extent to which compensation restores equilibrium can vary. The notion of disequilibrium is also extended to interpersonal interactions between speaker and interlocutor. In cases where one conversational partner has a pragmatic impairment, the other partner compensates and adjusts their communication accordingly. For example the unimpaired conversational partner may use repetition, simplification and gesture to aid communication.

The emergentist model therefore views pragmatic impairments as the consequence of interactions between intrapersonal abilities and interpersonal interactions. The relationship between language, social and cognitive development appears to be at the centre of these interactions and has been described in detail by a constructivist usage-
based account of language development (Tomasello, 2000, 2003). In Tomasello’s (2000, 2003) account of language development, children’s linguistic development is seen to occur alongside their emerging ability to use these increasingly complex linguistic structures to communicate. In the preschool years, rudimentary precursors to pragmatics such as joint attention, intention-reading and referencing may underpin the development of language (Tomasello, 2000, 2003). During this developmental period the ability to manage increasingly lengthy conversations emerges. The child must master the ability to construct and express their own mental model of the discourse, track the speaker’s referents and integrate them into this model with reference to the speaker’s perspectives and intentions. By school-age, the relationship may have reversed, so that access to language comprehension and expression begins to underpin the child’s development of social understanding (e.g. social cognition). Competence in expressive and receptive language may affect pragmatic use of language. Poor pragmatic use of language will in turn affect the child’s abilities to engage in and understand social exchanges, leading to poorly developed aspects of social cognition.

Tomasello (1999, 2003) argued that when children engage in discourse, they use language not just to take part in the conversation but also to represent the motivations, perspectives and intentions of the interlocutor. In so doing, children develop a sophisticated ability to represent and shift between perspectives such that they develop theory of mind, an aspect of social cognition, through discourse (Tomasello, 1999, 2003). Specific processes which occur during discourse, such as disagreements, negotiations, misunderstandings, communication breakdown and repair have all been cited as potential influences on the child’s emerging ability to represent and understand other people’s mental representations (Tomasello, 2003). For children who have language impairments, there may be fewer opportunities to engage in these complex discourse processes with the same level of sophistication as their language-able peers. These diminished communication opportunities may in turn lead to a reduction in opportunities to develop social cognition.

One argument in favour of adopting a contemporary constructivist or emergentist approach to pragmatic development is the fact that these approaches translate more easily into assessment and intervention approaches for pragmatic impairment. The next section will therefore outline how contemporary theories of pragmatic development can be applied to clinical models of pragmatic impairment.
1.3.4 Clinical frameworks of pragmatic impairment

Both the neuroconstructivist and emergentist approaches propose that the development of competent pragmatic abilities in childhood is a complex process involving multiple linguistic, cognitive, sensory and motor elements. Clinicians therefore need to consider the connections between linguistic and contextual aspects of pragmatic inference at a cognitive level to better understand the behavioural manifestations of childhood pragmatic impairments (Brinton & Fujiki, 2005). This notion of pragmatic development emerging from the synergy between different cognitive processes has been applied to a clinical framework of pragmatics (Adams, Baxendale, Lloyd, & Aldred, 2005; Adams, Lloyd, Aldred, & Baxendale, 2006). This framework focuses on aspects of social communication assessment and intervention. The framework will be discussed in the next section, with a view to applying it to the development of the novel assessment of metapragmatics to be used in this thesis.

Adams, Baxendale, Lloyd and Aldred (2005) and later Adams, Lloyd, Aldred and Baxendale (2006) gave a detailed account of a clinical framework of social communication including pragmatics. The framework was influenced by several previous clinical models of pragmatics including the seminal work of Prutting and Kirchner (1987). In Prutting and Kirchner’s (1983, 1987) descriptive taxonomy of pragmatics, the authors used speech act theory to analyse pragmatic impairment in four areas: utterance acts (the verbal and nonverbal features of the communication), propositional acts (the linguistic meaning of the utterance), illocutionary acts and perlocutionary acts (speech acts, topic, turn taking etc.). This framework assessed whether the child successfully used a range of pragmatic devices to facilitate communication, and context was seen as central to these judgements. Their descriptive taxonomy included three aspects of pragmatics: (1) verbal aspects of pragmatics such as topic selection and maintenance, aspects of turn-taking, specificity and cohesion; (2) paralinguistic aspects of pragmatics such as intelligibility, prosody and voice quality; and (3) nonverbal aspects of pragmatics such as proximity, gestures, facial expression and eye contact. Overall there were 30 verbal, nonverbal and paralinguistic aspects of pragmatics that could be rated within the protocol. The authors recommended that once the protocol had been completed, clusters of ability and impairment could be identified. Following this, the child’s existing pragmatic abilities could be utilised and developed to remediate the pragmatic impairments. They also argued that deficits in other aspects
of linguistic or cognitive ability should be considered as potentially affecting pragmatic abilities and impairments (Prutting & Kirchner, 1987).

These views were echoed in the contemporary frameworks of pragmatic impairment of McTear and Conti-Ramsden (1992) and Leinonen, Letts and Smith (2000), all of whom put forward the notion that a clinically useful view of pragmatics should include a broad range of communicative, linguistic and inference abilities and aspects of social involvement. Such a view moved away from the narrow conceptualisation of pragmatics as comprehension of intended meaning adopted by the modular accounts of pragmatics and moved towards the synergistic views held by the neuroconstructivist and emergentist approaches that pragmatics is an emergent property of multiple linguistic, cognitive and social abilities. This trend entailed that communicative behaviours such as inference, implicature and reference have also been drawn into the field of clinical pragmatics (Dennis, Lazenby & Lockyer, 2001; Leinonen & Letts, 1997; Bishop & Adams, 1992). Contemporary views of pragmatics have described the potential influence on pragmatic behaviours of understanding of social roles and social signals (Baron-Cohen, 1988), understanding, reading and representing knowledge states of others (social cognition) (Baron-Cohen & Swettenham, 1997; Hughes & Leekam, 2004), and even awareness of emotional states (Hughes & Leekam, 2004; Twachtman-Cullen, 1998).

The clinical framework put forward by Adams et al. (2005, 2006) posits that pragmatic development emerges from the synergy of social interaction, social cognition, language pragmatics and language processing (see Table 2). As such it gives a coherent description of the social, cognitive and language skills that may be necessary for the successful acquisition of pragmatics. The framework emphasises that pragmatic ability is just one aspect required for good social communication, alongside social interaction, social cognition and language processing. Therefore, any assessment of communication skills in children with communication impairments should include assessment of relevant social, cognitive, pragmatic and language skills. One advantage of such a framework is that it allows clinicians to assess the child’s social communication skills in their entirety rather than looking at a particular subset of pragmatic behaviours or cognitive processes.
Table 2: Aspects of social communication (reproduced from Adams et al., 2005, p. 229)

<table>
<thead>
<tr>
<th>Aspects of social communication</th>
<th>Synergy of emerging processes for each aspect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social interaction</td>
<td>Development of attachment, empathy and social interaction</td>
</tr>
<tr>
<td>Social cognition</td>
<td>Development of shared knowledge</td>
</tr>
<tr>
<td>Language pragmatics*</td>
<td>Development of pragmatic devices (may/may not be language/culture specific)</td>
</tr>
<tr>
<td>Language processing</td>
<td>Development of language specific processing</td>
</tr>
<tr>
<td></td>
<td>(syntactic, semantic and phonological)</td>
</tr>
</tbody>
</table>

*Adams et al., (2005) use the term pragmatics to include all aspects of spoken communication excluding nonverbal or paralinguistic aspects.

The framework is careful to specify pragmatics as “language pragmatics”. As such it does not address the role that nonverbal and paralinguistic abilities might play in social communication development. Whilst the framework separates out four aspects of social communication it is not a modular account of pragmatics. Instead, the framework emphasises the interaction between the four aspects and the synergistic and dynamic nature of development. What is not clear is how a breakdown in one aspect affects functioning in other aspects during pragmatic development.

The broad definition of pragmatics as the study of pragmatic inferencing which encompasses aspects of social cognition and emotional development is adopted in this thesis. This view of pragmatics emphasises not just what is being said and how it is being said but also focuses on the thoughts, feelings, intentions and motivations of the speaker and interlocutor and the way that these are mentally represented. A logical extension of this would be to view pragmatic impairment not just as difficulties with the use and understanding of pragmatic rules but also as encompassing impairments in inferencing and aspects of social cognition. Pragmatic difficulties are present in a range of communication impairments, including PLI, SLI, and ASD, each of which are outlined in the next section.
1.4 Communication impairments in children

The characteristics of children with communication impairments, including cwPLI, cwSLI and children with autistic spectrum disorder (cwASD) will be outlined in the sections below. In the current thesis, the term communication impairment will be used to refer to children with PLI, SLI, and ASD. The term language impairment will only be used in reference to children with PLI and SLI. The literature review will begin by outlining the diagnostic characteristics of cwSLI and cwASD. Following this, characteristics of cwPLI and current clinical definitions of PLI will be described. For each diagnostic category, impairments in pragmatics will be described. Historical and contemporary views of PLI will be outlined from which a working definition of PLI will be provided for use within this body of work.

1.4.1 Specific Language Impairment

SLI is typically characterised as disordered expressive and/or receptive speech and language development with or without impairments in pragmatics (Leonard, 1998). SLI has been described as a diagnosis of exclusion because other abilities such as nonverbal IQ and hearing are relatively unimpaired and are insufficient to explain the presence of severe language problems. Incidence data indicate that SLI is present in 7% of all children (Tomblin et al., 1997). Speech and/or language difficulties persist for 50-90% of cwSLI throughout childhood (Hulme & Snowling, 2009). Previous research has indicated continuing difficulties with speech and/or language in the upper primary school years for some cwSLI (Bishop & Adams, 1990; Botting, Faragher, Simkin, Knox, & Conti-Ramsden, 2001; Conti-Ramsden & Botting, 1999; Conti-Ramsden, Botting, Simkin, & Knox, 2001; Magnusson & Nauncler, 1990). In addition, longitudinal research which has followed-up cwSLI at age 24 to 28 years (Howlin, Mawhood, & Rutter, 2000; Mawhood, Howlin, & Rutter, 2000) and 33 to 38 years (Clegg, Hollis, & Rutter, 2005) indicates impairments in aspects of speech and language can persist into late adolescence and adulthood (Riches, Loucas, Baird, Charman, & Simonoff, 2010; Rutter, 2008).

CwSLI have severely delayed vocabulary acquisition and often present with semantic and phonological errors in naming tasks (Gray, 2003; Hick, Joseph, Conti-Ramsden,
Serratrice, & Faragher, 2002; McGregor & Appel, 2002). Word-finding difficulties and circumlocution are also common in this group (Chiat, 2000). Verbs are particularly difficult for cwSLI to acquire (Conti-Ramsden & Jones, 1997; Jones & Conti-Ramsden, 1997; Watkins, Rice, & Moltz, 1993) and “general all purpose” (GAP) verbs such as “do” and “go” are often used in sentences (Rice & Bode, 1993). CwSLI often omit obligatory verb arguments from their sentences (Grela, 2003) or fail to understand the verb argument structure in sentences such as passives (van der Lely & Harris, 1990). In addition to lexical-semantic impairments, cwSLI also have impairments in their use and understanding of grammatical morphology and syntax (Bishop, Bright, James, Bishop, & van der Lely, 2000a; Rice, 2000; van der Lely, Payne, & McClelland, 2011) including errors in past-tense morphology (Conti-Ramsden, Durkin, Simkin, Lum, & Marchman, 2011; Oetting & Horohov, 1997; van der Lely & Ullman, 2001), third person singular –s, possessive –s, articles a/the and auxiliary is/are (Gopnik & Crago, 1991; Joseph, Serratrice, & Conti-Ramsden, 2002; Leonard, Eyer, Bedore, & Grela, 1997).

Phonological processing impairments are demonstrated in tasks which measure nonword repetition (Bortolini et al., 2006), short-term memory (Archibald & Gathercole, 2006; Baddeley, Gathercole, & Papagno, 1998; Gathercole & Baddeley, 1990; Loucas et al., 2010) and sentence repetition (Riches et al., 2010). CwSLI can also have difficulties with attention and motor coordination (Hill, 2001; Snowling, Bishop, Stothard, Chipchase, & Kaplan, 2006) and impairments in speed of processing for both linguistic and non-linguistic tasks (Miller, Kail, Leonard, & Tomblin, 2001; Miller et al., 2006) calling into question the “specific” nature of the language impairment for these children. Although the use of the term specific is now challenged by some (Ors, 2002; Webster, Majnemer, Platt, & Shevell, 2005) the term SLI is used in this thesis to refer to children with disordered speech and language development who have nonverbal IQ scores in the average range.

1.4.1.1 Pragmatic impairments in cwSLI

Unsurprisingly, cwSLI have difficulties using language to communicate. Whilst SLTs do not rate cwSLI as having significant pragmatic impairments, parents have reported pragmatic impairments in these children including difficulties with initiating communication, communicating coherently, using non-verbal communication and using
context to support comprehension (Norbury, Nash, Baird, & Bishop, 2004). The
difference between SLT and parent ratings is unlikely to be due solely to differences in
communicative competence in different situations, and is more likely to reflect the
subtle but significant effects that structural language impairments can have on
pragmatic abilities. Pragmatic impairments in cwSLI include impairments in
conversational skills (Bishop, 1997; Bishop 2000) comprehension monitoring
(Skarakis-Doyle & Dempsey, 2008), wh-question comprehension (Deevy & Leonard,
2004), inferencing skills (Bishop & Adams, 1992; Crais & Chapman, 1987; Ellis
Weismer, 1985; Ford & Milosky, 2008; Newton, Roberts, & Donlan, 2010), story recall
and narrative ability (Crais & Chapman, 1987; Dodwell & Bavin, 2008; Reilly, Losh,
Bellugi, & Wulfeck, 2004) and emotional understanding (Fujiki, Leonard, & Finneran,
2008). However, language impaired children have been characterised in the literature as
heterogeneous in terms of pragmatics (Adams & Bishop, 1989) and there is evidence
that pragmatic impairments are not a characteristic of all cwSLI (Bishop, Chan, Adams,
Hartley, & Weir, 2000b).

The language impairments of cwSLI also have a negative impact on their ability to
interact and communicate with peers. Impairments initiating interaction and accessing
an on-going interaction have been demonstrated in cwSLI (Brinton, Fujiki, Spencer, &
Robinson, 1997). These children also respond less often than their peers to a peer
initiated verbal interaction (Hadley & Rice, 1991) and tend to produce shorter responses
and more nonverbal responses (Rice, Sell, & Hadley, 1991). Language and pragmatic
impairments in cwSLI also have a negative impact on their social competence. As early
as the preschool years children with receptive language impairments are rated as less
popular by their peers (Gertner, Rice, & Hadley, 1994). Impairments in prosocial
reactions to others and ability to understand and make inferences about the emotions of
others are also demonstrated (Denham, McKinley, Couchoud, & Holt, 1990; Ford &
Milosky, 2008). These socio-cognitive deficits have a marked effect on the ability of
cwSLI to form friendships. CwSLI report fewer interactions with peers in social
situations (Fujiki, Brinton, & Todd, 1996). These children are rated as having more
social and behavioural problems than their peers with many cwSLI having difficulties
establishing and maintaining friendships with peers and using specific social skills such
as negotiation or initiation (Brinton & Fujiki, 1999; Fujiki, Brinton, Hart, & Fitzgerald,
1999a; Fujiki, Brinton, Morgan, & Hart, 1999b; Redmond & Rice, 1998).
1.4.2 Autistic Spectrum Disorder

ASD is a disorder of childhood which persists into adulthood and as such is termed a pervasive developmental disorder (American Psychiatric Association, 1994). ASD is conceptualised as a triad of impairments in (1) social interaction/cognition, (2) communication and (3) repetitive/limited behaviours and interests (American Psychiatric Association, 1994; World Health Organisation, 1993). Pragmatic impairments are a central feature of this disorder (Happé, 1994b) and most cwASD also experience structural language impairments (Rutter, 2008). The linguistic and pragmatic impairments characteristic in cwASD are described in more detail in section 1.4.2.1. Specific diagnostic criteria for a diagnosis of ASD are outlined in the Diagnostic and Statistical Manual of Mental Disorders by the American Psychiatric Association (DSM-IV, American Psychiatric Association, 1994). These criteria have been reproduced in Figure 1.
**Autistic Disorder**

A total of six (or more) items from (1), (2), and (3), with at least two from (1), and one each from (2) and (3):

1. Qualitative impairment in social interaction, as manifested by at least two of the following:
   - (a) Marked impairment in the use of multiple nonverbal behaviours such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction.
   - (b) Failure to develop peer relationships appropriate to developmental level.
   - (c) A lack of spontaneous seeking to share enjoyment, interests, or achievements with other people (e.g., by a lack of showing, bringing, or pointing out objects of interest).
   - (d) Lack of social or emotional reciprocity.

2. Qualitative impairments in communication as manifested by at least one of the following:
   - (a) Delay in, or total lack of, the development of spoken language (not accompanied by an attempt to compensate through alternative modes of communication such as gesture or mime).
   - (b) In individuals with adequate speech, marked impairment in the ability to initiate or sustain a conversation with others.
   - (c) Stereotyped and repetitive use of language or idiosyncratic language.
   - (d) Lack of varied, spontaneous make-believe play or social imitative play appropriate to developmental level.

3. Restricted repetitive and stereotyped patterns of behaviour, interests, and activities, as manifested by at least one of the following:
   - (a) Encompassing preoccupation with one or more stereotyped and restricted patterns of interest that is abnormal either in intensity or focus.
   - (b) Apparently inflexible adherence to specific, non-functional routines or rituals.
   - (c) Stereotyped and repetitive motor mannerisms (e.g., hand or finger flapping or twisting, or complex whole body movements).
   - (d) Persistent preoccupation with parts of objects.

B. Delays or abnormal functioning in at least one of the following areas, with onset prior to age 3 years: (1) social interaction, (2) language as used in social communication, or (3) symbolic or imaginative play.

C. The disturbance is not better accounted for by Rett’s Disorder or Childhood Disintegrative Disorder.

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**Figure 1: Current ASD diagnosis according to DSM-IV (APA, 1994)**
1.4.2.1 Linguistic and pragmatic impairments in cwASD

There is substantial evidence to show that cwASD, including those with high-functioning autism (HFA) and Asperger’s syndrome, have significant difficulty in using pragmatic rules consistently (Ramberg, Ehlers, Nyden, Johansson, & Gillberg, 1996; Volden, Coolican, Garon, White, & Bryson, 2009). CwASD often have impairments in tasks which measure inferencing, narrative and social cognition (Baron-Cohen, Leslie, & Frith, 1985; Baron-Cohen, O’Riordan, Stone, Jones, & Plaisted, 1999; Dennis, Lazenby, & Lockyer, 2001; Happé, 1994a; Leekam & Perner, 1991; Norbury & Bishop, 2003). Impairments in social cognition also tend to persist into adulthood (Castelli, Frith, Happé, & Frith, 2002; Klin, 2000).

Although language impairment is not a diagnostic feature of ASD, clinical impairment in receptive and expressive language are a feature of most school-aged cwASD (Condouris, Meyer, & Tager-Flusberg, 2003; Rapin & Dunn, 1997). Early language impairments in cwASD appear related to later impairments in social and communication impairments for some but not all cwASD suggesting that for cwASD the relationship between language and social communication impairments is a general rather than a specific relationship (Dworzynski et al., 2007).

Rutter (2008) investigated the stability of SLI and ASD diagnoses into adulthood. By late adolescence or adulthood the cwSLI and cwASD had grown to be similar in their social impairments (Rutter, 2008). This suggests that aspects of language impairment may mediate the development of social competence, although it should be noted that the 14 cwSLI in this study had particularly severe language impairment. It is not surprising that adolescents with ASD and SLI become more similar in presentation, given the relationship between language and social cognition (Hughes & Leekam, 2004). Movement between diagnoses also raises the question as to whether these diagnostic labels are merely descriptions of the clinical symptoms present at a point in time, rather than a “diagnosis” as such. The presence of language impairments in cwASD and communication impairments in cwSLI has led some to challenge the sharp delineation between SLI and ASD (Bishop, 2000).
1.4.3 Pragmatic Language Impairment

As can be seen from the previous sections, there is a degree of consensus about the diagnostic criteria for SLI and ASD. However, unlike SLI and ASD there are no agreed diagnostic criteria for PLI and this is subject to much debate. Before describing this debate the characteristics of cwPLI will be outlined.

CwPLI are described in the literature as having an impairment in the use of language (pragmatics) which is disproportionate to their structural language abilities (lexical-semantics, syntax and phonology) (Bishop, 2000). CwPLI are often cited as having intelligible and fluent speech production and impaired use of language (Leinonen, Letts, & Smith, 2000; McTear & Conti-Ramsden, 1992; Rapin & Allen, 1983). However, recent studies suggest that the majority of cwPLI do have structural language impairments (Norbury et al., 2004). Comprehension impairments are a feature of this group and cwPLI often display over-literal comprehension and tend to make imprecise interpretations of non-literal language (Kerbel & Grunwell, 1998b). These children also have difficulties with comprehension monitoring and do not request clarification to the same extent as cwTLD (Leinonen & Letts, 1997). In some cases difficulties with paralinguistic aspects such as volume and tone of voice and nonverbal aspects such as eye contact have also been reported in cwPLI (Adams, Lockton, Gaile, & Freed, 2011; Bishop et al., 2000b; Leinonen et al., 2000; Perkins, 2007).

Conversational impairments are typical of this group and cwPLI are often described as having limited awareness of the listener’s needs, thoughts, beliefs and intentions. Bishop and Adams (1989) provided evidence of conversational impairments in cwPLI. In this comparative cross-sectional study, pragmatic abilities were investigated in 67 cwTLD and 57 language-impaired children aged between 4 and 12 years. The language-impaired children were further subdivided into 14 cwPLI and 43 cwSLI. Conversational samples between the child and an adult were taken and analysed for instances in which the conversation was disrupted by the child producing an inappropriate utterance. The results indicated that all children with language impairment made more inappropriate utterances as compared with the cwTLD. The cwPLI produced the most inappropriate utterances and displayed similar pragmatic errors to younger cwTLD. Pragmatic errors included failure to understand implied meaning or non-literal language and difficulties with exchange structure such as not responding to an initiation. CwPLI also showed...
errors which were not present in the younger typically developing children such as giving too much or too little information to the interlocutor. These errors were considered to be evidence of disordered pragmatic development.

Impairments in conversational rapport and the use of context to understand the conversation have also been noted in this group (Botting & Conti-Ramsden, 1999). In the research literature cwPLI are often reported to be verbose (Adams et al., 2011; Rapin, 1996) although this is not thought to be a defining feature of the disorder. Potentially the impression of verbosity may be created because many cwPLI initiate more than other language-impaired or typically developing peers (Adams & Bishop, 1989; Bishop, Hartley, & Weir, 1994). CwPLI also have difficulties comprehending and producing narratives and difficulties making inferences (Norbury & Bishop, 2002). Difficulties generating inferences have been found to occur in both structured tasks (Bishop & Adams, 1992) and during conversation (Leinonen & Kerbel, 1999).

1.4.3.1 Historical and contemporary views of PLI

Clinical interest in a specific group of children whose communication impairment was predominantly within the realm of pragmatics began in the 1980s. Since then the validity of PLI as a separate clinical entity has been extensively debated. The historical background to this debate will now be outlined, leading to a summary of contemporary views of PLI.

Historically, several researchers have investigated the pragmatic difficulties experienced by children with language impairments (Bishop & Rosenbloom, 1987; Conti-Ramsden, Crutchley, & Botting, 1997; Rapin & Allen, 1983). From these investigations a sub-type of language impairment was identified in which relatively intact structural language skills occurred with difficulties in interactional or pragmatic use of language and nonverbal communication.

In their study of approximately 135 children with developmental language impairments Rapin and Allen (1983) described one sub-type of language impairment as “Semantic-Pragmatic Syndrome without Autism”. Such children did not meet the diagnostic criteria for autism but did have significant difficulties understanding meaning within the context of conversation or discourse. They were also described as having difficulty
engaging successfully in communication and not following pragmatic rules of conversation.

More recently, the term Semantic-Pragmatic Disorder has been challenged by Bishop (1998, 2000). Whilst specific aspects of semantics such as idiom comprehension or literal comprehension may be more impaired in cwPLI as compared to cwSLI (Bishop & Adams, 1989; Kerbel & Grunwell, 1998a, 1998b) semantic impairment has been shown not to distinguish between cwPLI and cwSLI (Bishop, 1998). Bishop (2000) therefore renamed “Semantic-Pragmatic Disorder” as “Pragmatic Language Impairment” (PLI). Bishop (2000) has argued that pragmatic impairments can co-exist with language difficulties in some children who do not meet criteria for autism. The term PLI shall be used throughout this thesis to refer to children who have disproportionate pragmatic impairments in relation to their structural language abilities.

Research interest around cwPLI has focused on a drive to clarify and formalise the defining diagnostic characteristics of PLI. One of the major challenges here is the apparent heterogeneity of language and pragmatic impairment found in this population. Whilst some cwPLI may display impairments in areas such as language or inference abilities, this is not the case for all cwPLI (Norbury & Bishop, 2002). Heterogeneity of impairment for cwPLI has also been reported for other abilities which are closely related to language and inference development, such as literacy development (Freed, Adams, & Lockton, 2011). Whilst variability of clinical presentation may pose a challenge for clinicians and researchers in the identification of cwPLI, the problem of heterogeneity is not specific to this group. Arguably, the more formal diagnostic groups of SLI and ASD are also characterised by heterogeneity in the aspects of communication which are impaired and the degree of impairment experienced (Stark & Tallal, 1981).

Furthermore, there are clear overlaps between cwPLI, cwSLI, and cwASD in terms of sophisticated uses of language such as inference, narrative and conversational impairments (Bishop, 1997; Bishop 2000). Children who have developmental language disorders share commonalities in the way that they struggle to use language to express themselves and to make sense of the world around them and impairment in the ability to construct or express socially contextualised meaning through language appears to be a feature of all three groups. These overlaps between groups, and the notion of a
continuum of impairment, have stimulated much debate about the diagnoses of PLI, SLI and ASD as discrete entities (Brook & Bowler, 1992). To a large extent this debate centres on the heterogeneity of these impairments, and, in particular, the lack of clarity in our understanding of what exactly PLI is.

Whilst some argued that PLI is actually part of the ASD spectrum (Shields, Varley, Broks, & Simpson, 1996a) others caution against assuming that all children with pragmatic impairments would meet a diagnosis of ASD (Bishop & Norbury, 2002). Others view PLI as neither a sub-group of SLI nor ASD but in fact a separate clinical group (Botting, 1998) or an intermediate condition between SLI and ASD that simply shares some of the cognitive and processing impairments found in these groups (Adams et al., 2006). At present there is no clear consensus as to whether these groups are separate entities or part of a continuum and contemporary views are now moving towards the idea of comorbidity (Norbury, 2013). Evidence about the overlaps between PLI, SLI and ASD suggest that a descriptive multi-dimensional approach would be clinically useful for the assessment, diagnosis and intervention of children with communication impairments (Bishop, 2000). Such a multi-dimensional model of impairments has also been put forward to aid differential diagnosis of other developmental disorders such as SLI and developmental dyslexia (Bishop & Snowling, 2004).

**Application of the neuroconstructivist approach to developmental disorders of communication**

The notion of a continuum of developmental language disorders is supported by the neuroconstructivist approach to the classification of developmental disorders (Karmiloff-Smith, 1998). This approach argues that two distinct disorders, such as SLI and ASD, could in fact begin from very similar causes and that the small differences in underlying aetiology at this stage could lead to large differences in phenotype as a result of interaction between aetiology, environment, adaptation and development. In addition, the neuroconstructivist and emergentist perspectives of development argue that the same behaviour can have different causes and it can also emerge as an adaptive response to impairment in another area. For example, different underlying causes have been suggested to underlie the pragmatic impairments in inference skills common in PLI, SLI and ASD.
Inference impairments in cwSLI have been argued to be associated with the level of language impairment. Evidence has shown that impairments in inferencing in cwSLI have been predicted by language ability, including language comprehension, word knowledge, and general response time (Ford & Milosky, 2008). When inferences are generated, information from word knowledge is accessed in order to talk about the inference. If this word knowledge is weak or faulty, as is the case for cwSLI, responses to inference questions are more likely to be incorrect (Ford & Milosky, 2003). It has been suggested that for cwSLI, the difficulty lies not in the ability to make inferences per se but in the ability to use language to express these inferences (Bavin & Dodwell, 2010).

In contrast, inference impairments for cwPLI and cwASD have been argued to be due to the inability to integrate information into a coherent whole, i.e. weak central coherence. These impairments in central coherence are thought to be more severe in cwASD than cwPLI (Bishop & Norbury, 2005; Happé, 1999; Norbury & Bishop, 2002; Nuske & Bavin, 2011). There is also a continuum of severity within the autistic spectrum, with children at the high functioning end of the ASD continuum able to generate some inferences but continuing to have difficulty integrating these inferences successfully with information about the social context (Dennis et al., 2001).

Arguably it is these types of pragmatic inferences that form the basis of social communication. Dennis et al. (2001) argue that when the child does not master pragmatic inferences, this has a negative effect on their ability to develop an understanding of the speaker’s intentions and beliefs, which in turn affects their ability to internalise mental states and has implications for the development of theory of mind, an aspect of social cognition.

To successfully communicate and comprehend during discourse the child is required to be aware of the interlocutor’s thoughts, knowledge and intentions and must be able to apply these to the communicative situation. This ability to think about and reflect on what other people think, feel, believe or intend is termed social cognition. It can be argued that social cognition plays a large role in the inference processes required in pragmatic comprehension. Furthermore, in studies of social cognition ability cwPLI have been found to have similar impairments to cwASD but not cwSLI (Shields et al.,
More recently however, cwPLI were found to be intermediate between cwHFA and cwSLI in terms of social cognition ability (Gibson, 2011). Investigations of the underlying cognitive deficits in these developmental disorders has thus failed to demonstrate a clear delineation between cwSLI, cwPLI and cwASD perhaps lending support to the notion of either a continuum of clinical communication impairments or co-morbidity of impairments.

**Future definitions of PLI**

A previous criticism of PLI as a proposed entity centred around the lack of agreed diagnostic criteria (Boucher, 1998). Recent proposed changes to the DSM-V criteria (DSM-V proposed, American Psychiatric Association, 2013) partly address this criticism. In the proposed DSM-V criteria, “Language Impairment” is separated from another diagnostic category called “Social Communication Disorder” which stipulates that the presence of persistent pragmatic impairments and language impairments must be established in the absence of ASD diagnosis. This Social Communication Disorder category goes some way towards addressing the issue of diagnostic criteria for PLI as separate from SLI but it does not entirely resolve the issue. Despite separating Language Impairment and Social Communication Disorder into separate diagnostic categories, DSM-V also acknowledges that the presence of language impairments can result in functional impairments in social participation and communication. Furthermore, in the proposed revisions to DSM-V it is acknowledged that language impairment can and does co-occur with other diagnostic conditions such as ASD and learning disorder. The inclusion of a separate Social Communication Disorder category therefore appears to be at odds with current views on comorbidity of ASD and language impairment. The proposed criteria for Social Communication Disorder are given in Figure 2 below.
04 Social Communication Disorder

A. Persistent difficulties in pragmatics or the social uses of verbal and nonverbal communication in naturalistic contexts, which affects the development of social reciprocity and social relationships that cannot be explained by low abilities in the domains of word structure and grammar or general cognitive ability.

B. Persistent difficulties in the acquisition and use of spoken language, written language, and other modalities of language (e.g., sign language) for narrative, expository and conversational discourse. Symptoms may affect comprehension, production, and awareness at a discourse level individually or in any combination that are likely to endure into adolescence and adulthood, although the symptoms, domains, and modalities involved may shift with age.

C. Rule out Autism Spectrum Disorder. Autism spectrum disorder by definition encompasses pragmatic communication problems, but also includes restricted, repetitive patterns of behavior, interests or activities as part of the autism spectrum. Therefore, Autism Spectrum Disorder needs to be ruled out for Social Communication Disorder to be diagnosed. Social Communication Disorder can occur as a primary impairment or co-exist with disorders other than Autism Spectrum Disorder (e.g., Speech Disorders Learning Disorder, Intellectual Disorders)

D. Symptoms must be present in early childhood (but may not become fully manifest until speech, language, or communication demands exceed limited capacities).

E. The low social communication abilities result in functional limitations in effective communication, social participation, academic achievement, or occupational performance, alone or in any combination.

Figure 2: Proposed Social Communication Disorder diagnosis from DSM-V (APA, 2013)

There remains a lack of consensus about the validity of a discrete clinical group of cwPLI. Despite this, the view taken in this thesis is that a group of children with pragmatic impairments which are not commensurate with their structural language abilities do exist. This pragmatic impairment includes difficulties understanding the thoughts, feelings, intentions and motivations of the speaker and interlocutor. Regardless of the diagnostic classification for cwPLI, these children require intervention to remediate their pragmatic impairments. Metapragmatic intervention techniques which aim to remediate the pragmatic impairments characteristic of cwPLI are commonly cited in the research literature and published clinical programmes. These interventions are outlined in the next section.
1.5 Metapragmatic interventions

This section will outline the need for investigation of metapragmatic intervention tasks for cwPLI. First, current trends in the use of metacognitive strategies within wider educational and remediation settings will be described after which the theoretical rationale for specific metapragmatic tasks will be described. MPA techniques and intervention studies will be outlined in more detail in the discussion.

Over recent years there has been an increased awareness of the role of meta-level awareness in learning, so much so that “Talking about talk” is now an assessment strand of the National Curriculum Strategy for Speaking and Listening in both the Primary and Secondary Curriculums (Qualifications and Curriculum Development Agency, 2010). Alongside this has been a rapid increase in the use of metacognitive strategies and tasks within teaching and therapy settings for children with typical and atypical language development. For cwTLD, who form the majority of the school-aged population, there has been an increase in the popularity of programmes which develop children’s higher-level language and inference skills within education (Dewey & Bento, 2009). These approaches emphasise pupil talk methods such as dialogic teaching in which understanding develops through the children explicitly discussing and debating issues using progressively complex forms of language (Alexander, 2008).

There is strong evidence to support the use of these programmes. Projects such as Philosophy for Children (Topping & Trickey, 2007; Trickey & Topping, 2004), Activating Children’s Thinking Skills (Dewey & Bento, 2009) and the Learn to Think intervention project (Hu et al., 2011) demonstrate that when children are systematically taught to explicitly discuss and debate, they can improve aspects of inference, reasoning and metacognitive skills over a long follow-up period (Dignath & Buttner, 2008). It is unsurprising that metacognitive interventions have become popular, given that they provide high impact for low cost (Higgins, Kokotaki, & Coe, 2011). However, concerns have been raised that these interventions, which rely on children’s use of language to mediate learning, may be less advantageous for children with limited language ability (Trickey & Topping, 2004).

Whilst general metacognitive interventions targeted at cwTLD may not be effective for children with language impairment, specific and targeted metacognitive interventions
which are differentiated to the child’s language level may be. Evidence from intervention studies for children with language impairments provide supports this argument. For example, meta-syntactic intervention tasks have been used to improve expressive and receptive language skills in cwSLI by explicitly teaching syntax (Ebbels, 2007; Ebbels & van der Lely, 2001; Hirschman, 2000). Metalinguistic approaches such as mental imagery training have been used to improve narrative comprehension in cwSLI (Joffe, Cain, & Marić, 2007).

There are several references to metapragmatic intervention tasks in the research literature (Adams, 2005; Adams et al., 2005; Adams et al., 2006; Adams et al., 2012; Anderson-Wood & Smith, 1997; Dollaghan & Katson, 1986; Timler, Olswang, & Coggins, 2005; Willcox & Mogford-Bevan, 1995). The metapragmatic methods cited relied heavily on verbal scaffolding to support acquisition of MPA for pragmatic rules along with specific demonstration and practise of pragmatic skills, rule-flouting and self-monitoring. These interventions aim to use language to comment on observed communicative acts and to increase conscious awareness of pragmatic rules (Anderson-Wood & Smith, 1997). Most recently a randomised control trial, the Social Communication Intervention Project, provided evidence of the effectiveness of pragmatic intervention for school-aged cwPLI. Although intervention tasks were individualised to the child’s profile of impairment, metapragmatic tasks were part of the intervention for almost all children in the study (Adams et al., 2012).

Despite some support for metapragmatics intervention tasks their unique therapeutic effect remains unproven. Furthermore, due to a lack of clear definition of metapragmatic tasks in the literature it is unclear whether metapragmatic tasks are being used to teach and improve MPA abilities or whether MPA ability is being used to teach and improve pragmatic behaviours. It could be that metapragmatics acts as a mediator, in which improvements in MPA during intervention lead to better outcomes. Alternatively, it could be that metapragmatics is a moderator, in which good metapragmatic skill at the start of intervention predicts good outcome following intervention.

Despite the use of MPA as a therapeutic tool, the assessment of MPA is often overlooked by clinicians (Donahue, 1997). There is no systematic approach to the assessment of MPA as a pre-assessment baseline or as an outcome of intervention. This
is unsurprising, given both the lack of published or standardised MPA assessment tools and that little is known about MPA development. Current standardised published assessments of pragmatics including above sentence level comprehension/production include the Test of Pragmatic Language-Second Edition (Phelps-Terasaki & Phelps-Gunn, 2007), the Inferential Comprehension Subtest of the Assessment of Comprehension and Expression (ACE) (Adams, Cooke, Crutchley, Hesketh, & Reeves, 2001), Understanding Spoken Paragraphs Subtest of the Clinical Evaluation of Language Fundamentals-Fourth Editions (CELF-4 UK) (Semel, Wiig, & Secord, 2006) and the Non-literal Comprehension Subtest of the ACE (Adams et al., 2001). Current standardised published assessments of narrative ability include the Expressive, Reception and Recall of Narrative Instrument (ERRNI) (Bishop, 2004), the Bus Story-Revised Edition (Renfrew, 2010) and the Narrative Subtest of the ACE (Adams et al., 2001).

In addition to formal assessments of pragmatic skills, there are several parent/teacher-report measures including the Children’s Communication Checklist-2 (Bishop, 2003a), the Pragmatics Profile Subtest of the CELF-4 UK (Semel et al, 2006), the Pragmatics Profile of Early Communication Skills (Dewart & Summers, 1988) and more recently the Targeted Observation of Pragmatics in Children’s Conversation (TOPICC) Observation Schedule (Adams et al., 2011). There are also several unpublished assessment tools which have been used for research purposes, such as the Pragmatic Protocol (Prutting & Kirchner, 1983). For a review of unpublished assessment protocols for aspects of pragmatic ability see Paul and Norbury (2012). None of these assessments or pragmatic checklists currently measure MPA ability.

The lack of MPA assessments had led to two main issues. Firstly, the lack of tools to systematically assess MPA means that there is a dearth of information regarding the development of MPA in cwTLD. Knowledge of typical developmental norms would inform SLTs about the level of MPA that a child should possess at a certain chronological age. This information would enable them to ascertain if a child with communication impairment had developmentally appropriate levels of MPA. Secondly and subsequently, the child’s level of MPA would enable SLTs to decide whether MPA should be a target of intervention (a mediator) or a tool for intervention (a moderator). MPA intervention tasks have been used with cwPLI despite no clear evidence that these children lack knowledge of pragmatic rules. What is uncertain is whether cwPLI have
difficulty using pragmatic rules because they lack MPA for these rules or alternatively because they lack the ability to adhere to these rules, despite age-appropriate MPA. If a child with clinical communication impairment had difficulty in adhering to a specific pragmatic rule but demonstrated MPA for the pragmatic rule, intervention might focus on self-detection and self-correction of rule violation or perhaps on motivation to self-regulate and adhere to the rule. If the child did not have MPA for the specific pragmatic rule that they were violating, intervention might focus on raising the child’s awareness of the rule before behaviour was changed.

It is not known whether cwPLI and cwSLI also have impairments in MPA. Given that metapragmatic judgements require the child to link linguistic and contextual information by drawing on inferences about the speaker and the interlocutor it is likely that impairments in MPA are present in at least some cwPLI and cwSLI. In the next section conceptualisations of metapragmatics will be described in relation to metarepresentation, metacognition and metalinguistics. Precursors of metapragmatic development will be described before outlining the childhood development of metapragmatics for typical and atypical populations.

### 1.6 Metacognition, Metalinguistics and Metapragmatics

Metapragmatic awareness sits under the broad umbrella of metacognitive ability. In this section definitions of metacognition, metalinguistics and metapragmatics will be given. How these terminologies might relate to each other is also described.

The term metacognitive refers to any activity or knowledge that is used to regulate a cognitive task i.e. thinking about cognition (Flavell, 1981). Metacognition is believed to enable the learner to regulate their cognitive activities to aid learning (Veenman, Van Hout-Wolters, & Afflerbach, 2006). Metacognition therefore covers a wide range of skills including knowledge about metamemory (memory strategies), metacognition (strategies for perceptual or linguistic tasks) and the ability to monitor and regulate our own cognitive activities (Flavell, 1999).

Whilst cognition deals with routine forms of learning and thinking, metacognition deals with tasks in which a strategy is required to maximise the chance of success. As such,
metacognition involves self-regulatory strategies and processes and therefore sits under the umbrella of executive function (Paul & Norbury, 2012). Metacognition consequently draws on a form of self-awareness in order to monitor task activity and evaluate task success. It has been argued by some that this form of metacognition involves the ability to metarepresent the strategy (Carruthers, 2009). The term metarepresentation in this sense refers to the ability to form a mental representation of our own thoughts and beliefs.

However, this view has been challenged by those that argue metacognitive strategies require representation only at the procedural level (i.e. the ability to do) and not at the declarative level (i.e. the ability to describe) (Proust, 2007). To metarepresent the metacognitive activity, the strategy must be talked about and reflected upon so that verbal inferences can be made about it (Proust, 2007). Take the case of the child who used a metacognitive strategy to learn a word list. If they subsequently found that their memory of the list was poor they could then infer that they had a memory problem. Only at this point would the child have metarepresented their metacognition. Once metacognitive activities have been reflected upon verbally they have undergone a process of “representational redescription” (Karmiloff-Smith, 1986) in which the knowledge or procedure that was involved in the thinking becomes available to conscious thought. Such metacognitive knowledge therefore becomes decoupled from the original process (i.e. the original implicit representation at the procedural level) and can be reflected upon explicitly through a metarepresentation. Through language the metacognitive knowledge then becomes something which can be discussed, shared and taught (Proust, 2003). The relationship between metacognition, metalinguistics and metapragmatics will now be outlined.

Early models of metacognition conceptualised metalinguistic awareness as a subset of metacognition, whilst metapragmatic awareness was conceptualised as a subset of metalinguistic awareness, referred to in this model as metalanguage (Tunmer & Bowey, 1984). This model is shown in Figure 3 below.
Figure 3: Hypothesised relationship between metacognition, metalinguistics and metapragmatics (reproduced from Tunmer & Bowey, 1984, p. 151)

Metalinguistic activities included those in which language was used to discuss structural aspects of language (grammar/phonology), aspects of word meaning (semantics) or aspects of language use (pragmatics). Metapragmatic awareness was termed “pragmatic awareness” and early research into MPA used this terminology (e.g. Pratt & Nesdale, 1984). It appears to be later on, when metapragmatics was recognised as a separate ability and not as a sub-skill of metalinguistics, that the prefix “meta” was added to the label. In this thesis the term metapragmatic will be used throughout to describe any activity in which the child is required to reflect on the use of pragmatic rules and the term metalinguistic will be used to describe any activity in which the child is required to reflect on structural aspects of language. In the remainder of this section the terms metalinguistics and metapragmatics will be outlined and their relationship to other metarepresentational abilities will be described.

Tasks which tap explicit metalinguistic awareness require the use of language to talk about language. Nevertheless, metalinguistic activities go beyond talk to encompass thinking about and reflecting on language (Gombert, 1992). Furthermore, it is not necessarily the case that all metalinguistic activity is accessible to conscious awareness. It has been argued that metalinguistic awareness may occur at either an implicit unconscious level or at an explicit level in which the rules of language are explicitly described or discussed (Tunmer & Herriman, 1984). Metalinguistic tasks which require
the participant to make an acceptability judgement about a heard utterance do not require conscious metalinguistic awareness as the participant does not have to explicitly define why they have made their judgement. These tasks are therefore measuring implicit metalinguistics. Such implicit metalinguistic judgement tasks do not require expressive language abilities, although receptive language abilities are necessary for task success. Implicit tasks are important as they allow children with limited language abilities, such as younger children or children with language impairments to demonstrate their metalinguistic awareness. Since the limited language abilities of these children precludes them from explicitly talking about metalinguistic awareness, it is necessary to use implicit tasks to measure metalinguistic awareness in these groups. However, these tasks require the examiner to infer awareness from the child’s response and cannot therefore be taken as direct evidence of metalinguistic awareness.

Early conceptualisations of metalinguistics viewed metapragmatics as intrinsically metalinguistic (Tunmer & Bowey, 1984). However, later conceptualisations have viewed metalinguistic activity as occurring because of our need to analyse the way that language is used, suggesting that metalinguistics is intrinsically metapragmatic (Lucy, 1993). To clarify what is meant by metapragmatics it is necessary to draw a distinction between the processes involved in metalinguistics and those additional processes involved only in metapragmatics. Metalinguistic judgements require only awareness of linguistic knowledge i.e. the rules of grammar, syntax, phonology and semantics. In contrast, metapragmatic judgements require awareness of linguistic knowledge and contextual or world knowledge (Caffi, 1994). According to this conceptualisation metapragmatics goes one step further than metalinguistics in that it not only reflects on the linguistic aspects of communication but also the extralinguistic aspects of communication such as the context of the utterance.

Metapragmatics is therefore defined in broad terms as the ability to reflect on language by linking language to context and this view of metapragmatics is adopted in the current thesis. According to this view, metapragmatic awareness of a heard conversation would require the child to represent the linguistic aspects of what was said and the pragmatic aspects of how it was said. Optimal performance in an explicit metapragmatic task would therefore require linguistic and metapragmatic abilities. In the metapragmatic task the child would be expected to demonstrate explicit awareness of the pragmatic rules used in the utterance. Whether optimal performance on the metapragmatic task
would also require metalinguistic awareness is debateable. Although the child would be required to represent the grammatical, syntactic and lexical-semantic aspects of the conversation in order to comprehend what was said their awareness of these linguistic rules might only be implicit. Indeed, it is plausible that the child’s metalinguistic and metapragmatic awareness for the same utterance could be at different levels of explicitation, depending both on the child’s awareness and the task demands.

Generally, when language is used to do things such as converse or negotiate with someone, this does not require conscious access to the pragmatic rules in use. Only at certain times may the need for explicit metapragnatic comments be required (van Kleeck, 1984). As with metacognition, it is thought that metapragmatic comments are used by children for many different reasons. A brief sample of hypothetical metapragmatic comments and their functions are given below:

- To negotiate the flow of a conversation (e.g. I’m sorry I didn’t hear you, can you talk a bit louder?)
- To reflect on the consequence of an action (e.g. Why is Jonny angry with you? Because I ignored him)
- To establish group rules (e.g. You must always look at me and listen when I am talking)
- To reflect on pragmatic rule violations (e.g. You didn’t say please, that’s not polite)

The previous section introduced current conceptualisations of metacognition, metalinguistics and metapragmatics. The next sections outline the development of metalinguistic ability and metapragmatic ability. Metapragmatic development will be outlined in more detail given the focus of the thesis. Typical development of metalinguistic and metapragmatics will be outlined in sections 1.6.1 and 1.6.2 respectively. The final section (section 1.6.3) outlines what is currently known about metapragmatic development in atypical populations.
1.6.1 Metalinguistic development

Metalinguistic ability shows developmental progression during childhood. It initially emerges tacitly, as demonstrated by pre-school children’s implicit self-repairs for their linguistic errors (Clark, 1978). Explicit metalinguistic awareness develops during middle childhood (Tunmer & Herriman, 1984) and between the ages of 2 and 6 years is demonstrated through the child’s emerging ability to ask questions about and discuss specific aspects of language use and to comment on their own use of language (Slobin, 1978). The ability to define a word as a label for something emerges at the age of 6 or 7 years (Berthoud-Papandropoulou, 1978) and continues to develop throughout middle childhood (Benelli, Belacchi, Gini, & Lucangeli, 2006). Metalinguistic awareness for some aspects of morphology such as the suffix “-er” emerge between 6 and 8 years (Duncan, Casalis, & Cole, 2009). However, for other aspects of morphology such as plural noun phrase markers, difficulty with metalinguistic awareness has been found in children aged up to 10 years (Serratrice, Sorace, Filiaci, & Baldo, 2009). It seems likely that metalinguistic awareness shows a different developmental progression for different aspects of morphology.

Metalinguistic awareness continues to become more sophisticated during later childhood with greater knowledge of the phonological and morphological aspects of word structure emerging during adolescence and into early adulthood (Nippold, 2007). Cross-linguistic differences in the development of metalinguistic awareness for grammatical morphology have also been found in both the Duncan et al. (2009) and the Serratrice et al. (2009) studies, suggesting that exposure to specific languages can also affect metalinguistic development rates.

1.6.1.1 The relationship between linguistic and metalinguistic development

Although linguistic and metalinguistic abilities do develop alongside one another explicit metalinguistic awareness is argued not to be necessary for language development until language is required for literacy (Gombert, 1992). It is therefore argued that metalinguistic awareness has little or no relationship with early language development (Karmiloff-Smith, 1989). Furthermore, children’s early metalinguistic awareness may underestimate how much they know about language. For example, preschoolers often know category information about words such as cat (animal) or apple
(fruit) but when asked to define these words they typically omit such categorical information from their definition (Nelson, 1978). Children may be able to demonstrate their knowledge implicitly, through activities such as category sorting or category generation, but they are usually unable to demonstrate the same knowledge explicitly as required by the definition task. The same is true for the development of morphology in early language learners. For example, preschool children confidently use words such as “teacher” and “helper” in school without any demonstrable awareness of the rules for suffixes such as “-er” (Derwing, 1979). A similar pattern of ability developing before awareness can be seen in the development of syntax. By the age of 3 to 4 years children with typically developing language have usually acquired basic Subject-Verb-Object syntax e.g. “The girl is pushing the boy”. Despite having little or no difficulty producing such utterances to describe a picture, children at this age had great difficulty transposing the sentence using graphical representations of each argument, suggesting that they could not explicitly reflect on the syntactic structures that they so easily used to communicate (Sutton, Trudeau, Morford, Rios, & Poirier, 2010).

However, there is evidence that metalinguistic skills are involved in acquisition of specific aspects of language learning. For example, children, adolescents and young adults use their knowledge of word meanings and linguistic context to comprehend unfamiliar nonliteral phrases such as idioms e.g. “paper over the cracks” (Nippold, Moran, & Schwartz, 2001). In the same way, people are able to use word knowledge and contextual clues to comprehend unfamiliar compound words e.g. “yachtsman” (Brusnighan & Folk, 2012), a skill which is competently employed by the age of 12 to 13 years (Nippold, 2007).

Furthermore, the ability to comprehend and use “literate verbs” in metalinguistic tasks (e.g. “interpret”, “infer”, “concede”, “predict”) has been found to relate to the adolescent’s or young adult’s level of education (Nippold, 1993). In addition, the student’s knowledge of literate verbs correlated significantly with their reading vocabulary, suggesting metalinguistic ability and literacy are related at this age. Whether this relationship is causal was not ascertained. Overall, this research indicates that some metalinguistic abilities are not mastered until early adulthood, and that for some adults who do not go on to higher education, some levels of metalinguistic awareness may indeed never be mastered. The development of metalinguistic awareness
appears to span the entire length of childhood and continues into adulthood. With this in mind, the development of metapragmatic awareness will now be described.

1.6.2 Metapragmatic development in cWTLD

There has been a limited amount of research into the development of MPA in typically developing children. What research there is indicates that MPA does follow a developmental progression. This data is reviewed below. It has been suggested that MPA can be assessed simply by asking children to explicitly describe the rules of communication (Creaghead, 1990; Nelson, 1998). However, as will be discussed, there are several methods of assessing MPA which tap either implicit or explicit levels of awareness. Evidence on the development of implicit MPA and explicit MPA will be outlined in separate sections. Methodologies are described in detail to inform later discussion regarding the proposed method for investigation of MPA to be used in the current thesis. The final part of this section will outline what is known about the relationship between pragmatics and metapragmatics.

1.6.2.1 Prerequisites for metapragmatic development

It has been discussed above that metapragmatic ability involves the ability to talk about language within the context in which it was used. This context includes the physical context of the utterance and the mental context of the speaker and interlocutor’s thoughts and emotions. In order to make a metapragmatic judgement the child must therefore be able to represent others’ thoughts, feelings and beliefs including an understanding of intentionality. They must therefore be capable of metarepresentation, the ability to form a mental representation of another person’s thoughts or beliefs (Bishop, 1997). Such metarepresentation of intentionality is not required in traditional metalinguistic tasks where only knowledge of grammar, syntax or lexical-semantics is necessary.

The earliest forms of metarepresentation are thought to emerge in the preschool years and include the ability to demonstrate and understand pretence and to engage in
symbolic play (Bosco, Friedman, & Leslie, 2006; Leslie, 1987; Onishi, Baillargeon, & Leslie, 2007). Metarepresentational ability has typically been studied via an aspect of social cognition termed Theory of Mind (ToM) in which the child is required to represent the beliefs of another person (Wimmer & Perner, 1983).

The most commonly used false-belief task is the change-of-location task wherein the child observes a situation in which two people begin with a shared knowledge of an object e.g. a ball in a basket. One of the people then leaves the scene and the object is moved to another location e.g. the ball is moved to a box. The person then returns and the child is asked where this person thinks the ball is. If they are able to represent the other person’s belief and suppress their own knowledge of where the ball is, they will correctly say that the person will identify the basket as the location. If they are unable to represent the other person’s belief they will say that the ball is in the box. Therefore, in the false-belief task the child must metarepresent the other person’s false-belief and compare it to their own true belief. False-beliefs are typically represented at two levels. In first-order ToM tasks the child is simply asked to state where the protagonist thinks the object is e.g. “Mary thinks the ball is in the basket”. In second-order ToM tasks the child is required to state where the protagonist thinks the object is but from the perspective of another protagonist e.g. “John thinks that Mary thinks that the ball is in the basket.”

Children aged 4 to 6 years are able to perform first-order ToM tasks (Flavell, 1993; Gopnik & Astington, 1988; Wellman, Cross, & Watson, 2001; Wimmer & Perner, 1983). ToM ability continues to develop during childhood and by 7 years children can also perform second-order ToM tasks (Perner & Wimmer, 1985). These abilities to metarepresent the beliefs of another are also associated with other aspects of cognitive development such as language ability, attention ability and executive functioning (Astoning & Jenkins, 1999; Carlson, Mandell, & Williams, 2004; Leslie & Polizzi, 1998; Wellman, Lopez-Duran, LaBounty, & Hamilton, 2008). ToM abilities have been demonstrated in some 3-year-old children with strong executive functioning (inhibition control) abilities (Carlson & Moses, 2001). However, the authors suggest that other factors such as working memory ability may also be involved.

Two main hypotheses have been put forward to explain the difficulty that 3-year-old children have with the false-belief tasks. The first hypothesis states that these children
have a conceptual deficit, i.e. they have not yet acquired the ability to represent the beliefs of others at this level (Perner, Leekam, & Wimmer, 1987; Wellman et al., 2001). In contrast, the early competence hypothesis argues that it is task demands which obscure the child’s actual metarepresentational abilities (Fodor, 1992). Most recently support for the latter hypothesis has been growing. The general inability of most 3-year-olds to pass ToM tasks has been attributed in part to their difficulties suppressing their own knowledge when it is superior to that of a more naïve person (as tends to be the case in false-belief tasks) and has been called the curse of knowledge (Birch & Bloom, 2003, 2004, 2007). The effect of this reality bias has been tested most recently using a prosocial cooperative false-belief task (Buttelmann, Carpenter, & Tomasello, 2009; Matsui & Miura, 2008). In this prosocial task the child must use their false-belief awareness to help another person. Doing so does not require the child to suppress their knowledge as was the case with the deception tasks. Using these prosocial tasks 3-year-olds (Matsui & Miura, 2008) and even 18-month-olds (Buttelmann et al., 2009) have demonstrated false-belief awareness. Whether these children possess ToM in the same way as the 4- and 5-year-olds is unknown but it is clear that the ability to metarepresent another person’s thoughts or beliefs is present early on in development.

It is likely that the continuing sophistication of children’s ToM ability is linked to the interaction between different cognitive abilities during development. Linguistic ability is one aspect of development which appears to be linked to ToM development and the relationship between language and ToM will now be explored. Research in typically developing children indicates an association between linguistic ability and ToM although the precise aspects of language involved remain unclear. Training study evidence suggests that sentential complement syntax ability is associated with the ability to talk about other people’s perspectives (Lohmann & Tomasello, 2003). In contrast, others have found that sentential complement syntax does not uniquely predict variance in ToM ability once general expressive syntax and receptive vocabulary skills have been controlled for (Farrar et al., 2009).

Evidence from cwSLI indicates an association between impairments in language and social cognition. Typically cwSLI perform more poorly on ToM tasks than their peers and these deficits appear to diminish once the language demands of the task are reduced (Miller, 2001). Both grammatical and vocabulary development have been found to predict ToM ability in cwSLI (Farrar et al., 2009). Although language ability is
associated with ToM, deficits in ToM tasks are more severe in cwSLI who have pragmatic impairments than those cwSLI who fit the more classical profile of phonological-syntactic impairments (Shields et al., 1996b). This suggests that the ability to metarepresent the intentions of others are associated with aspects of language and pragmatics.

The ability to metarepresent involves the notion of intentionality. This ability becomes more sophisticated during the preschool years and develops alongside the child’s awareness that people’s mental states drive their intentions (Flavell, 1999). The child is required to understand propositional attitudes such as “believing that” or “desiring that”. In order to explicitly talk about metapragmatics the child must also be able to use metacognitive language such as modal state verbs about the propositional attitudes that they perceive e.g. “he thinks”, “she believes”, “he knows”. Rudimentary use of such modal state verbs begins in the pre-school years and continues to develop into middle childhood (Antonietti, Sempio-liverta, Marchetti, & Astington, 2006; Schwanenflugel, Fabricius, & Alexander, 1994). Some modal verbs appear to be easier to learn than others, with verbs such as “explain” and “remember” emerging around 5 years with more ease than other verbs such as “understand” and “deny” (Flavell, 1999; Lockl & Schneider, 2006).

Children’s exposure to and talk about mental states has been associated with ToM development (Peterson & Siegal, 1995, 1999, 2000). Parental use of mental state verbs has also been found to correlate with children’s understanding of mental states (Howard, Mayeux, & Naigles, 2008; Slaughter, Peterson, & Mackintosh, 2007) and to predict later understanding of mental states in ToM tasks (Adrián, Clemente, & Villanueva, 2007). Training study evidence also indicates exposure to mental state talk of others can facilitate the development of false-belief awareness in preschool children (Gola, 2012).

The association between both ToM ability and mental state vocabulary and later metacognitive abilities supports the notion of a reciprocal relationship between the ability to metarepresent (ToM) and the ability to reflect (metacognition) (Lockl & Schneider, 2006). In relation to MPA, the ability to explicitly use knowledge of another person’s thoughts within a metapragmatic task appears to emerge around the age of 7 years (Hickmann, Champaud, & Bassano, 1993), at the same age that children acquire
the ability to report speech e.g. “she said…” (Hickmann, 1993). More information on
the methodology used by Hickmann et al. (1993) is given in section 1.6.2.4.

In summary, there is a strong theoretical argument that metarepresentation and
metacognitive vocabulary are necessary prerequisites for metapragmatic development.
Metapragmatics appears therefore to sit at the interface between linguistic and cognitive
processes. It is not known whether the relationship between these skills is reciprocal or
causal. The lack of empirical evidence in this area will be returned to in the discussion
chapter with reference to metapragmatic assessment and intervention for children with
language impairments.

1.6.2.2 Implicit Metapragmatics

Early investigations into metapragmatic awareness carried out in the 1970’s and 1980’s
focused on how informative a message was judged to be, including message adequacy,
ability to monitor comprehensibility of the message, and awareness of the necessity to
alter the message to the requirements of the situation (Pratt & Nesdale, 1984). These
studies often assessed implicit MPA as measured through behaviours such as request
clarification and often contained a “metapragmatic training” element. This data is
reviewed to establish both an understanding of how implicit MPA emerges in typical
development and the historical context from which investigations of explicit MPA
development emerged.

In order to make a metapragmatic judgment about the communication of a message, the
child requires an awareness that a message can be either adequate or inadequate (Pratt &
Nesdale, 1984). Put another way, they must know whether they have understood the
message. Evidence suggests that children as young as 2 ½ years are often aware of non-
comprehension during story violations, although to a lesser extent than 3- to 4-year-olds
(Skarakis-Doyle, 2002). In addition to comprehension monitoring, the child must also
be able to attribute blame for the inadequacy of the message to the correct person.
Awareness that communication breakdown is the fault of the speaker is not present in
children at 5 years, and only emerges around 6 to 7 years (Robinson & Robinson,
1976). Children must become aware that a message should refer to the idea that the
speaker is trying to convey and that communication breakdown can be caused by
inadequate messages. This awareness must occur before they begin to analyse the message (Robinson & Robinson, 1977). Awareness that communication breakdown is the speaker’s fault is also associated with superior ability to request clarification during such occasions (Robinson & Robinson, 1981) suggesting that greater awareness is associated with greater communication success. The ability to determine whether a message is adequate and to suggest improvements to the message is present at 8 to 9 years but not at 6 years (Markman, 1977). Interestingly, the 6-year-olds became aware of the inadequacy of the instruction only when they carried it out, suggesting that experience of following instructions may be involved in the development of MPA for message adequacy.

A similar developmental pattern occurs for request clarification. In one study, children were given an instruction which contained an inadequate amount of information (Cosgrove & Patterson, 1977). The 10-year-olds spontaneously requested clarification but the 4- and 8-year-olds did not request clarification and simply attempted to follow the instruction. In doing so the youngest children behaved in a way which suggested that they expected the message to make sense and that they did not automatically appraise message adequacy. Next the children were given training about effective listening strategies and were instructed to ask for clarification if they did not understand. Following the training, both the 8- and 10-year-olds increased their request clarification compared to initial pre-instruction levels, whereas the 4-year-olds did not. The facilitative effect of instruction for the 8-year-olds suggests that they may not have demonstrated MPA because of performance difficulties, rather than awareness difficulties per se. The effect of training in request clarification has also been found to generalise beyond the initial training session (Cosgrove & Patterson, 1978; Patterson, Massad, & Cosgrove, 1978).

It is assumed that MPA develops in response to experience of pragmatic behaviours and the explicit metapragmatic comments or instructions that the child hears from peers and adults. Research indicates that children are often given instructions containing explicit metapragmatic information (e.g. “remember to take turns”, “please don’t interrupt”) and are expected to decode these statements in order to successfully communicate and interact (Yifat & Zadunaisky-Ehrlich, 2008). In early language development caregivers and teachers most commonly request clarification indirectly, such as by asking “wh-“ questions (e.g. “Which jumper?”) or by having a guess (e.g. “Do you mean the red
jumper?”) but they rarely state explicitly that the child’s message is inadequate or that the child needs to be more explicit (e.g. “Which jumper, there are three jumpers here”) (Robinson & Robinson, 1981). Awareness that message adequacy is the fault of the speaker at age 6 years is predicted by caregiver’s use of explicit statements of non-comprehension when the child was aged 2 to 3 years (Robinson & Robinson, 1981). However, this evidence comes from naturalistic infrequent time sampled observations and it may be possible that some caregivers provided explicit statements of non-comprehension that were not recorded.

Metapragmatic training to improve awareness of message adequacy has been used with 4- to 5-year-olds. The children were trained to ask questions to disambiguate an instruction. Afterwards the children who received the metapragmatic training were significantly better at giving unambiguous instructions and requesting clarification in response to an ambiguous instruction than the children who did not receive the training (Robinson & Robinson, 1982). The evidence reviewed indicates a relationship between metapragmatic training and pragmatic behaviour in early language development. Perhaps when children are made aware that their messages have not communicated the intended meaning they become aware of message adequacy and that inadequate messages are the fault of the speaker. Whilst there is some evidence that explicit training can improve specific pragmatic and metapragmatic abilities it is unlikely that MPA for all pragmatic rules is explicitly taught. Indeed, there is strong evidence from the broader domain of metacognitive development that metacognitive knowledge is not necessarily discussed during task performance and is often inferred from behaviour (Veenman et al., 2006).

The evidence discussed thus far has focused on implicit MPA as measured through a specific behaviour such as requesting clarification or altering the message to the requirements of the situation. These behaviours do not require explicit awareness and can be performed simply by monitoring comprehension and altering what is said accordingly. A more recent study of implicit MPA investigated children’s awareness of conversational rule violations. Exploration of implicit MPA in bilingual language learners has been carried out with 3 to 6 year old Italian monolinguals and Slovenian-Italian bilinguals. The children were shown videoed interactions in which three dolls engaged in a brief conversation in which one of the dolls asked a question to one of the other dolls who either adhered to or violated a Gricean conversational maxim. The
participant was asked to point to the doll that “said something silly”. Results indicated that even the youngest children were able to identify the speaker who violated the maxim on some occasions. Implicit MPA increased with age and there was also an advantage for the bilingual language learners (Siegal, Iozzi, & Surian, 2009). However, the children were not required to explicitly reflect on why the speaker said something “silly” and therefore no information on explicit MPA was provided in this study.

The remainder of this section deals with the development of children’s ability to explicitly reflect on pragmatic rules and pragmatic rule violations. The methodologies used in these studies will be outlined in detail to inform the discussion of the methodology chosen for the novel AMP assessment used in this thesis.

1.6.2.3 Explicit Metapragmatics

Studies of explicit MPA have used the following methodologies: spontaneous conversation sampling, production tasks, judgment tasks and narrative completion. These studies will be outlined below.

Becker (1988) investigated spontaneous metapragmatic comments in six preschoolers (2- to 4-years-old). Unstructured conversations between the child and at least one parent were audiotaped over a year during informal play and household activities such as eating, bathing etc. The children produced “unprompted, explicit statements about a pragmatic behaviour or rule” (Becker, 1988, p. 460) in five metapragmatic categories:

1. comments about other people’s pragmatic errors e.g. “I said hi to him and he didn’t say hi to me.”
2. comments and questions about pragmatic rules e.g. “When I say please then they say Yeah, you can have a bite, and I take it away, and I eat it all up.”
3. comments to regulate and maintain the conversation e.g. “I said I couldn’t hear you, Momma.”
4. self-promptings of pragmatic behaviours e.g. “Be quiet and grow up.”
5. accounts for pragmatic errors by reference to conflicting pragmatic rules e.g. “I can’t talk now, my mouth is full” and “I can’t talk, I’m dead.”

It is argued that the errors described in category five demonstrate sophisticated MPA. In order to describe conflicting pragmatic rules it is assumed that the child must
understand both the violated rule and the alternative rule. Becker (1988) noted that the children’s metapragmatic comments were not only used to repair or continue a conversation but also reflected the children’s growing desire to increase their MPA and self-prompted pragmatic behaviours. Becker argues that these comments were evidence that the child was internalising pragmatic rules that had been previously spoken by caregivers.

Further research into the MPA of preschoolers has been carried out by Sachs, Donnelly, Smith & Bookbinder (1991). Forty-five 3- to 5-year-olds participated in an arts project and performed a request task, a conversation task and a metapragmatic task. In the request task they were required to ask a moderately familiar adult for a pretend fish that was needed to complete an art project. The adult was either silent or talking to another adult. Younger children took longer than older children to request from a silent adult. Older children took longer to request from a talking adult. In the metapragmatic task the children were asked to say how a child would ask for some scissors/sellotape/glue in condition (i) in which mother was making dinner or in condition (ii) in which mother and a woman were sitting talking with coffee and cake or in condition (iii) in which mother was talking on the phone. Younger children’s metapragmatic judgments made no distinction between a talking or silent adult. Older children were aware that when an adult was talking the child should wait for an appropriate moment. Metapragmatic task response did not predict children’s behaviour in the request task (Sachs et al., 1991). The authors conclude that knowledge about a pragmatic principle may not automatically and immediately transfer to the use of this principle in children’s behaviour:

Sachs et al.’s (1991) finding that the 3- to 4-year-olds did not display MPA in their task contrasts with Becker’s (1988) evidence of preschool children’s metapragmatic comments in naturalistic conversations. When the children were asked direct questions they were unable to provide metapragmatic responses, yet in the spontaneous situations observed in Becker’s study they did appear to make metapragmatic comments. An explanation for these findings could lie in a developmental progression from MPA which is only explicit during the moment of communication to MPA which is explicit whenever it is probed. The former would include spontaneous comments during conversation where context supports access to metapragmatic knowledge. The latter would include explicit MPA assessment tasks where less contextual support is required to access the same metapragmatic information about the same pragmatic rules. So far
the picture is one of a gradual development in MPA from preschool onwards. In addition to a gradual developmental progression there is also evidence of a distinct developmental shift in sophistication of MPA at approximately 7 years. This evidence will be outlined below.

Axia and Baroni (1985) investigated children’s awareness of request politeness relative to cost to interlocutor in completing the request. In this study involving data from 64 participants, children were shown a picture of an adult and child sitting on the sofa in front of a TV. An additional character, either a child or adult, was added to the scene. This additional character asked either the adult or child to move over so that they could sit down. The participant was asked who the additional character had addressed the request to and to justify their response. Axia and Baroni (1985) found an increase in awareness of request politeness relative to cost to interlocutor in completing the request, at age 7 years compared to age 5 years.

Baroni and Axia (1989) investigated children’s MPA of politeness as a function of familiarity. The authors applied Karmiloff-Smith’s (1986) theoretical model of metalinguistic awareness to their analysis of the child’s level of explicit MPA. Although initially put forward as a model of metalinguistic awareness it is highly pertinent to the debate about levels of explicit MPA. This model will be described in detail and is put forward as a clinically useful way of measuring MPA. The results of Baroni and Axia’s (1989) study will then be outlined.

The three-phase model of conscious access to linguistic information (Karmiloff-Smith, 1986) moves away from the implicit/explicit dichotomy and argues that such a dichotomy is too simplistic to capture the complexity of metalinguistic development. Instead, the development of conscious access to linguistic information is seen as an emergent process. Initially, linguistic structures (such as grammatical morphemes) are represented as independent representations connected to the word in which they were originally learned. These representations are not available to conscious access and not generalizable for use with other words. Gradually, as more tokens which include the linguistic structure are added to the child’s representations, the child becomes able to consciously manipulate and explicitly reflect on the linguistic structure in question. The model specifies four levels of metalinguistic representation: a level of non-awareness labelled implicit awareness, and three levels of explicit awareness labelled primary
awareness, secondary awareness and tertiary awareness. The model is intended to represent phases of emerging conscious access to metalinguistic knowledge, rather than developmental ages or stages. In this way, the model predicts that a child could be at a primary level of awareness for one aspect of linguistic ability and at a tertiary level of awareness for another aspect of linguistic ability. The next part of this section will look at the data used by Karmiloff-Smith (1986) to form the basis for her three-phase model. Baroni and Axia’s (1989) application of the model to the study of MPA will then be analysed.

Karmiloff-Smith (1986) based this model on developmental data of the metalinguistic responses and repairs of 996 responses from children aged 4 to 12 years. Children’s metalinguistic responses were analysed for a range of linguistic devices such as anaphora, deixis and gender-marking (Karmiloff-Smith, 1979). Children were asked to talk about a picture and were then asked to respond to metalinguistic questions such as “Why did you say the apple?” which prompted the child to explicitly reflect on their use of linguistic devices such as the definite article. Children’s spontaneous metalinguistic comments were also recorded and analysed. For example, Karmiloff-Smith (1986) gives the following example “you took the shoe (rising intonation in French)...I was going to say the shoe red but there aren’t two shoes” (p. 120). The repair data were collected from the child’s spontaneous repairs during the metalinguistic tasks cited above and during studies of children’s narrative production (Karmiloff-Smith, 1985). An example of a self-repair for the use of definite/indefinite articles is given by Karmiloff-Smith (1986) “you hid the book...a book (context with several books present)” (p. 128).

These four levels of explicitation suggested by Karmiloff-Smith (1986) are predominantly of interest in terms of their application to the measurement of levels of MPA. Each level will be outlined in the next paragraph which summarises how the model was applied to the measurement of MPA. Table 3 outlines Baroni and Axia’s (1989) application of the three-stage model of representational explicitness to children’s awareness of the pragmatic rule involved in request politeness. Thirty-two 4- to 6-year-olds and 6- to 8-year-olds were given a scenario in which a child made a polite or impolite request in situations typical in children’s lives e.g. playing on the swing, eating cake etc. The children were presented with a short story which comprised of two pictures. The picture depicted a scene with a mother, son and other boy. In the story one of the boys made a request which was either polite or impolite. The requests also varied
by degree of familiarity with the addressee. Children were asked which boy made the request. They were also asked to justify their assumption by responding to the question “What makes you think that?” The children’s responses to the latter question were scored using the levels of explicitation specified in Table 3.

**Table 3: Four-tier model of representational explicitness**

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Implicit knowledge</td>
<td><strong>Non-awareness</strong> No linguistic awareness e.g. “don’t know”, no response, irrelevant/incorrect</td>
</tr>
<tr>
<td>Awareness level 1: Redescription</td>
<td><strong>Primary explicitation</strong></td>
</tr>
<tr>
<td></td>
<td>The child repeats what had been said in the dialogue</td>
</tr>
<tr>
<td>Awareness level 2: Secondary explicitation</td>
<td><strong>Linguistic marker awareness</strong></td>
</tr>
<tr>
<td></td>
<td>The child identifies the part of the language used in the dialogue which signals the pragmatic behaviour</td>
</tr>
<tr>
<td>Awareness level 3: Tertiary explicitation</td>
<td><strong>Pragmatic rule awareness</strong></td>
</tr>
<tr>
<td></td>
<td>The child identifies the part of the language used in the dialogue which signals the pragmatic behaviour and explicitly stated the pragmatic rule</td>
</tr>
</tbody>
</table>

According to Baroni and Axia’s (1989) interpretation of this model the developmental progression of awareness of pragmatic rules can be described as a four-stage process. The lowest level of awareness is described as non-awareness or implicit awareness in which the child cannot identify or talk about the pragmatic behaviour or rule. The next level of awareness is described as redescription of the event in which there is some awareness of the event but the pragmatic behaviour or rule cannot be explicitly talked about. At this level the child may repeat verbatim what has been said or may describe what happened but without a specific focus on the pragmatic behaviour or rule. The next level of awareness is described as linguistic marker awareness in which the aspect of the language which marks the pragmatic behaviour can be explicitly reflected upon. At this level the child may specifically focus on the pragmatic behaviour and describe it e.g. “he did not say please”. The final level of awareness is described as pragmatic rule
awareness. Only at this stage is the child able to explicitly reflect on the pragmatic rule e.g. “he was impolite”.

The logical implication of this model entails that children may be able to redescribe behaviour or the context of behaviour before they can talk about the pragmatic aspects of the utterance. The model has been put forward as a three-phase model of explicitation both in its original form and in its later application to the study of pragmatic awareness of politeness. Baroni and Axia (1989) described this awareness as “metalinguistic” but it is argued in this thesis that any task which measures explicit awareness of pragmatic rules is by its very nature metapragmatic. Furthermore, when the descriptions of each level of awareness given by Baroni and Axia are scrutinised it becomes clear that the two most sophisticated levels, linguistic marker and pragmatic rule awareness, are measuring not metalinguistic awareness but actually metapragmatic awareness. Only at these two levels is the child required to make explicit reference to the pragmatic behaviour or the pragmatic rule. In contrast, the level of redescription does not require the child to make reference to the pragmatic rule and can therefore comfortably be described as metalinguistic. It is therefore argued in this thesis that only two levels of metapragmatic awareness are specified by the model: linguistic marker awareness and pragmatic rule awareness.

The results of Baroni and Axia’s (1989) application of the three-phase model to the study of MPA for politeness will now be outlined. The authors found that 7-year-olds had superior awareness for the pragmatic rule of politeness than 5-year-olds, as indicated by the greater number of linguistic marker awareness responses in the older age group. There were also fewer non-awareness responses in this group as compared to the younger children. No significant differences between the age groups were found for either redescription or pragmatic rule awareness scores. The authors attributed the older children’s increased representational explicitness and superior judgements to their ability to integrate their knowledge of linguistic rules (linguistic politeness markers) with knowledge of the situation (degree of familiarity) in order to make an inference about the identity of the speaker. The results also support the argument put forward in this thesis that metapragmatic representations are captured only by the two most sophisticated levels of explicitation. This furthermore indicates that only non-awareness, linguistic marker awareness and pragmatic rule awareness are of interest to the study of metapragmatic development.
The results of Baroni and Axia’s (1989) study indicate a significant difference in MPA between the 5-year-olds and the 7-year-olds indicating a developmental progression in MPA between the preschool and school years. The remainder of this section will outline the results of other studies which have investigated the developmental progression in MPA. Bernicot & Laval (1996) found a developmental progression in MPA for knowledge of promise fulfilment in a sample of school-age children. Seventy-two children aged 3-4 years, 6-7 years, and 10-11 years were shown a comic strip of four pictures in which a boy makes a promise. The children heard the beginning of the story up until the point at which the boy did or did not keep his promise. The children were asked to complete the story by choosing a picture of a happy or unhappy interlocutor and were asked to explain their choice. Whilst 3- and 6-year-olds focused on whether the promise was fulfilled, some 6-year-olds began to include the interlocutor’s desires into their analysis. In contrast, the 10-year-olds did not focus on whether the promise was fulfilled but rather the intentions of the speaker or the interlocutor’s desires and the speaker’s intentions. The authors argue that this data confirm a shift from action-related MPA until 6 years to intention-related MPA after 6 years. In addition, Bernicot (1991) also found a developmental progression in MPA for request appropriacy. Seventy-two children aged 5, 7 and 9 years listened to a brief narrative in which a request occurred. They were asked to judge request appropriacy and make a suggestion about what the speaker should have done instead. Although the 5-year-olds possessed some MPA, awareness increased with age and there was in interaction with MPA and degree of cooperation between speaker and interlocutor.

Evidence of the role of context in MPA judgements was provided by Laval (2003) in a study of idiom comprehension and MPA. Thirty-two children aged 6 and 9 years heard 12 stories comprising of four pictures each, with accompanying text which was read to them. The pictures set the scene, introduced the action and the context and produced an idiom linked to the context. In the fourth picture the children were asked to choose between two interpretations (literal and figurative) of the idiom. Once the children had chosen a picture they were asked to justify their choice. MPA was present in children even as young as 6 years. In both 6- and 9-year-olds the context affected MPA, with an increased awareness of linguistic convention in the 9-year-olds only. This suggests that although context plays a role in MPA from at least 6 years onwards, this interaction becomes more sophisticated during development.
Evidence suggests that the ability to synergise lexical, social cognitive and contextual information may be associated with the developmental shift in MPA from 7 years onwards. Bernicot and Laval (1996) showed a developmental trend in MPA for promise fulfilment was associated with the cognitive ability to represent the situation from different perspectives. In this study, 3- and 6-year-olds focused on whether the promise was fulfilled; some 6-year-olds began to include the interlocutor’s desires into their analysis and 10-year-olds focused on the speaker’s intention and the interlocutor’s desires. Developmental trends in MPA have also been associated with the ability to synergise contextual and linguistic information. In Laval’s (2003) study of literal and figurative interpretations of idioms, metapragmatic responses were influenced by linguistic context at 6 years. This effect increased in at 9 years, when knowledge of linguistic conventions also influenced metapragmatic responses. Similar shifts in sophistication and complexity of MPA have been found for MPA of request appropriacy (Bernicot, 1991; Wilkinson & Milosky, 1987) and idiom comprehension (Bernicot, Laval & Chaminaud, 2007).

Further evidence for the role of integration between linguistic and contextual information in MPA judgements was provided by Hickmann et al. (1993). In their study 60 children aged 5 to 9 years watch videoed interactions between four puppets; a boy, a girl, and two animals (a bear and a fox). In the video the girl leaves the scene to fetch something and whilst she is gone one of the animals does something “bad” e.g. stains a notebook. The girl then returns and asks the boy what has happened. The boy responds using one of two linguistic forms: either a simple sentence e.g. “It’s the bear [or fox] that stained the notebook” or a modalised sentence e.g. “I think it’s the bear [or fox] that stained the notebook”. The sentence was either a true accusation or a false accusation. The accused animal then looked shocked and the girl told the accused animal off. During the experiment the children watched the videos after which they were asked two questions: (1) “What did he say?” and (2) “Why did he say that?” Responses to the first question were analysed for accuracy, which was found to increase significantly between 5 and 7 years. Responses to the second question were analysed for the type of justification given for the boy’s response. All children used background knowledge to justify the boy’s response but by the age of 7 years children were also able to use this information to make inferences about what the boy thought had happened. The 9-year-olds were able to integrate background knowledge, inferences and the linguistic form (simple or modal) of the utterance. Hickmann et al. (1993) argued that by 9 years the
children were able to make explicit MPA responses which referred directly to what the boy said, how he said it, the context in which it was said and what this implied about his internal thought processes.

Little attention has been paid to goal-oriented or motivational aspects of MPA but at least one study has investigated this. Wilkinson & Milosky (1987) investigated MPA in 59 school-aged children aged 5-8 years. The children were asked to judge the appropriacy of a child’s request for help/equipment in a classroom scene. They were then asked to role-play (with wooden dolls) what the student should say to get the assistance that they needed. Children also had to judge the adequacy of responses to requests for information during a math lesson. Results showed that as the children’s age increased they were more likely to identify an indirect request as inappropriate in the judgement task, perceiving indirect requests as acceptable only in some situations. The older children were also more aware that specific information is required for a satisfactory response. By age 10 to 11 years children were able to make complex metapragmatic judgements and had developed an awareness of what different types of responses allowed them to do. The authors argue that as children get older they gain experience in achieving task success, leading to a greater knowledge and awareness of pragmatic behaviours which are most likely to achieve a goal.

The evidence suggests that during development the child becomes more skilful in explicitly reflecting on the pragmatic rules and rule violations using a range of information including the speaker’s intentions, the interlocutor’s desires, the nature of the pragmatic act and the physical context. This evidence fits well with the emergentist and neuroconstructivist perspectives in that metapragmatics can be seen as emerging as a product of interactions amongst the development of other cognitive processes.

1.6.2.4 The relationship between pragmatics and metapragmatics

This section outlines the relationship between pragmatics and metapragmatics. Arguably this is the most important aspect of MPA research for clinicians working to remediate pragmatic impairments. There is sparse research on the relationship between pragmatics and MPA. In one study Bernicot, Laval and Chaminaud (2007) explored the development of pragmatics and MPA in an idiom comprehension task in 60 children aged 6, 8 and 10 years. The children were shown a comic picture depicting non-literal
use of language (semantic-inference implicatures, indirect requests, idioms and sarcasm) accompanied by two pictures depicting what the interlocutor might do next. The children were asked to choose the picture that correctly depicted the interlocutor’s response to the non-literal phrase. The children were then asked to explain why the interlocutor responded that way. Responses were scored using a three point scale: irrelevant explanations, simple explanations which included the utterance or the context and elaborate explanations that “explicitly expressed the discrepancy between what was said and what was meant” (Bernicot et al., 2007, p. 2124).

Bernicot et al. (2007) found a developmental progression in both non-literal comprehension and MPA for the non-literal phrases. There was a significant effect of age on MPA between all three age groups, suggesting that MPA continued to develop between 8 to 10 years. However, abilities in comprehension and MPA did not shown the same order of developmental progression. In terms of comprehension the order of development was semantic-inference implicatures, indirect requests, idioms and sarcastic-inference implicatures. In terms of MPA the order of development was idioms, semantic-inference and sarcastic-inference implicatures and indirect requests.

Bernicot et al. (2007) provided evidence that there are different patterns of development for different pragmatic forms. For example, children were able to demonstrate MPA for non-literal phrases at an early age whereas they were able to understand the meaning of the same phrases at a later age. In contrast, children could understand indirect requests (hints) before they had explicit MPA of these. Whilst comprehension and MPA of semantic-inference implicatures developed early, sarcastic-inference implicature comprehension was acquired later but at a similar time to MPA. Bernicot et al. (2007) argue that this suggests that the development of pragmatics and the development of metapragmatics are separate and may not be linked during language development.
Summary of the development of MPA in cwTLD

The review of the literature on MPA development has moved from children’s tacit or implicit MPA to an emerging explicit MPA which is conceptualised as a form of higher-level language ability. The definition of MPA as the ability to explicitly demonstrate awareness of pragmatic rules or pragmatic rule violations is adopted in this thesis. It is argued that when children make these explicit metapragmatic judgements they are required to use language in a sophisticated way by matching language with context. As such, MPA tasks involve the ability to make inferences about the speaker and interlocutor’s thoughts, feelings, intentions and behaviours. Such inferences are made by linking what is said to what is meant within the social context of the utterance and through utilising an awareness of the pragmatic rules that govern language use.

To date, information on MPA development in cwTLD has focused on specific pragmatic aspects, such as non-literal language forms (Bernicot et al., 2007; Laval, 2003), promise language (Bernicot & Laval, 1996), request politeness (Axia & Baroni, 1985; Baroni & Axia, 1989) and request appropriacy (Wilkinson & Milosky, 1987; Bernicot, 1991). Previous research has indicated that in cwTLD awareness of pragmatic rules bound to specific contexts emerges from preschool age onwards. Whilst context is important in MPA judgments from 6 years onwards, linguistic information becomes equally important at 9 years (Hickmann et al., 1993). Evidence suggests a distinct shift in explicit MPA development at 7 years (Axia & Baroni, 1985; Baroni & Axia, 1989). The developmental shift may be linked to the child’s developing ability to synergise different cognitive processes. This hypothesis is supported by research evidence which suggests that MPA development is associated with the cognitive ability to represent the situation from different perspectives or to link linguistic and contextual information (Bernicot, 1991; Bernicot & Laval, 1996; Bernicot, et al., 2007; Laval, 2003; Wilkinson & Milosky, 1987). Evidence suggesting that MPA emerges as a product of interactions amongst the development of other linguistic and social cognitive processes echoes recent theories of development such as the neuroconstructivist (Karmiloff-Smith, 2009) and emergentist (Perkins, 2007) developmental perspectives. No research could be found on the development of MPA in adolescents and adults and it cannot be assumed that MPA development stops in childhood. In addition, little is known about MPA development in children with atypical language development and what research there is will now be described in section 1.6.3.
1.6.3 Metapragmatic development in cwPLI and cwSLI

Whilst some data has been gathered on MPA in cwTLD, little is known about MPA in clinical populations. It is believed that many children with clinical communication impairments do have impairments in metapragmatics (Smith, 1988). Evidence from intervention studies suggests that it is rare to find a child who has PLI with a language age of below 7 years who can make metapragmatic comments (Adams, 2005). This confers with what is expected given what is currently known about the emergence of MPA at around 7 years for cwTLD. However, there have been no systematic studies into MPA for cwPLI and little is known about their explicit MPA.

Whilst a few studies have investigated MPA in cwSLI these have tended to focus more generally on the area of comprehension monitoring. These studies will be outlined below to allow for a discussion of what is currently known about MPA in this population. In one study of comprehension monitoring the performance of 8-year-old cwSLI was compared to a group of age-matched typically developing children and a group of younger 7-year-old language-matched controls (Meline & Brackin, 1987). The children heard two stories in which a speaker made a general request which could not be understood. Each story consisted of three coloured drawings. As the child was shown the drawings the examiner told the child a pre-scripted story in which a child made a request (for a drink or for a record to be returned). The child in the story did not specify which drink/record they were requesting and were given the wrong item, the fault of the comprehension breakdown lying with the speaker rather than the listener. After the story the child was asked a “whose fault?” question e.g. “Whose fault was it that Terry did not get what he wanted?” Following their response the child was then asked “why?” to elicit a justification. Responses to the “whose fault?” question were analysed as to whether the child blamed the speaker or the listener for the comprehension failure. Whilst age-matched controls correctly perceived the fault to be with the speaker, the cwSLI and younger language-matched controls perceived the fault to be with the interlocutor. Next, the child’s justification (responses to the “why?” question) was categorised into one of five response types as cited in Meline and Bracken (1987, p266):

1. Explicit reference to the communicative act of the speaker e.g. “He didn’t tell his mother he wanted orange drink”

2. Explicit reference to the communicative act of the listener e.g. “She forgot to ask what he wanted”
(3) Restatement of the facts e.g. “She didn’t give him the right kind”
(4) Reasoning unrelated to the communicative act e.g. “She didn’t want to fix it”
(5) Implicit reference to the communicative act e.g. “His mother didn’t know”

The justification question arguably taps aspects of MPA and will be explored in some detail. The cwSLI tended to give justifications which either made explicit reference to the communicative act of the speaker or restated the facts. One child with SLI made reference to the communicative act of the listener and two children gave reasons unrelated to the communicative act. The younger language-matched control group also gave a large number of restatements of fact but tended to make fewer explicit references to the communicative act of the speaker. In contrast, the older age-matched control group tended to give justifications that made explicit reference to the communicative act of the speaker. This reveals an interesting finding that although the cwSLI tended to blame the listener for the communication breakdown, when asked to justify their response they made reference to the speaker not the listener. This perhaps indicates that the cwSLI did have some awareness that the communication breakdown was the fault of the speaker but they did not demonstrate this when initially questioned. Although these justifications tapped the child’s MPA they did so only at the level of linguistic marker awareness rather than pragmatic rule awareness (see Baroni & Axia, 1989). The child is not required to explicitly state the pragmatic rule i.e. “you should ask for what you want” and therefore even justifications which identified the speaker’s communicative act do not demonstrate the most sophisticated level of MPA as put forward by Baroni and Axia (1989). The fact that some cwSLI were able to identify the aspect of the speaker’s utterance that was at fault suggests that MPA may be present in at least some cwSLI.

In a more recent study, the comprehension monitoring abilities of 10 cwSLI aged 3 to 5 years were compared to a group of 13 age-matched cwTLD and 14 cwTLD matched for receptive vocabulary ability (Skarakis-Doyle & Dempsey, 2008). Each child was read a short story about a girl who tries to avoid bath time. The story was then re-told with eight alterations to the original text. The task was designed to measure whether children could detect the alterations in the story thereby demonstrating comprehension monitoring abilities. The authors argued that the task was metacognitive because it involved detecting and correcting errors. However, it is argued in this thesis that the task was inherently metapragmatic, given that the detection and correction of errors
occurred in an above-sentence-level task i.e. at the pragmatic level. Indeed, other researchers make reference to MPA about the role of the listener in communication success and breakdown (Donahue, 1997). The method and results of Skarakis-Doyle and Dempsey’s study will now be outlined in order to provide a more detailed evaluation of the metapragmatic aspects of the task.

Following the initial story reading the children were asked a series of wh-questions to measure their level of narrative comprehension. Although all children demonstrated some understanding of the story, and presumably had developed some level of story representation to refer to during the subsequent task, the cwSLI and the younger language-matched controls demonstrated significantly lower comprehension than the age-matched controls. The groups did not differ in their levels of comprehension of the vocabulary used in the story. The story was then re-read to the child who was told “I’m going to say some things that sound silly or out of place, and I want you to catch me.” The child was given up to five practice trials in order to check that they had understood the task. During these trials all children in all groups detected at least one error. The child was then read the altered version of the story and their responses were videotaped and later scored for the number of violations detected. Results indicated that only half of the cwSLI detected at least one violation, compared with all of the age-matched peers and 13 of the 14 language-matched peers. Furthermore, the cwSLI demonstrated significantly lower detection scores as compared to both age- and language-matched peers.

Response types were then analysed in order to explore the comprehension monitoring of the cwSLI in more depth. Responses were scored as nonverbal or verbal. Nonverbal responses were scored as indicating some level of awareness and were defined as (1) shifts in eye gaze between reader and book; (2) changes in facial expression such as laughter, puzzlement, frowning; and (3) changes in body movements such as abrupt stillness or turning towards the adult. Responses were only scored as violation detections if they occurred within five seconds of the violation occurring in the story. Verbal responses were defined as protests which were exclamations or questions (e.g. “No!” or “Mum?”) or corrections which contained reference to the original story (e.g. “Not Mum, Sarah!”).
Given that only half of the SLI group detected any violation, the sample of responses is small. Of these 6 responses, half were nonverbal responses and half were verbal. Of those that were verbal responses all were protests and only one protest included a correction. The younger language-matched peers performed similarly to the cwSLI, in that only half of their responses were verbal and most of these were protests only, with few corrections. In contrast, the age-matched peers usually gave a verbal response including a high number of corrections. The significantly lower comprehension monitoring abilities in the cwSLI could not have solely been due to failure to comprehend the story as the younger language-matched controls demonstrated similar levels of story comprehension to the cwSLI. Nor can performance limitations explain the results, given that all cwSLI detected at least one violation during the practice trials. The lower overall response rate in the SLI group suggests that cwSLI are impaired in identifying errors in a narrative. The cwSLI had low levels of verbal responses, suggesting that they found it difficult to talk about the violations when they were detected. Even those cwSLI who did respond verbally did not tend to talk explicitly about the part of the narrative containing the violation. Therefore the cwSLI in this study demonstrated at best only implicit MPA because they referred to the story but without explicit reference to the rule violation.

One published study has specifically investigated MPA in the SLI population (Marton, Abramoff, & Rosenzweig, 2005). The authors defined their task as assessing “social pragmatic skills” but when the task is examined in more detail it is clear that it measures metapragmatics. The task and the results will now be outlined to define which aspects of the task were metapragmatic. Marton et al. (2005) were interested in the ability of cwSLI to talk about strategies for negotiating and resolving conflict in everyday situations. Participants were 19 cwSLI aged between 7 and 10 years and a control group of 19 age-matched cwTLD. Each child was presented with 23 scenarios set in familiar contexts such as the classroom, playground or a family activity. For each scenario the child was shown a picture and asked to answer a question such as “If two children are playing together and you want to join them what would you do?” or “What do you say if you and another child come to get the same toy at the same time?”. Responses were scored on a scale from 0 to 2. A score of 2 was given if the pragmatic strategy suggested was age-appropriate to the situation. A score of 1 was given if a pragmatic strategy was suggested but it was not appropriate to the situation. A score of 0 was given if the response was irrelevant to the scenario.
Marton et al. (2005) provided examples of errors given by the cwSLI. For example, in response to the question “What do you say if you and another child come to get the same toy at the same time?” examples of incorrect responses included saying “I got it first” (termed inappropriate negotiation strategy) or saying that they would do nothing and give up (termed passive or withdrawn behaviour). Other errors included aggressive behaviour e.g. “push them”. For questions where the child was required to give an explanation, such as delivering a note from one teacher to another, errors included failing to provide adequate information e.g. saying “Here”. However, the authors did not illustrate each level with specific examples and therefore it is difficult to comment on precisely which incorrect responses were scored as a 1 or 0 point response. When the responses of the cwSLI and the cwTLD were compared, the cwSLI demonstrated impairments in the “social pragmatic skills” task. They had difficulty explicitly talking about how to initiate conversation, negotiate or resolve conflicts. Furthermore, the cwSLI suggested more nonverbal strategies in order to resolve conflicts or negotiate, such as pushing/shoving or passive withdrawal, than their typically developing peers. Perhaps the language impairments in the SLI group predisposed them towards nonverbal methods of communication indicating that there may be a symbiotic relationship between language impairments and metapragmatic impairments.

However, the authors argue that the social pragmatic impairments in the cwSLI were not due to language impairments. Structural language abilities were also assessed for each of the 23 responses. The child’s response was coded as either grammatically correct (score of 1) or grammatically incorrect (score of 0). A grammatically correct sentence was defined as one that had correct sentence structure and was a complete sentence. Both groups performed better on the grammatical task than the social pragmatic task. The cwSLI demonstrated significantly superior grammatical performance (75% accuracy) than social pragmatic performance (57% accuracy). However, the lack of a relationship between performance on the language and social pragmatic task is not proof of a dissociation between the two skills. The measure of language ability used in the grammatical task merely proved that cwSLI are capable of giving the wrong answer using the right grammar. Such a result indicates that linguistic ability may be necessary but not sufficient for metapragmatic ability. Furthermore, the language measure used may not have tapped the specific aspects of language impairment which are associated with impairments in metapragmatics.
Studies of MPA in other developmental disorders are rare but recent evidence suggests that MPA development is impaired in children and adolescents with Williams’ syndrome, a genetic disorder in which children are characterised by good language skills and impaired pragmatic skills (Lacroix, Aguert, Dardier, Stojanovik, & Laval, 2010). In this study Lacroix et al. (2010) compared MPA in 19 participants with Williams’ syndrome aged between 7 and 17 years (mean age 12 years) with a group of typically developing peers matched on language age. All participants were shown a two-picture sequence in which a character used an idiomatic phrase. They were then asked to choose the final picture in the sequence from a choice of three pictures (one depicting the literal interpretation of the phrase, one depicting the idiomatic interpretation of the phrase and one depicting an interpretation not related to the literal or idiomatic meaning of the phrase). The children’s MPA for the idiom was then tested by asking “Why did you choose that picture?” Responses were coded based on whether they expressed knowledge of (1) the linguistic convention of the idiomatic phrase; (2) the context in which the utterance was produced; (3) the literal meaning of the phrase. Other responses were coded as “other explanations” or “no explanation”. The most frequent responses were “other explanations” or explanations based on the story context. There were no observable differences between the two groups for either of these explanations. Participants in both groups also gave some explanations based on the linguistic convention of the idiom. Participants with Williams’ syndrome were less likely to explain their response based on the linguistic convention of the idiom than the typically developing control group. Furthermore, language ability (as measured by the Verbal Intellectual Quotient of the Weschler Scales) was found to predict MPA in both groups, suggesting that MPA is highly reliant on increasingly sophisticated language ability.
Summary of the MPA literature for children with typical and atypical language development

The present level of research knowledge regarding MPA does not enable SLTs to draw firm conclusions on MPA development which could be applied to their clinical work for four reasons. Firstly, relatively few aspects of pragmatics have been subjected to systematic longitudinal or cross-sectional developmental enquiry, resulting in a sparse research base. Secondly, MPA for each pragmatic rule has been investigated separately, using a variety of methods and task demands, making comparability of studies difficult. Thirdly, choice of measurement or response type has also varied amongst studies making it difficult to establish whether each study was measuring the same cognitive construct. Similarities in developmental patterns of MPA across different studies imply that a similar construct probably is being measured in each study but this is an assumption at best. The effect of this is that at present we are only able to make general comments about a developmental trend for MPA. Lastly, little is known about MPA development in the clinical populations for which MPA intervention is purportedly being used i.e. cwPLI and cwSLI. What evidence there is points to possible MPA impairments in these clinical groups but whether this is the case for all cwPLI and cwSLI is unknown. It is also unclear from current data whether cwPLI and cwSLI would perform similarly or differently from each other in terms of metapragmatics.

For clinicians working with cwPLI and cwSLI data on MPA development in typically and atypically developing populations would provide guidelines for expected MPA performance at assessment. Such guidelines would aid identification of impairment and might signpost to differential treatment pathways. Furthermore, the underlying relationships between MPA and language/cognitive development which have received preliminary investigation in the cwTLD have not been studied in cwPLI or cwSLI. Moreover, research in both typical and atypical populations has tended to focus on MPA for pragmatic rules which have been adhered to, with the exception of comprehension monitoring and the naturalistic MPA comments analysed in Becker’s (1988) study. In contrast, clinicians require information on whether cwPLI and cwSLI possess MPA for pragmatic rule violations, something which has not been systematically studied in either population. Finally, no published research is available on the relationship between pragmatic rule violations (i.e. behaviour) and MPA for
pragmatic rule violations (i.e. awareness) in either typically or atypically developing children.

A first step towards disentangling the relationship between pragmatics and MPA in typical development and towards subsequent enquiry regarding the effects of MPA intervention is to develop normative data which could be used to underpin interventions (Paul, 2007). There are no published tools for measuring MPA in the UK which can be used to collect clinically meaningful information on MPA development. The central aim of this thesis is to create a novel Assessment of Metapragmatics (AMP) which can be used to measure MPA in cwTLD, cwPLI and cwSLI. In accordance with the assumption that pragmatics is at the interface between language and social context, the AMP has been designed to test how language is understood within a social context.

The specific research aims and hypotheses pertaining to this thesis will be outlined in section 2.
2 Research Aims

There will be three main phases of data analysis: AMP task development, investigation of age-related changes in MPA for cwTLD and comparison of MPA abilities in cwTLD, cwPLI and cwSLI. Research aims are outlined below for each phase.

**Research Aim 1:** To develop and pilot a clinical tool for assessment of MPA in school-aged children: The Assessment of Metapragmatics (AMP).

**Rationale for Research Aim 1**
The research reviewed in section 1.6.2 indicated that a range of methodologies and measurement types have previously been used to investigate MPA in cwTLD, and have done so only for a limited range of pragmatic rules. Thus, there is currently no standard methodology for measuring MPA for the range of pragmatic rules typically violated by children with pragmatic impairments. For the AMP to become a clinically useful way of measuring MPA in cwPLI and cwSLI the pragmatic rules under investigation need to reflect those which are typically violated by children with pragmatic impairments. Therefore, the AMP Video Items should have good face validity, such that the items in the AMP appear to portray the pragmatic rules that they were intended to. Furthermore, for the AMP to be a clinically useful MPA assessment the task should have appropriate utility, both in terms of ease of delivery for the SLT and ease of accessibility for the child.

**Research Aim 2:** To investigate the reliability and sensitivity of the AMP as a measure of age-related changes in MPA when it is administered to cwTLD, cwPLI and cwSLI.

**Rationale for Research Aim 2**
In order to identify children with impaired explicit MPA the AMP needs to elicit explicit MPA responses. These responses should be scored in a way which assesses how explicitly the child demonstrates MPA, so that differences in ability can be measured. This scoring scheme should demonstrate good inter-rater reliability to ensure that it can be reliably used by more than one assessor. Of central importance is that the AMP scoring scheme demonstrates age-related changes in MPA. Therefore the sensitivity of the AMP Items to age-related changes in MPA scores will be assessed. The level of internal consistency of the AMP Items will also be established.
**Research Aim 3:** To investigate MPA in school-aged cwTLD using the AMP.

**Rationale for Research Aim 3**

To develop a clinical assessment task which can measure MPA for cwPLI and cwSLI it is first necessary to establish information regarding the age-related changes in MPA for cwTLD. The research reviewed in section 1.6.2 indicated that investigations of explicit MPA in cwTLD had only been carried out for a limited range of pragmatic rules. Further research is therefore required to investigate the typical development of MPA for a broader range of pragmatic rules. Investigation of age-related changes in the levels of explicitation of MPA responses (i.e. the level of explicitness) should indicate at what age a child might be expected to explicitly reflect on pragmatic rule violations. This information can then be used to guide SLTs about when it would be developmentally appropriate to expect cwPLI and cwSLI to demonstrate MPA.

**Research Aim 4:** To compare MPA in school-aged cwTLD, cwPLI and cwSLI using the AMP.

**Rationale for Research Aim 4**

Thus far, investigations into clinical categorisation of PLI and SLI have focused on observable linguistic and pragmatic behaviours. In contrast, sparse attention has been given to the child’s awareness of pragmatic behaviours i.e. MPA. The research reviewed in section 1.6.3 indicated a paucity of information on MPA in cwPLI and cwSLI. The limited available evidence suggests that MPA is impaired in these children. However, given the heterogeneous nature of these groups it cannot be assumed that all cwPLI or cwSLI will have impaired MPA. The AMP data will therefore be analysed to investigate between-group differences in MPA for the cwTLD, cwPLI and cwSLI. If MPA is associated with pragmatic ability then it is expected that cwPLI will perform more poorly on the MPA task than the cwTLD. Furthermore if MPA is mediated by language ability then it is expected that both cwPLI and cwSLI will perform more poorly on the MPA task than the cwTLD. If pragmatic ability is associated with MPA then it is predicted that cwPLI will perform more than the cwSLI poorly on the MPA task once language ability has been controlled for. However, if pragmatic ability is not
associated with MPA then it would be likely that cwPLI and cwSLI perform similarly on the MPA task, even when structural language abilities are controlled for.

**Research Aim 5:** To explore social understanding in cwTLD, cwPLI and cwSLI using an exploratory social understanding question within the AMP.

**Rationale for Research Aim 5**

The constructivist approach to language development argues that when children converse they represent the discourse both at the level of language and social cognition (Tomasello, 1999, 2003). For the illocutionary force of the utterance to be understood the child must represent the intentions or motivations of the speaker. Therefore, investigation of children’s ability to explicitly reflect upon pragmatic rule violations also necessitates an investigation of their ability to reflect upon the social consequences of such rule violations. The question is whether MPA simply involves an explicit awareness of pragmatic rules or whether awareness of pragmatic rules might be integrated with social knowledge about rule use. In order to explore whether social understanding might contribute to MPA, a social understanding question will be developed as part of the AMP. This question will measure the child’s explicit awareness of the personality characteristics conferred upon a person who violates specific pragmatic rules. If social understanding is associated with pragmatic ability then it is expected that the cwPLI will perform more poorly on the social understanding question than the cwTLD. Given that social understanding has been found to be associated with linguistic ability it is expected that the cwPLI and cwSLI will perform more poorly on the social understanding question than the cwTLD.
3 Method

The information given in the Methods chapter will apply to the whole body of experimental work presented in this thesis. This chapter presents information on the experimental AMP task, ethical approval, recruitment of research participants and the design and development of the AMP task and scoring scheme.

3.1 AMP Task Description

The central aim of the thesis was to create a clinically practicable task which could measure explicit MPA in school-aged children. Briefly, the AMP comprises a set of short videoed interactions (Video Items) depicting conversation scenarios between two school-aged children. Each videoed interaction involves two child actors aged between 6 to 14 years old who were recruited from local youth amateur dramatic groups (see section 3.4.2 for recruitment procedure). The child dyads performed a scripted conversation about everyday topics such as holidays, pets or hobbies etc. Each script was written by the author using language and themes appropriate for school-aged children. In each script, one child makes a pragmatic rule violation and the other child displays a typical reaction to that violation (the final scripts are given in Appendix 4). Videoed interactions were used in order to retain naturally occurring nonverbal information such as facial expression and paralinguistic information such as tone of voice that would not be portrayed adequately in pictorial or purely oral narratives. Videoed interactions were filmed on high-quality digital video by a professional filming service in the drama group’s location using a ‘green screen’ backdrop. Photos of familiar backgrounds (classrooms, playgrounds, gym hall etc.) were taken in a local primary school and the images superimposed into the videos during the editing process which was also carried out by the professional filming service.

Each participant watched the AMP Video Items on a lap-top computer in an individual testing session. After the participant watched each Video Item they were asked a set of pre-scripted Assessor Questions designed to measure MPA for the pragmatic rule violation. An exploratory Assessor Question designed to measure social understanding for the pragmatic rule violation was also included. The participants’ responses to the questions were recorded, transcribed and scored to provide a measure of MPA. The
AMP aimed to be a sensitive and reliable measure of MPA, suitable for use with both a language impaired and typically developing school-aged population.

3.2 Ethical approval

The research was carried out in accordance with the NHS Research Governance Framework for Health and Social Care (NHS, 2005). Ethical permission for recruitment and testing of research participants was gained as part of participation in the Social Communication Intervention Project (SCIP, Adams, Lockton et al., 2012a) from the NHS Northern and Yorkshire Multi-Centre Research Ethics Committee (07/MRE03/3) and NHS R&D Research Governance Coordinators (RMG/06/134).

Ethical permission for filming the AMP videos and recruiting children to perform in the videos was gained from The University of Manchester Ethics Board. All filming and editing procedures were carried out in accordance with ethical guidelines set out by the British Psychological Society (BPS, 1995). Informed consent was gained from all participants. Ethical issues pertaining to recruitment of participants and to the use of the AMP to collect data will be outlined in section 3.3.6. Ethical issues pertaining to the procedures involved in filming the AMP will be outlined in section 3.4.

3.3 Research Participants

In this section the inclusion criteria for each group will be described and rationale discussed. The method for recruiting and screening participants will then be outlined. The children were recruited to one of three groups:

- Children with typical language development (cwTLD)
- Children with pragmatic language impairment (cwPLI)
- Children with specific language impairment (cwSLI)

The participants with typical language development were recruited in order to develop preliminary normative data on the typical development of metapragmatic awareness. They also served as a comparison group for the cwPLI and the cwSLI. It was intended
that equal numbers of children with TLD, PLI and SLI would be recruited to the study (estimated at N=40 for each group).

3.3.1 General inclusion criteria for all groups

All participants had English as their primary language of learning and communication in school. None of the children had severe emotional or behavioural needs, severely unintelligible speech, severe physical difficulties or severe hearing loss as judged by their Speech and Language Therapist (for cwPLI and cwSLI) or their teacher (cwTLD). This ensured that the participants could access the AMP Video Items and complete the protocol without any special adaptations.

The children in all three groups were recruited to be aged between 6:00-11:11 years of age as previous research on explicit MPA suggests that this skill may not emerge until approximately 6-7 years and is still developing at 10 years (Axia & Baroni, 1985; Baroni & Axia, 1989; Bernicot & Laval, 1996; Laval, 2003). The upper age limit was set to encompasses the full primary school age range as it has been noted that most children on SLT caseloads tend to be of primary school age or below (Clarke & Collins, 2007). It was therefore felt that this age range would be the easiest to recruit to and provide relevant data for the development of MPA in school-aged children. Three age bands were pre-specified within the chosen age range. These were 6:00-7:11 years, 8:00-9:11 years and 10:00-11:11 years. It was intended that within the TLD group equal numbers of children from the three age bands would be recruited. It was not anticipated that equal numbers of children from the three age bands could be recruited to the PLI and SLI groups, given the lower prevalence of cwPLI and cwSLI as compared to cwTLD in the general population.

Non-verbal IQ

All children were recruited to have a Non-Verbal IQ (NVIQ) score greater than or equal to the 5th percentile (i.e. standard score of ≥75) as measured on the Raven’s Coloured Progressive Matrices (Raven’s CPM; Raven, 1998). This ensured that children with severe learning difficulties were not included in the sample. The inclusion criteria remained the same for the three groups to ensure that all participants could perform at or
above the same level on a NVIQ test. The NVIQ cut-off was particularly pertinent to the recruitment of the cwSLI. NVIQ cut-offs have traditionally been used in research to identify cwSLI whose NVIQ is considered to be within the normal range compared to a verbal IQ score or language score which is in the impaired range (Leonard, 1998). There is some debate about the precise thresholds which should be used to identify cwSLI. Some of the earlier attempts to quantify the NVIQ threshold for cwSLI recommended a standard score of $\geq 85$ (i.e. $\geq 16^{th}$ percentile) (Stark & Tallal, 1981).

However, there is no theoretical or conceptual argument for the use of a NVIQ threshold standard score of $\geq 85$ (Fey, Long, & Cleave, 1994). Comparisons of cwSLI with $\geq 85$ NVIQ and cwSLI with 70-85 NVIQ have revealed no difference in language ability or response to intervention (Fey et al., 1994) suggesting that children in the “borderline range” of intelligence (NVIQ standard score of 70-85) should be included in the SLI population. Indeed, other large-scale studies of cwSLI have included a NVIQ threshold of $\geq 80$ (i.e. $\geq 9^{th}$ percentile) (Bishop & Norbury, 2002; Norbury & Bishop, 2002; Riches et al., 2010) or $\geq 70$ (Botting et al., 2001; Conti-Ramsden et al., 1997). By including cwSLI who meet the lower NVIQ threshold this increases the number of children who can be recruited to the study without compromising the generalizability of the results to the wider SLI population. Furthermore, Botting and Adams (2005) suggest that using a lower NVIQ threshold does not affect the pattern of language strengths/impairments when comparing cwSLI and cwPLI. The NVIQ threshold used in this thesis has also been used in recent comparisons of cwPLI and cwSLI such as Freed et al. (2011). The Raven’s Coloured Progressive Matrices (Raven, 1998) was used in this thesis to measure NVIQ and is described below.

**The Raven’s Coloured Progressive Matrices (Raven’s CPM; Raven, 1998)**

This task measures whether a child or adult can reason by analogy and has been used as a measure of NVIQ for cwSLI in previous research (Bishop, North, & Donlan, 1995; Botting et al., 2001). The test consists of a series of incomplete patterns. The child is required to select a patterned shape which completes the coloured pattern from a choice of six. Correct scores are summed and can then be converted to a percentile. The test takes approximately 5-10 minutes to complete.
3.3.2 Inclusion criteria for the TLD group

The cwTLD were recruited to have expressive and receptive language within the average range to ensure that no frank impairment of language was present. Two measures of language ability were used to provide maximum sensitivity and identification accuracy (Tomblin, Records, & Zhang, 1996). The inclusion criteria were as follows:


2. Expressive language measure: Naming subtest of the Assessment of Comprehension and Expression 6-11 (ACE, Adams et al., 2001) standard score of ≥7. Standard scores on the ACE have a mean of 10 and a standard score of 3. Expressive vocabulary abilities are known to show high variability (Ginsborg, 2006) and therefore the ACE Naming standard score cut-off ≥7 was chosen to allow for the inclusion of children with low average abilities, ensuring that a range of language abilities were captured.

Test of Comprehension of Grammar-2 (TROG-2; Bishop, 2003b)

This task measures receptive language ability and is suitable for children aged 4-16 years. The test is comprised of 80 items. For each item the child is shown a series of four pictures and asked to point to the picture that the examiner describes. The items are designed to test the child’s ability to understand specific grammatical morphology and sentence structure in a spoken sentence. Scores can be expressed as age-equivalents, percentiles or standard scores. The task is administered in 10-20 minutes.

Assessment of Comprehension and Expression Naming Subtest (ACE Naming; Adams et al., 2001)

This task measures expressive naming ability and is suitable for children aged 6-11 years. The child is shown 25 pictures and asked to name each picture. Raw scores can be expressed as standard scores or percentiles. The task is administered in approximately 5 minutes.
3.3.3 Inclusion criteria for the PLI and SLI groups

The allocation of children who have communication impairments into separate PLI and SLI groups necessitates careful consideration of the characteristics of each group. Bishop’s (2000) definition of PLI as a condition in which pragmatic impairments are disproportionate to structural language impairments was central to group allocation. SLI, in contrast, is defined as a condition in which structural language impairment is the principal area of developmental need; any pragmatic difficulty in SLI is seen as a likely consequence of the primary language disorder (Bishop, 2000). Inclusion criteria were therefore developed to ensure a clear and precise boundary between the PLI and SLI groups for the purposes of this study.

The Children’s Communication Checklist-2 (CCC-2; Bishop, 2003a) is a parent report checklist of language and communication impairments and was used to allocate children with communication impairments to the PLI or SLI group. Research has shown that parent report checklists are accurate at identifying childhood language impairment and childhood pragmatic impairment (Bishop & Baird, 2001; Klee, Pearce, & Carson, 2000).

Two CCC-2 composite scores were used: the General Communication Composite (GCC) and the Social Interaction Deviance Composite (SIDC). The rationale for using these CCC-2 composites and the requisite cut-off scores will be outlined below.

For allocation to the PLI group children were required to have the following CCC-2 composite scores:

- GCC score of \( \leq 58 \)
- SIDC score of \( \leq 8 \)

For allocation to the SLI group children were required to have the following CCC-2 composite scores:

- GCC score of \( \leq 55 \)
- SIDC score of \( \geq 9 \)
The CCC-2 (Bishop, 2003a) consists of a 70-item multiple choice checklist which is completed by a responder who knows the child well, such as a parent or teacher. In this case the CCC-2 was completed by the child’s parent or carer. Each item consists of a statement e.g. Item 14 “Does not look at the person s/he is talking to”. Each statement is rated by the responder according to how frequently that behaviour is observed. Items are rated on a 0-3 point scale where 0 = less than once a week, 1 = at least once a week, but not every day, 2 = once or twice a day, 3 = several times (more than twice) a day. Items are divided into ten scales of statements about speech/language behaviours, pragmatic behaviours and social interaction (see Table 4) which are presented in random order. The raw score for each scale can be converted to a scaled score.

Table 4: CCC-2 Scales

<table>
<thead>
<tr>
<th>Speech and language</th>
<th>Pragmatics</th>
<th>Social interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Speech</td>
<td>E. Inappropriate initiation</td>
<td>I. Social relations</td>
</tr>
<tr>
<td>B. Syntax</td>
<td>F. Stereotyped language</td>
<td>J. Interests</td>
</tr>
<tr>
<td>C. Semantics</td>
<td>G. Use of context</td>
<td></td>
</tr>
<tr>
<td>D. Coherence</td>
<td>H. Nonverbal communication</td>
<td></td>
</tr>
</tbody>
</table>

The CCC-2 produces two composite scores which are relevant for this study:

- General Communication Composite (GCC) is produced by summing the scaled scores of Scales A-H and can be used to identify children with communication difficulties
- Social Interaction Deviance Composite (SIDC) is produced by summing Scales E, H, I and J and subtracting from this the sum of Scales A-D and can be used to identify children whose social interaction difficulties are disproportionate to their structural language skills.
**CCC-2 General Communication Composite (GCC)**

This composite score is used to identify children with clinical communication impairments (Bishop, 2003a). The CCC-2 manual states that a GCC score of ≤55 (and an SIDC score of ≥9, see below) indicates a profile of SLI (Bishop, 2003a). However, the CCC-2 manual does not state a specific GCC cut-off score for PLI. In order to identify an appropriate GCC score which would reflect the heterogeneous nature of PLI, whilst also clearly separating PLI and SLI in the experimental paradigm, the following criteria were used. The CCC-2 manual states that a GCC score greater than or equal to the 15\(^{\text{th}}\) percentile should be considered to be within the normal range. The GCC cut-off for cwPLI was therefore set at the 14\(^{\text{th}}\) percentile (i.e. ≤58). This score is slightly higher than the cut-off for cwSLI, reflecting the possibility that cwPLI might have superior structural language skills to the cwSLI.

**CCC-2 Social Interaction Deviance Composite (SIDC)**

Whilst there is evidence to support the use of the CCC-2 as a tool to identify communication impairments (Botting, 2004), the GCC score alone was insufficient to identify children with disproportionate pragmatic impairments. The SIDC, however, indicates the presence/absence of a disproportionate difficulty in pragmatics compared to structural aspects of language. That is, it discriminates between cwSLI and cwPLI (Bishop, 2003a). The CCC-2 manual states that the SIDC “provides qualitative information about the pattern of impairment, and is primarily of use in research contexts, where one may want an objective method for subdividing children into subgroups” (Bishop, 2003a, pp. 17-18). Indeed, the SIDC has been found to identify children with pragmatic impairments which are disproportionate to structural language impairments (Norbury, Nash, Baird & Bishop, 2004). Therefore, both the GCC and SIDC scores were used to assign children to either the PLI or SLI group after they had been recruited. Rationale for the precise SIDC thresholds are outlined below.

The CCC-2 manual does not state where the SIDC cut-off should fall for discriminating cwPLI. It does state that a negative SIDC score indicates pragmatic impairments which are disproportionate to structural language impairments, described in the manual as similar to those seen in cwASD. The CCC-2 manual also states that cwSLI should have an SIDC score of greater than or equal to 9 (Bishop, 2003a). This leaves an intermediate SIDC range of 0 to 9 between the SLI and ASD cut-offs. As previously discussed, PLI may be a condition which is intermediate between SLI and ASD and it is therefore
plausible that some cwPLI will have an SIDC that falls in or below this intermediate range of scores. It is also important to have a clear boundary between the social interaction ability for PLI and SLI in order to create defined subgroups of language impairment for the planned analyses. Therefore, participants were required to have an SIDC of $\geq 9$ to be allocated to the SLI group and an SIDC of $\leq 8$ to be allocated to the PLI group. For the children who had been allocated to the SLI group additional language assessments were then carried out to ensure that they demonstrated impairment in either a measure of expressive or receptive language ability (see section 3.3.3.1 below).

3.3.3.1 Language criteria for the SLI group

To be allocated to the SLI group participants needed to score in the impaired range on either the receptive language test (TROG-2) or the expressive language tests (ACE Naming) reflecting the heterogeneous nature of SLI.

For allocation to the SLI group children were required to have the following language scores:

- TROG-2 (Bishop, 2003b) Standard Score $\leq 80$ and/or
- ACE Naming Subtest (Adams, et al., 2001) Standard Score of $\leq 8$

The additional inclusion criteria for the cwSLI were set at a level commensurate with other studies in the field. Whilst the impaired range is typically considered to be a standard score of $<70$ (World Health Organisation, 1993), it is important to acknowledge that at least some cwSLI may have standard scores on language tests higher than this but still be considered to fit the criteria for SLI. Indeed, it has been noted that the language criteria used to identify cwSLI has been variable in the research (Hulme & Snowling, 2009). Whilst some researchers have used a threshold of -1.25 standard deviations (SD) below the mean on at least two out of five language measures (Tomblin et al., 1996) other large-scale studies of SLI have used a higher threshold of impairment. For example, Conti-Ramsden et al. (1997) included children in their SLI sample if they scored -1 SD below the mean (below the 16th percentile) on one or more standardised language tests. This threshold of -1 SD below the mean has been shown to concur with the diagnosis that a clinician would give (Aram, Morris, & Hall, 1993) and
is therefore of use when carrying out clinical research. The threshold of performance -1SD below the mean was chosen as the inclusion criteria for the SLI group in the current study. Similar inclusion criteria, including use of CCC-2 criteria, have also been reported in a published comparison study of cwSLI and cwPLI (Freed et al., 2011).

For the cwPLI there were no additional inclusion criteria for structural language (i.e. ACE Naming and TROG-2 scores). The heterogeneous nature of PLI implies that some children will have language impairments whereas some can be linguistically precocious (Adams, 2002).
3.3.4 Summary of inclusion criteria for all groups

Inclusion criteria for cwTLD

- Aged between 6;0 and 11;11 years at the time of testing
- English as their primary language of learning and communication
- No history of speech and language therapy
- No history of special educational needs
- Ravens Coloured Progressive Matrices (CPM, Raven 1998) \( \geq 5^{th} \) percentile
- TROG-2 (Bishop, 2003b) Standard Score >85
- Ace Naming (Adams et al., 2001) Standard Score \( \geq 7 \)

Inclusion criteria for cwPLI

- Aged between 6;0 and 11;11 years at the time of testing
- English as their primary language of learning and communication
- No severe emotional or behavioural needs
- No severely unintelligible speech
- No severe physical difficulties
- No hearing loss
- Currently under the care of speech and language therapy services
- Ravens Coloured Progressive Matrices (CPM, Raven 1998) \( \geq 5^{th} \) percentile
- CCC-2 (Bishop, 2003a) General Communication Composite Score \( \leq 58 \)
- CCC-2 (Bishop, 2003a) Social Interaction Deviance Composite of Score \( \leq 8 \)

Inclusion criteria for cwSLI

- Aged between 6;0 and 11;11 years at the time of testing
- English as their primary language of learning and communication
- No severe emotional or behavioural needs
- No severely unintelligible speech
- No severe physical difficulties
- No hearing loss
- Currently under the care of speech and language therapy services
- Ravens Coloured Progressive Matrices (CPM, Raven 1998) \( \geq 5^{th} \) percentile
- CCC-2 (Bishop, 2003a) General Communication Composite Score \( \leq 55 \)
- CCC-2 (Bishop, 2003a) Social Interaction Deviance Composite of Score \( \geq 9 \)
- TROG-2 (Bishop, 2003b) Standard Score \( \leq 80 \) and/or ACE Naming Subtest (Adams et al., 2001) Standard Score of \( \leq 8 \)
3.3.5 Additional clinical assessments completed by the cwPLI and cwSLI

For the cwPLI and cwSLI additional assessments were conducted to provide data on language and social cognition for the planned analyses which are outlined in section 4.3 and 4.4. These assessments were: Clinical Evaluation of Language Fundamentals-4 UK (Semel et al., 2006), the CCC-2 Pragmatic Composite Score (Bishop, 2003a) and the Social Communication Questionnaire (Rutter, Bailey, & Lord, 2003). The cwPLI also completed the TROG-2 (Bishop, 2003b) and the ACE Naming Subtest (Adams et al., 2001).

Clinical Evaluation of Language Fundamentals (CELF-4, Semel, Wiig & Secord, 2006)

This test has a battery of expressive and receptive language subtests and is suitable for children aged 5-16 years. Scores can be expressed as standard scores or percentiles. The scores from each test form three composite scores:

- Expressive Language Index (ELI): A composite of the expressive language subtests
- Receptive Language Index (RLI): A composite of the receptive language subtests
- Core Language Index: A composite of the ELI and the RLI scores

Different sets of subtests are used to calculate the composite scores for different age groups as specified in the CELF-4 UK manual.

The CCC-2 Pragmatic Composite Score (Bishop, 2003a)

In addition to the GCC and the SIDC the CCC-2 also gives mention to a third composite score, the pragmatic composite, which is reached by summing the participant’s scores for scales E, F, G, and H. These scales measure inappropriate initiation, stereotyped language, use of context and nonverbal communication respectively. This composite was computed for the clinical groups as a measure of pragmatic impairment for use in the planned analyses to investigate MPA in the cwPLI and cwSLI.
**The Social Communication Questionnaire (SCQ; Rutter, Bailey & Lord, 2003)**

The SCQ is a parent-report, suitable for children aged 4 years and older, that is comprised of 40 statements which are associated with behavioural characteristics of ASD. The statements were chosen by the authors to match ADI-R items which have discriminant diagnostic validity for identifying cwASD. The parent answers yes/no to each statement. The SCQ can be completed by the parent in 10 minutes.

The version of the SCQ used in the current study was the SCQ Lifetime form. The items on the Lifetime form relate to the child’s entire developmental history. The total score from the Lifetime form is then interpreted using a cut-off score which identifies children who are likely to have ASD. The authors recommend a cut-off score of 15 or greater on the Lifetime form as an indicator of possible ASD (Rutter et al., 2003). The assessment is intended to be a screen which identifies children who require a more extensive assessment of possible ASD. The SCQ is not intended to be a diagnostic assessment in isolation.

### 3.3.6 Recruitment and testing procedure

#### 3.3.6.1 Identification and recruitment of participants to the PLI and SLI groups

Recruitment of cwPLI was via NHS Speech and Language Therapists (SLTs) in the North West of England and Edinburgh as part of participation in the Social Communication Intervention Project (SCIP, Adams, Lockton et al., 2012a,b). The author conducted the recruitment of the cwSLI via NHS Speech and Language Therapists in the North West of England. The initial approach to NHS Principal SLT was made by either the SCIP research team (for the cwPLI) or the author (for the cwSLI). The Principal SLT was approached and asked to identify members of the SLT staff who could support recruitment. These SLTs were approached via letter and telephone and briefed on the types of communication impairment pertinent to the research study. Pre-screening inclusion criteria for cwPLI and cwSLI were then
provided to the SLT (see Appendices 1 and 2) and used by the SLT to identify children on their caseload who met these criteria.

Informed consent to participate was gained from the child and their parents. Written information packs explaining what was involved in taking part were sent to the parent/guardian including information about the right to withdraw from the study at any time. An accompanying child information letter explained what was involved in taking part in child friendly language and parents were instructed to read this with their child. If the parents and, where appropriate, the child gave informed consent to participate they signed and returned the consent form to the research team. Where informed parental consent to participate was given the child’s school was approached and consent obtained for the researchers to complete the assessments in the child’s school. A member of the research team then made an initial visit to the child’s school to carry out a battery of screening assessments to confirm suitability for the study. If suitability was confirmed the child then took part in a further one to three individual testing sessions in their school to complete additional clinical assessments and the AMP. The child’s parents/carers or teaching assistant could request to be present during the testing sessions.

Thirty-nine cwPLI from a cohort of 88 cwPLI who had participated in the Social Communication Intervention Project (SCIP, Adams, Lockton et al., 2012a,b) completed the AMP. No purposive selection criteria were used to select these 39 children from the whole SCIP cohort; rather the sample was based purely on practical accessibility at the time of data collection. These 39 children completed the AMP as part of their SCIP baseline assessment battery. The parents of the 39 cwPLI who took part in the AMP testing were subsequently asked to give consent for their child’s AMP data to be used in the group comparison analyses, of which 34 parents gave consent.

Fifteen children with SLI were recruited to the study and completed the AMP having met the inclusion criteria. However, one child withdrew from the study and their data were therefore not included in any of the analyses, leaving fourteen children in the SLI group.
3.3.6.2 Identification and recruitment of participants to the TLD group

Forty-two cwTLD were recruited via mainstream primary schools in the North West of England. The initial recruitment phase for the cwTLD aimed to identify a list of primary schools which might be interested in taking part in the study. A search of local government websites and recommendations from colleagues identified a list of 26 primary schools in Greater Manchester that were within a reasonable travelling distance. Due to time constraints 19 of these schools were approached to establish interest. The initial approach was made via a phone conversation between the author and the school’s Head Teacher or Deputy Head Teacher to ascertain whether the school was interested in receiving information about the study. Where the Head or Deputy Head Teacher requested further information a written information pack was sent to the school. This was followed up by a telephone call from the author to establish whether informed consent for the school to participate was given. Where the Head or Deputy Head Teacher gave consent for the school to participate they were asked to sign a consent form stating that the school agreed to take part in the study.

Pre-screening inclusion criteria for cwTLD were then provided to the school (see Appendix 3). A teacher in the school identified children who the teacher judged to currently have typical language development and no history of language impairment. Where informed parental consent to participate was given the researcher met with the child, and their parent if requested, for an initial screening session to establish suitability to the study. If suitability was confirmed the child then took part in the AMP assessment in an individual testing session.

All 42 cwTLD were recruited to the study. Data from two cwTLD were eventually excluded as both children demonstrated evident lack of concentration and motivation during testing and their scores were considerably outside of the expected range for their ages. This left the remaining sample of 40 cwTLD whose data were used in the thesis analysis. The cwTLD were recruited into one of three age bands: 6:00-7:11 years, 8:00-9:11 years and 10:00-11:11 years. Fourteen cwTLD were recruited to the youngest age band (6:00-7:11 years), thirteen cwTLD were recruited to the middle age band (8:00-9:11 years) and thirteen cwTLD were recruited to the oldest age band (10:00-11:11 years).
3.3.6.3 General testing procedure for all participants

The general testing procedures outlined below were applicable to all children who took part in the research. Individual testing sessions were carried out in a quiet room at the child’s school. The child’s parent or teaching assistant could be present during testing if they requested this. Regular breaks were provided during the testing sessions. As per the procedure for standardised formal assessments, specific feedback could not be given to the child. However, the child was given frequent praise and reassurance during each testing session. If the child showed anxiety or expressed a wish to not participate then the session was ended. All data were stored anonymously and securely in accordance with data protection guidelines. Parents and schools were provided with feedback about the results of the research via a newsletter. No specific feedback about individual children’s performance on the AMP assessment was given.

In the next sections the design and development of the AMP will be described. Information on piloting and refining the AMP design as pertains to the Video Items, Assessor Questions, administration protocol and scoring scheme will be outlined. The participants who took part in the pilot studies were drawn from the samples described above. Sample characteristics of the participants for each pilot study are provided.

3.4 AMP Task Design

The overarching aim in the AMP design was to develop a clinical task which could assess children’s ability to explicitly talk about pragmatic rule violations. There were no test items in which a pragmatic rule was adhered to and the children were not required to judge whether the pragmatic rule had been adhered to or violated. The rationale for assessing MPA for pragmatic rule violations rather than pragmatic rule adherence was both clinical and practical. Clinically, intervention aims to remediate pragmatic rule violations and therefore an assessment of MPA which provides clinically relevant information should measure awareness for such violations. Practically, and as will be discussed below, the development of the AMP was a lengthy process which did not allow time for the development of videos depicting violation of and adherence to a pragmatic rule.
During the task development phase, special emphasis was given to creating an assessment of metapragmatics that enabled MPA judgements to be assessed using stimuli which reflected real-life use of language. The rationale being that for the AMP Video Items to be clinically useful tools for assessing MPA the items should use language in a way that would be typical in children’s interactions. Conversations between two children were chosen as a way to achieve this.

Specific methodological issues pertaining to the development of an assessment of MPA were considered. An optimum method of task design emerged from an analysis of the structure of current MPA assessment procedures and is outlined in this section. Whilst there are no published assessments of MPA in the UK there are several descriptions of MPA assessments in the research literature which have been described in detail in sections 1.6.2 and 1.6.3. The majority of previous studies of MPA have focused on cwTLD. The tasks which were suitable measures of MPA in these cwTLD may not be suitable for use with cwPLI and cwSLI. The AMP is intended to be a clinical task which can identify impairments in MPA and therefore a thorough consideration of specific task requirements for cwPLI and cwSLI is necessary. Specific rationale for the task design and the assessment methodology will be outlined in the sections below.

### 3.4.1 MPA task designs

A thorough investigation of current methods for assessing MPA in the research literature revealed that none of these methods in isolation were completely suitable for the purpose of the AMP. Whilst behavioural observations have been used in MPA research for cwTLD (Becker, 1988; Yifat & Zadunaisky-Ehrlich, 2008) these are time consuming and not suitable for the practicalities of clinical assessment. Narrative completion tasks have been used to assess MPA (Bernicot et al., 2007; Laval, 2003; Sachs et al., 1991). However, these require fairly sophisticated expressive language skills including sequencing and narrative abilities which are known areas of difficulty for cwSLI and cwPLI.

Other researchers have assessed MPA by asking children to make metapragmatic judgements about the appropriacy of communication in hypothetical situations (Axia & Baroni, 1985; Baroni & Axia, 1989; Bernicot, 1991; Bernicot & Laval, 1996; Bernicot et al., 2007; Laval, 2003; Sachs et al., 1991; Wilson & Milosky, 1987). MPA judgment
tasks usually require the child to judge if a pragmatic behaviour is appropriate/inappropriate and then to provide explicit justification for this judgement. The initial judgement task does not necessitate the ability to explicitly talk about a pragmatic rule and task performance is therefore less likely to be affected by expressive language difficulties such as those present in cwSLI and cwPLI. Children’s explicit metapragmatic comments about a pragmatic rule or rule violation in hypothetical situations are measured against a pre-specified criterion of metapragmatic explicitness. Given that the AMP aimed to assess explicit MPA for pragmatic rule violations a criterion-referenced task design was adopted, commensurate with the majority of existing experimental paradigms in the field. The judgement task was not suitable given that the AMP aimed to measure MPA only for pragmatic rule violations. For a judgement task to be suitable, examples of pragmatic rule adherence and violations would have been required as part of the AMP design. Furthermore, the judgement task did not, in isolation, allow for the assessment of explicit MPA.

Next, the formats of the criterion-referenced tasks were reviewed in preparation for the development of the AMP method. These tasks generally required children to comment on comic strip or spoken narratives which were read to the child (Bernicot, 1991; Bernicot & Laval, 1996; Bernicot, Laval and Chaminaud, 2007; Lacroix et al, 2010; Laval, 2003). Videoed scenarios have previously been suggested as an appropriate method for assessing MPA (Walker et al., 1994) and have been used to assess MPA responses in cwTLD (Hickmann et al, 1993; Siegal et al., 2009).

The potential for producing a measure of MPA which reflects real-life use of language appeared greater for tasks that used videoed interactions as compared to comic strip or oral narratives. This was because videoed interactions contain rich sources of contextual information which would be available in real-life interactions. Unlike the static images available in comic strips, videoed interactions contain crucial sources of contextual information including environmental information, facial expression, and paralinguistic information such as tone of voice. Such information could be crucial for the MPA judgements, especially in children with communication impairments who may rely on nonverbal information to supplement their verbal comprehension. Furthermore, cwPLI may be impaired in aspects of nonverbal and paralinguistic communication thus necessitating the inclusion of nonverbal or paralinguistic pragmatic rule violations in a clinical assessment of MPA.
The use of videoed interactions to elicit MPA responses appeared to be a potentially effective method of assessment for this clinical population. However, there are both time and cost implications involved in the development stage i.e. scripting and filming these videos. Alternative possibilities were considered which would entail a lesser investment in cost and time. For example, the researcher could act out a scenario with puppets or toys in front of the child to elicit MPA responses. However, this method was judged more difficult to administer and increased the risk of errors in performing the scenarios, leading to problems with standardising administration. Standardisation of administration is important in task design to allow comparability of results between participants and between testing times. It was therefore concluded that videoed interactions should be used to measure explicit MPA for pragmatic rule violations. The procedure for developing these videoed interactions is described in the next section.

3.4.2 Recruitment of child actors and filming of the AMP videos

A number of amateur youth drama groups were approached by phone to take part in the filming of the AMP. Three youth drama groups based in the North West of England and Yorkshire agreed to take part. Forty-one children (ages ranged from 6 to 14 years) participated in filming. Participation in rehearsal and filming were voluntary and informed consent to participate was gained from the drama group leader and each child and their parent/guardian.

Scripts of social scenarios (see Appendix 4) were provided by the author and regular rehearsals were carried out at the drama group’s location with the author in attendance at some of these rehearsals. A professional film crew then filmed children performing the scripts at their drama group’s location. Each child took part in one to two scripts. The approximate filming time for each script was usually 30 minutes. Children who were performing more than one script were given breaks in between filming. Any child who demonstrated anxiety or fatigue was given an immediate break. Any child who requested to withdraw from filming was able to do so at any time. Children were given immediate positive feedback throughout the filming process. For each drama group filming took 1 day.
The films were edited into a DVD. All copies of the DVDs were securely stored in accordance with data protection guidelines. No identifying details were stored on the videos or with the videos. The three drama group leaders were provided with a DVD of the Video Items that their drama group had performed with the proviso that the video footage should not be shown in public or used for commercial publications.

Each video was filmed in front of a green screen backdrop. This allowed photographic images to be superimposed onto the filmed scenario after filming had taken place. The photos used as the backdrops were taken at a primary school in Manchester. Informed consent for the photos to be used in the videos was given by the school’s Head Teacher. The photos did not contain any information which could identify the school or any children, parents or staff at the school. The photos were destroyed once they had been used to create the green screen backdrops for each video.

3.5 AMP Video Item Design

The following section will outline the rationale for selection of the pragmatic rule violations depicted in the AMP. Information on the pilot phases which informed the selection of the final pragmatic rule violations in the final 13 Video Items will be described.

3.5.1 Rationale for pragmatic rule selection in the AMP task

The AMP was designed to be a clinical assessment tool which could collect data on the child’s MPA for a broad range of pragmatic rule violations. Previous studies have measured MPA for a limited range of pragmatic rules such as politeness and idiom comprehension. The aim of this section of the task design was to identify the pragmatic rule violations that would be included in the AMP. Documentary descriptions of PLI (McTear & Conti-Ramsden, 1992) and conversation samples of cwPLI in data samples from the development of the Assessment of Language Impaired Children’s Conversation (ALICC, Bishop, Chan, Adams et al., 2000) were inspected to reveal typical pragmatic rule violations in cwPLI. A list of 18 pragmatic rule violations typical
of cwPLI were identified including a spread of linguistic, paralinguistic and nonverbal rule violations.

Two scripts were written for each pragmatic rule violation giving 36 scripts altogether (see Appendix 5 for a list of the scripts). Scripts included spoken lines, stage directions and instructions for facial expressions, tone of voice and use of props. All scripts were then scrutinised for errors in grammar, style and sentence length by the research team and revised versions developed. The scripts were then shown to a local Speech and Language Therapist naïve to the research protocol. The therapist read the scripts and gave general feedback about the style of the assessment and specific feedback about content of the scripts, e.g. scripts where additional facial expressions were required to make the interlocutor’s response to the error more salient. Revised versions were written based on this feedback. Scripts were filmed and produced by a professional film crew and edited into a DVD (as outlined above) which could be played and viewed on a laptop computer.

Three Practice Video Items were built into the task design. The purpose of these practice items was to allow the children an opportunity to familiarise themselves with the AMP procedure before the test items were administered. This ensured that any incorrect responses given during the AMP testing session were not due to a lack of understanding of the task demands. The pragmatic rule violations in the AMP Practice Video Items were designed to be extremely salient so that all children would succeed in identifying these errors. Success during practice items is important in task design as it allows the child to familiarise themselves with the demands of the task without placing excessive demands on the child in terms of the cognitive process under assessment.

3.5.2 Piloting the Video Items

The Video Items were piloted in two phases which allowed the pool of Video Items to be reduced from 36 to the final 13 Video Items used in the AMP task. Each pilot phase will now be outlined.
3.5.2.1 Pilot phase 1 – Video Item Design

The first phase of the pilot study aimed to identify and eliminate any Video Items which were judged to inadequately portray the pragmatic rule violation either due to poor acting or errors in filming. Three cwPLI took part in this phase of the task design. All 36 Video Items were also watched by the author and two qualified SLTs. They were told which pragmatic rule the Video Item intended to portray and were then asked to say whether the Video Item portrayed the intended pragmatic rule violation in order to establish which Video Items had adequate face validity.

The three cwPLI were selected from the PLI group (as outlined in section 3.3) to cover a range of ages and language abilities. The participants were aged 6:10 years, 8:07 years and 9:07 years. Standard scores on the CELF Core Language were 52, 70 and 78. There was one female participant and two male participants.

Each child was shown the AMP practice items followed by a selection of the 36 AMP Video Items. This ensured that all Video Items were watched by at least one participant. The number of Video Items watched by each child ranged from 14-28 out of a total of 36 Video Items. After they saw each Video Item they were asked the Final AMP Assessor Questions (see section 3.6). Responses were recorded on a digital Dictaphone and written down by the assessor.

Responses from the cwPLI to the Assessor Questions were analysed to ascertain which Video Items satisfactorily portrayed the intended pragmatic rule violation so that a child could identify the error. The use of both the adults’ judgements and children’s responses ensured that any Video Items judged by an adult to portray the pragmatic error did so at a level adequate enough that a child could identify the error. Video Items judged to be unsatisfactory for testing purposes were eliminated from the AMP at this stage on the basis of one or more of the following:

- *the pragmatic rule violation was obscured by poor acting* e.g. not portraying the error as described in the script
- *the pragmatic rule violation was obscured by errors in filming*, e.g. the angle of the camera did not capture the error (this occurred more for nonverbal errors such as not giving eye contact)
In total, 10 Video Items were considered to be unsatisfactory for testing purposes, leaving a pool of 26 AMP Video Items which were considered satisfactory representations of pragmatic rule violations.

3.5.2.2 Pilot phase 2 – Video Item Design

In the second phase, performance of the remaining 26 Video Items were analysed with a larger group of cwPLI and a group of cwTLD. The aim of the second pilot phase was to reduce the pool of Video Items further so that only the Video Items which most consistently elicited an explicit MPA response were retained. For this reason the cwTLD were included to increase the likelihood that responses included explicit MPA. As the AMP aims to be a clinical assessment task the cwPLI were included to ensure that at least some of the children in this group were able to identify the pragmatic rule violation being portrayed. 10 cwPLI and 13 cwTLD were selected from the PLI and TLD groups (as outlined in section 3.3) to take part in the second phase of the pilot study.

The cwPLI ranged from 6:06 to 10:00 years with an average age of 8:04. The cwPLI demonstrated a range of language ability. Average CELF Core Language Standard Score was 86 with a range in standard scores of 58 to 114. There were 2 female participants and 8 male participants in the PLI group. The cwTLD ranged in age from 6:01 to 11:08 years with an average age of 10:00 years. There were 7 female participants and 6 male participants in the TLD group.

Each child watched all of the 26 AMP Video Items. After they saw each Video Item they were asked the Final AMP Assessor Questions (see section 3.6). Responses were recorded on a digital Dictaphone and transcribed later. Responses were scrutinised to ensure that the children’s answers reflected the pragmatic rule violation depicted and where this did not consistently occur the item was eliminated. Where there were two Video Items both depicting the same error, the item which most consistently elicited an explicit MPA response was retained and the other eliminated. This method resulted in the selection of the final 13 AMP Video Items which are listed in Table 5 below. Table 5 also shows the social scenario depicted and the duration (in seconds) of each Video Item.
Table 5: Pragmatic rule violations used in the AMP task

<table>
<thead>
<tr>
<th>Video Item</th>
<th>Pragmatic rule violation</th>
<th>Social Scenario</th>
<th>Duration (seconds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practice 1</td>
<td>Speaker says hello instead of goodbye</td>
<td>Playing with cars</td>
<td>70</td>
</tr>
<tr>
<td>Practice 2</td>
<td>Speaker has their back to the interlocutor</td>
<td>Talking about holidays</td>
<td>65</td>
</tr>
<tr>
<td>Practice 3</td>
<td>Interlocutor whispers to speaker</td>
<td>Playing with dolls</td>
<td>61</td>
</tr>
<tr>
<td>1</td>
<td>Speaker uses hyperbole</td>
<td>Talking about a bumped knee</td>
<td>73</td>
</tr>
<tr>
<td>2</td>
<td>Overuse of speech act</td>
<td>Playing with dinosaurs</td>
<td>39</td>
</tr>
<tr>
<td>3</td>
<td>Speaker fails to make clarification</td>
<td>Talking about dogs</td>
<td>53</td>
</tr>
<tr>
<td>4</td>
<td>Interlocutor provides minimal response</td>
<td>Talking about a farm trip</td>
<td>53</td>
</tr>
<tr>
<td>5</td>
<td>Speaker gives a tangential response</td>
<td>Talking about a football match</td>
<td>98</td>
</tr>
<tr>
<td>6</td>
<td>First and second parts of exchange do not match</td>
<td>Talking about a funfair</td>
<td>106</td>
</tr>
<tr>
<td>7</td>
<td>Speaker does not pick up on hints</td>
<td>Playing games</td>
<td>82</td>
</tr>
<tr>
<td>8</td>
<td>Speaker provides excessive detail</td>
<td>Talking about Holidays</td>
<td>78</td>
</tr>
<tr>
<td>9</td>
<td>Speaker looks away from interlocutor</td>
<td>Waiting to be collected by a parent at home time</td>
<td>72</td>
</tr>
<tr>
<td>10</td>
<td>Interlocutor responds ambiguously</td>
<td>Talking about visiting a friend’s house for tea</td>
<td>78</td>
</tr>
<tr>
<td>11</td>
<td>Speaker ignores request to change topic</td>
<td>Talking about cars</td>
<td>80</td>
</tr>
<tr>
<td>12</td>
<td>Speaker stands too close to interlocutor</td>
<td>Asking for a party invitation</td>
<td>55</td>
</tr>
<tr>
<td>13</td>
<td>Speaker dominates the conversation</td>
<td>Talking about pets</td>
<td>56</td>
</tr>
</tbody>
</table>
3.6 AMP Assessor Question Design

In this section the rationale for the design of the AMP Assessor Questions will be described. The method for piloting and refining the Assessor Questions will be outlined and the final Assessor Questions will be presented.

3.6.1 Rationale for AMP Assessor Questions

A series of Assessor Questions were designed to tap into the child’s ability to explicitly talk about the pragmatic rule which was violated. The questions were designed to be asked by the assessor after each Video Item. Questions were phrased so as to elicit explicit metapragmatic responses rather than a more general redescription of the videoed conversation. Special consideration was given to the development of questions suitable for a clinical assessment for use with cwPLI and cwSLI.

Previous research into MPA, predominantly with cwTLD, was reviewed to guide the rationale for AMP question format. Choice of question type varied amongst studies. Some studies asked the child to label a request according to specific pragmatic labels such as polite/impolite (Baroni & Axia, 1989) or to identify the intended interlocutor based on the speaker’s level of politeness (Axia & Baroni, 1985). Other studies focused on the child’s ability to judge either the appropriacy of a pragmatic behaviour or the motivation for a pragmatic behaviour (Bernicot, 1991; Bernicot & Laval, 1996; Bernicot, Laval & Chaminaud, 2007) or to complete a narrative from picture choice and explain their choice of ending (Bernicot et al., 2007; Laval, 2003). The MPA questions which required the child to provide specific pragmatic labels or to explain their choice of narrative ending were judged to measure explicit MPA but were also judged to place heavy demands on the child’s expressive language abilities, something which might be difficult for the cwPLI or cwSLI. Whilst the judgement tasks are less linguistically demanding they do not measure explicit MPA and are therefore not adequate for the purposes of the AMP.

Essentially there is a trade-off between preserving explicit metapragmatic content and a requirement to use expressive language to provide specific pragmatic labels in the MPA task. Given that the AMP aims to measure the child’s explicit awareness of pragmatic rule violations then the Assessor Questions need to access this knowledge via the
child’s expression of their ideas i.e. their expressive language. Performance on the AMP Assessor Questions might therefore be affected by language ability, particularly in the cwPLI and cwSLI, and this was further considered when designing the question frames and when analysing the data in the results sections.

The variety of stimulus types in previous MPA studies provided little specific guidance on the development of question types for the AMP. However, one question type was considered to have potential clinical relevance. In Bernicot’s (1991) study children were asked to suggest a pragmatic rule that the speaker should have adhered to in order to make their communication more appropriate to the situation (“What should the speaker have done differently?”). It was judged that this question would demonstrate whether the child could explicitly state the pragmatic rule that had been violated in the conversation.

The AMP question design was influenced by the clinical framework of pragmatics outlined by Adams et al. (2005, 2006) in which recognition is given to four principal influences on communication development (principle influences given in italics): *language processing* (understanding and expression of meaning through language forms), *conventions of language pragmatics* (the ability to use formal pragmatic devices), *social interactions* (the ability to interact and empathise with others), and *social cognition* (the possession of shared social knowledge).

The Assessor Questions were designed to tap two principle influences from this framework. Firstly, questions which measured explicit metapragmatic awareness were designed to measure MPA for *conventions of language pragmatics*. Secondly, a question which measured the child’s social understanding (i.e. their ability to reflect on social, psychological or emotional state associated with the pragmatic rule violation) was included as an exploratory measure for the *social cognition* aspect of MPA. The AMP Assessor Questions underwent a rigorous piloting procedure (see below). As part of the pilot procedure a range of question forms were piloted, each judged to measure MPA for *language pragmatics*. These questions were called the MPA questions. A comprehension check question was asked first and was designed to assess whether the language of the scripted conversation had been understood.
3.6.2 Piloting the Assessor Questions

The Assessor Questions were piloted in two phases to identify the questions which consistently and successfully elicited explicit MPA responses. Each pilot phase will now be outlined.

3.6.2.1 Pilot phase 3 – Assessor Question Design

Phase 3 of the pilot study aimed to ascertain how the Assessor Questions should be worded to elicit MPA responses from children with communication impairments. Three school-aged children with PLI were selected from the PLI group (as outlined in section 3.3) to participate in the pilot study. These children also participated in the pilot study for AMP task administration (see section 3.7.2). The cwPLI were aged 8:01 years, 8:07 years and 9:07 years. The children were chosen to cover a range of language ability. Standard scores for CELF Core Language were 52, 69 and 78. There was one female participant and two male participants.

Each child was shown two AMP Video Items: Practice Video Item 1 showing an error of greeting (‘Speaker says hello instead of goodbye’) and Practice Video Item 3 showing an error of body posture (‘Speaker talks with their back to the interlocutor’). After they saw each Video Item they were asked the Phase 1 Assessor Questions (as shown in Table 6). Responses were recorded on a digital Dictaphone and written down by the assessor. The nature and quality of the children’s responses were then scrutinised to check whether the AMP questions performed as expected.
Table 6: Assessor Questions used in phase 3 of the pilot study

<table>
<thead>
<tr>
<th>Assessor Question</th>
<th>Question wording</th>
<th>Example target responses for practice script 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comprehension check</td>
<td>What were the children talking about?</td>
<td>Playing with toys OR lunch (accept either response)</td>
</tr>
<tr>
<td>Indirect MPA question</td>
<td>Tell me about how the children were talking</td>
<td>The boy said hello instead of goodbye.</td>
</tr>
<tr>
<td>Emotion MPA question</td>
<td>The girl feels confused. What made the girl feel confused?</td>
<td></td>
</tr>
<tr>
<td>Behaviour MPA question</td>
<td>The girl frowns at the boy. What made the girl frown at the boy?</td>
<td></td>
</tr>
<tr>
<td>Metapragmatic Rule awareness question</td>
<td>What could the boy have done differently?</td>
<td>Said goodbye.</td>
</tr>
<tr>
<td>Social Understanding question</td>
<td>What kind of person is the boy?</td>
<td>Any comment that refers to a relevant psychological characteristic e.g. strange.</td>
</tr>
</tbody>
</table>

The participants’ responses were scrutinised to establish whether the AMP Assessor Questions elicited the explicit MPA responses that they were designed to. The results of the pilot phase indicated that children responded as expected to the Comprehension Check question, the Social Understanding question and the Metapragmatic Rule Awareness questions. All three questions were retained in the final version.

Responses to the three MPA questions were analysed to identify which, if any, elicited the target responses. Responses to the first MPA question (“Tell me about how the children were talking”) indicated that the question elicited either no response or a general response about the content of the dialogue but did not elicit specific MPA responses. Examples of the participants’ responses to this question included “a conversation” or “I don’t know”. This indirect MPA question was excluded at this point. Two new MPA questions, Descriptive MPA and Reflective MPA, were written.
which directly asked the child to reflect on the pragmatic rule violation in order to elicit an explicit MPA response. These two MPA questions were added to the original list of Assessor Questions.

3.6.2.2 Pilot phase 4 – Assessor Question Design

At the end of phase 3 there were five questions all designed to elicit a metapragmatic response; Descriptive MPA, Reflective MPA, Emotion MPA and Behaviour MPA and Metapragmatic Rule awareness. Phase 4 had two aims. Firstly, to establish whether the revised MPA questions (Descriptive MPA and Reflective MPA) elicited explicit MPA responses. Secondly, to ascertain which of the five MPA questions should be retained in the final version of the AMP task.

Three cwPLI took part in this phase of the Assessor Question design. The three cwPLI who took part in this phase of the pilot study also took part in the pilot study for the AMP Video Items (see section 3.5.2.1).

Each child was shown the AMP practice items followed by a selection of the AMP Video Items. After they saw each Video Item they were asked the AMP Assessor Questions (as shown in Table 7). Responses were recorded on a digital Dictaphone and transcribed later.
Table 7: AMP Assessor Questions used in phase 4 of the pilot study

<table>
<thead>
<tr>
<th>Assessor Question</th>
<th>Question wording</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comprehension check</td>
<td><em>What were the children talking about?</em></td>
</tr>
<tr>
<td>Descriptive MPA</td>
<td><em>Something went wrong in the conversation. What went wrong?</em></td>
</tr>
<tr>
<td>Reflective MPA</td>
<td><em>Why is that wrong?</em></td>
</tr>
<tr>
<td>Emotion MPA</td>
<td><em>The girl feels confused. What made the girl feel confused?</em></td>
</tr>
<tr>
<td>Behaviour MPA</td>
<td><em>The girl frowns at the boy. What made the girl frown at the boy?</em></td>
</tr>
<tr>
<td>Metapragmatic Rule awareness</td>
<td><em>What could the boy have done differently?</em></td>
</tr>
<tr>
<td>Social Understanding awareness</td>
<td><em>What kind of person is the boy?</em></td>
</tr>
</tbody>
</table>

The participants’ responses to the two revised MPA questions for each Video Item were analysed and confirmed that the new question format did elicit explicit MPA responses. Example responses elicited by the questions are given below. The example pertains to the Video Item in which the speaker stands too close to the interlocutor.

- Descriptive MPA: “Something went wrong in the talking. What went wrong?” – Child’s response “Girl was in the face all the time”
- Reflective MPA: “Why is that wrong? – Child’s response “Coz you shouldn’t do that all the time”

Next, responses to the five MPA awareness questions were analysed to ascertain whether the questions elicited different responses. The participants provided very similar responses to the Descriptive MPA, Emotion MPA and Behaviour MPA questions. The Emotion and Behaviour MPA questions therefore appeared to elicit MPA responses which were repetitions of the MPA responses given for the Descriptive MPA question. The Emotion and Behaviour MPA questions were therefore eliminated at this stage. The Descriptive MPA, Reflective MPA and Metapragmatic Rule awareness questions were retained in the final version of the AMP Assessor Questions.
This was done because the combination of these three questions provided the best chance of eliciting an MPA response from the child without repetition. Retaining more than one MPA question was particularly important as it provided the cwPLI and cwSLI with three opportunities to understand and respond to the MPA Assessor Questions.

The final AMP Assessor Questions are given in Table 8 below. These questions were used in the pilot phases for selecting the Video Items and for developing the Scoring Scheme. These questions were also used in the final AMP task used to measure MPA in the TLD, PLI and SLI groups. The precise wording of the question was slightly changed for each Video Item to reflect the gender and/or action of the protagonist in each Video Item. Otherwise the wording of the question and the sequence of questions was exactly as shown in Table 8.

Table 8: Final version of AMP Assessor Questions

<table>
<thead>
<tr>
<th>Assessor Question</th>
<th>Question wording</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comprehension check</td>
<td><em>What were the children talking about?</em></td>
</tr>
<tr>
<td>Descriptive MPA</td>
<td><em>Something went wrong in the conversation. What went wrong?</em></td>
</tr>
<tr>
<td>Reflective MPA</td>
<td><em>Why is that wrong?</em></td>
</tr>
<tr>
<td>Metapragmatic Rule awareness</td>
<td><em>What could the boy have done differently?</em></td>
</tr>
<tr>
<td>Social Understanding</td>
<td><em>What kind of person is the boy?</em></td>
</tr>
</tbody>
</table>

3.7 AMP Task Administration Protocol

3.7.1 General Task Administration considerations

Due consideration was given to ensuring that the AMP had appropriate utility. Utility in this context relates to the ability of the assessment to measure MPA in an effective,
efficient, practical and user-friendly way. User-friendly in this sense refers to ease of use in a clinic or school setting with young children and/or children with language impairments. Consideration was given to the experience of the child participant and the task administrator. The task design aimed to have a standardised administration procedure in order to eliminate individual differences in the way different people might administer the test.

The following aspects of utility were considered to be important when designing the AMP and were built into the task design:

- The task should be child friendly – interesting and enjoyable for children to take part in
- The task should require only a basic set of equipment
- The task should not be excessively lengthy or tiring
- The task should be easy for the child to understand
- The task should be easy for the SLT to administer
- The SLT should only be required to give limited feedback to the child

3.7.2 Piloting the AMP Task Administration

Pilot phase 5 – AMP Task Administration

The aim of phase 5 of the pilot study was to establish the optimal mode of task administration. Three school-aged cwPLI were selected from the PLI group (as outlined in section 3.3) to participate in the pilot study to ascertain if the task was suitable for cwPLI. These children were selected to include a range of language abilities. Standard scores on the CELF Core Language were 52, 69 and 78. The children were aged 8:01 years, 8:07 years and 9:07 years old. There was one female participant and two male participants. Two of these children also participated in pilot phase 1 of the Video Item design and pilot phase 4 of the AMP Assessor Question design (see sections 3.5.2.1 and 3.6.2.2). All of these children participated in pilot phase 3 of the AMP Assessor Question design (see section 3.6.2.1).

Each child was shown two AMP Video Items: Practice Video Item 1 showing an error of greeting (‘Speaker says hello instead of goodbye’) and Practice Video Item 3 showing an error of body posture (‘Speaker talks with their back to the interlocutor’).
After they saw each Video Item they were asked AMP Assessor Questions which were used in the pilot study phase 3 for Assessor Question Design (see section 3.6.2.1). From the initial pilot data it was evident that:

- The participants benefited from viewing each Video Item twice before they were asked a series of standard questions. Although one viewing per Video Item would have reduced the time taken to administer the assessment, the second viewing supported comprehension and recall of the viewed material

- The participants benefited from viewing the “freeze-frame” photo of the two children immediately after the video had been presented for the second time. This allowed the participant to point to the child they were referring to on the screen e.g. “that boy said...and that other boy said...” and reduced the memory and expressive language demands for responding

- Repetition of questions could be given if requested or if the child did not respond and this also reduced the memory and receptive language demands for responding

- Verbal responses should be recorded on Dictaphone and not written down as this slowed the progress of the test administration

- Non-leading prompts could be used to elicit a more detailed response from the child, for example “tell me more” / “anything else?” where the child gave a brief or unclear response

Following the pilot study the mode of administration was adjusted to take into account the factors above. The final AMP administration protocol was written up as an Instruction Sheet to be read by the assessor before administering the AMP (see Appendix 6). The instructions contain a sequence of steps which were to be carried out by the assessor in the order specified. The final AMP administration protocol was used in all design phases for the Video Items and Assessor Questions as well as in the final AMP data collection. During data collection the author reflected upon the clinical utility of the AMP. The final AMP task took approximately 20 minutes to administer and children appeared to find the task enjoyable and they did not complain of disinterest. The author also noted that the child’s attention was maintained throughout the AMP.
3.7.3 Final AMP Administration Protocol

The administration protocol for the AMP is outlined below. This is intended to clarify the final method for administration which resulted from the pilot phase of the task design.

The AMP task was administered to each participant individually in a quiet room at their school. The assessor and participant sat at a table in the room with a lap top computer on which the Video Items were viewed. The participant viewed three practice items in which feedback on task requirements and performance could be given. In the experimental task, participants were shown the test Video Items even if they failed the practice items. This ensured that the data represented a wide range of MPA ability. The participant was then shown the 13 Video Items one at a time. The participant was shown each video twice after which they viewed a “freeze-frame” photo of the two children who had appeared in the video. No further viewings of each video were permitted. At the end of each Video Item, a series of questions was asked by the assessor. Questions could be repeated if the participant was distracted by a noise or action in the testing area or if the child specifically requested a repetition of the question. It was permitted to give non-leading prompts to elicit further information if it was felt that the child had given a response which was too brief (e.g. “Anything else?”) and to give neutral feedback during the task administration (e.g. “Thank you” or “Let’s do the next one”). Directive feedback (e.g. “That’s right”) was not permitted. The participant’s responses were recorded on a digital Dictaphone (Phillips Speech Exec). After the AMP task was completed, the participant was reminded that the assessor was only interested in what s/he thought about the way the children were talking in the videos and that there were no right or wrong answers.

The order of presentation of the 13 Video Items was counterbalanced to control for practice or fatigue effects. Counterbalancing was done by separating the Video Items by order of occurrence into three blocks for ease of administration: the initial third (set A), the middle third (set B) and the final third (set C). The counterbalanced orders of viewing therefore included ABC, ACB, BAC, BCA, CAB, and CBA. Each participant was assigned an order before testing. This was intended to ensure that equal numbers of each order were seen by the participants. The 3 practice Video Items were always shown first in numerical order.
Participant responses to Assessor Questions were transcribed into Word files on a laptop computer and stored in an electronic file labelled with the participant ID number. Transcriptions were then checked through and any transcription errors were corrected. Recordings were transcribed by the author and two members of the SCIP research team. Each transcription was scored using the AMP Scoring Guide (see Appendix 8). The average transcription time was approximately 1 hour and the average scoring time was 15-20 minutes depending on the length and complexity of the participant’s responses.

3.8 AMP Scoring Scheme Design

In this section the rationale for the AMP Scoring Scheme will be described. The final Scoring Scheme will be given and the method for piloting and refining this into the Scoring Guide will be outlined.

3.8.1 Rationale for AMP Scoring Scheme

A scoring system was developed with the aim of differentiating levels of explicitation in MPA responses when talking about a pragmatic rule violation. The chosen scoring scheme was based on a theoretical conceptualisation of levels of metalinguistic explicitation (Karmiloff-Smith, 1986) which has been used in a previous study of MPA (Baroni & Axia, 1989). Karmiloff-Smith (1986) proposed four levels of representational explicitation which were adapted by Baroni and Axia (1989) to study levels of explicitation for MPA (adaptation in italics): non-awareness or implicit awareness in which the child demonstrates no awareness; primary explicitation or redescription in which the child repeats part of the dialogue; secondary explicitation or linguistic marker awareness in which the child repeats the part of the dialogue signalling the pragmatic rule violation; and tertiary explicitation or pragmatic rule awareness in which the child describes the pragmatic rule which has been violated.

The levels of explicitation used by Baroni and Axia (1989) were evaluated to ascertain which levels could be used in the AMP to measure explicit MPA. In the context of the AMP Assessor Questions, redescription responses (primary explicitation) did not measure any level of explicit MPA and was therefore not suitable for use in the AMP.
The non-awareness and redescription responses were therefore collapsed into a single "non-awareness" response category. Explicit MPA was measured by linguistic marker awareness responses (secondary explicitation) and the more sophisticated pragmatic rule awareness response (tertiary explicitation). These two levels were therefore retained in the scoring scheme. The levels of explicitation used in the final AMP scoring scheme are given in Table 9.

### 3.8.2 AMP Scoring Scheme

The participant’s responses to the AMP Assessor Questions (Descriptive MPA, Reflective MPA and Metapragmatic Rule awareness Questions) were given a score which related to the level of explicitation demonstrated (i.e. non-awareness, linguistic marker awareness and pragmatic rule awareness). Scores for each level of explicitation are given in Table 9.

**Table 9: Levels of explicitation for the MPA Assessor Questions**

<table>
<thead>
<tr>
<th>Level of Representational Explicitness*</th>
<th>Description / Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>No awareness</td>
<td>No linguistic awareness e.g. “don’t know”, no response, irrelevant/incorrect or the child repeated what had been said in the dialogue without mention of the pragmatic rule violation e.g. “They were both talking about going on holiday”</td>
</tr>
<tr>
<td>0 points</td>
<td><strong>Primary explicitation</strong></td>
</tr>
<tr>
<td>(Implicit knowledge)</td>
<td></td>
</tr>
<tr>
<td>1 point</td>
<td>The child identified the part of the language used in the dialogue which signals the pragmatic behaviour e.g. “That girl kept on saying what degrees it was and what she did”</td>
</tr>
<tr>
<td>(Secondary explicitation)</td>
<td></td>
</tr>
<tr>
<td>2 points</td>
<td>The child identified the part of the language used in the dialogue which signals the pragmatic behaviour and explicitly stated the pragmatic rule e.g. “She was giving too much Information”</td>
</tr>
<tr>
<td>(Tertiary explicitation)</td>
<td></td>
</tr>
</tbody>
</table>

*The examples given are taken from a sample of participant responses to Video Item 8 “Speaker provides excessive detail”.*
Social Understanding Assessor Question

A separate scoring scheme aimed to differentiate levels of sophistication in responses to the Social Understanding Assessor Question. This scoring scheme was exploratory and was broadly based on the levels of sophistication outlined in the Person Index Score of the Social Attribution Task (SAT; Klin, 2000). Three levels of sophistication were applied where zero points were awarded for non-awareness or no response, one point was awarded for describing the pragmatic behaviour, and two points were awarded for attributing a social, psychological or emotional state. Examples of the scoring scheme are outlined in Table 10 below.

Table 10: Levels of sophistication for the Social Understanding Assessor Question

<table>
<thead>
<tr>
<th>Level of Representational Explicitness*</th>
<th>Description / Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-awareness</td>
<td>No awareness, e.g. “don’t know”, no response, irrelevant/incorrect e.g. “from nursery”</td>
</tr>
<tr>
<td>0 points</td>
<td></td>
</tr>
<tr>
<td>Redescription of the pragmatic behaviour</td>
<td>A description of the pragmatic error, e.g., “someone who likes details”</td>
</tr>
<tr>
<td>1 point</td>
<td></td>
</tr>
<tr>
<td>Psychological state (including emotional or social description)</td>
<td>A social, psychological or emotional description , e.g., “boring” “weird”</td>
</tr>
<tr>
<td>2 points</td>
<td></td>
</tr>
</tbody>
</table>

*The examples given are taken from a sample of participant responses to Video Item 8 “Speaker provides excessive detail”.

The Comprehension Check was considered to be a dichotomous pass/fail question as the child was simply expected to name (in one word or more) what the topic of conversation had been. A score of 1 was awarded for a correct response and a score of 0 was awarded for an incorrect response. The Comprehension Check was intended for use by clinicians to ensure that the child had comprehended the language of the Video Item before the MPA Assessor Questions were administered. However, for the purposes of the thesis MPA data from all children were analysed regardless of performance on
the Comprehension Check. This ensured that a range of language ability was included in the responses under analysis. Scores on the Comprehension Check were not used in the analysis but were retained in the Scoring Guide. It was intended that if the AMP was used as a clinical assessment of MPA, failure on the Comprehension Check would prompt the examiner to not ask the MPA questions for that Video Item as comprehension of the videoed dialogue could not be ensured.

A Scoring Guide was developed which provided a range of example responses at each level of explicitation, for all Assessor Questions related to each Video Item. The method and results for piloting the Scoring Guide are described in section 3.8.4. The Scoring Guide is shown in Appendix 8.

3.8.3 AMP Composite Scores

For each participant two scores were produced. The scores for the MPA Assessor Questions (Descriptive MPA, Reflective MPA and Metapragmatic Rule awareness) for all Video Items were summed to form a composite score called the MP Score (maximum score 78). The scores for the Social Understanding (SU) Assessor Question for all Video Items were summed to form an SU Score (maximum score 26).

3.8.4 Piloting the AMP Scoring Guide

Pilot phase 6 – AMP Scoring Guide

The Scoring Guide was piloted to ensure that the levels of explicitation framework could be consistently applied to the children’s MPA responses. The responses of 10 cwPLI and a 13 cwTLD were scored using the Scoring Guide to confirm that the scoring scheme could measure MPA responses from children with a range of language abilities. These children also participated in phase 2 of the pilot study for AMP Video Items (see section 3.5.2.2 for a summary of the sample characteristics).

Where a correct novel response, not included in the Scoring Guide, occurred in a participant’s transcript it was added to the Scoring Guide for completeness. The complete Scoring Guide contained approximately 3-5 sample responses for each
Assessor Question for each level of explicitation. Once the Scoring Guide had been finalised a small-scale inter-rater reliability study was carried out. This will be outlined in the results section.
4 Results

4.1 Investigation of the reliability and sensitivity of the AMP

This section of the results addresses Research Aim 2: To determine the reliability and sensitivity of the AMP as a measure of MPA when it is administered to cwTLD, cwPLI and cwSLI.

4.1.1 Inter-rater reliability of the Scoring Guide

Research Question: Does the AMP demonstrate good inter-rater reliability?

MP and SU Scores for all responses were compared for six cwPLI (approximately 20% of the PLI sample). Participants’ responses were scored by two independent coders, the author, who is a speech and language therapist, and a research assistant who was involved in data collection for the cwPLI. The results are outlined separately for the MP Scores and SU Scores.

MP Scores
A total of 234 responses were scored by the two coders. Agreement between the two coders was 86.3%, Cohen’s $K = 0.712$ ($p<.001$) indicating substantial inter-rater agreement (Landis & Koch, 1977).

SU Scores
A total of 78 responses were scored by the two coders. Agreement between the two coders was 86%, Cohen’s $K = 0.715$ ($p<.001$) indicating substantial inter-rater agreement (Landis & Koch, 1977).
4.1.2 Exploration of the internal consistency of the AMP

**Research Question:** Does the AMP demonstrate internal consistency?

The AMP aimed to be a clinical tool for measuring explicit MPA and therefore it was important to establish the internal consistency of task items as a measure of reliability. It was proposed that the MPA Assessor Questions were measuring MPA in a comparable way. Analyses of internal consistency were therefore conducted to establish whether participants scored similarly for each Assessor Question. Furthermore, it was proposed that the AMP Video Items were designed to elicit explicit MPA responses in a comparable way. Analyses of internal consistency were therefore conducted to establish whether participants scored similarly on each Video Item. All available data from the 88 participants in the TLD, PLI and SLI groups (40 TLD, 34 PLI and 14 SLI) were pooled to maximised power.

4.1.2.1 Missing data

The MP Score was a composite of the Descriptive MPA, Reflective MPA and Metapragmatic Rule Assessor Questions. For these questions, responses were missing for 16 participants out of the total sample of 88 children. The total number of missing responses was 25 (0.7% of the total MP responses). The maximum number of missing responses for any participant was 4. Responses were missing for two main reasons, either because the experimenter had failed to ask the question (N=11) or because the participants’ response were inaudible or unintelligible (N=14). To avoid losing statistical power, missing values were dealt with using a pro-rating method. In this method each missing value was replaced with the average of the non-missing values for the same question from the same participant’s data (Field, 2005).

4.1.2.2 Exploration of the internal consistency of the Descriptive MPA, Reflective MPA and Metapragmatic Rule Awareness scores

The first stage of the analysis was to ascertain whether all three MPA Assessor Questions were measuring MPA in a consistent way. If this was the case then each child should produce similar scores for the Descriptive MPA, Reflective MPA and
Metapragmatic Rule Awareness Assessor Questions and these scores should correlate significantly with each other. Within the AMP task, sub-scores were calculated for Descriptive MPA, Reflective MPA and Metapragmatic Rule Awareness responses for all Video Items. These sub-scores were produced by summing the scores for a specific MPA Assessor Question for all Video Items. The maximum sub-score for any Assessor Question was 26. A correlation analysis was then used to examine the relationship between each Assessor Question sub-score and with the total MP Score. The results are shown in Table 11.

**Table 11: Correlation matrix for the MPA Assessor Question Scores**

<table>
<thead>
<tr>
<th></th>
<th>MP Score</th>
<th>Descriptive</th>
<th>Reflective</th>
<th>MP Rule</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP Score</td>
<td>1.0</td>
<td>.955**</td>
<td>.955**</td>
<td>.947**</td>
</tr>
<tr>
<td>Descriptive</td>
<td>.955**</td>
<td>1.0</td>
<td>.897**</td>
<td>.864**</td>
</tr>
<tr>
<td>Reflective</td>
<td>.955**</td>
<td>.879**</td>
<td>1.0</td>
<td>.857**</td>
</tr>
<tr>
<td>MP Rule</td>
<td>.947**</td>
<td>.864**</td>
<td>.857**</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Note: ** Spearman’s Rho correlation is significant at the 0.01 level (1-tailed).

The Descriptive, Reflective and Metapragmatic Rule awareness sub-scores all correlated significantly with each other and with the MP Score at a 0.01 level (1-tailed) using Spearman’s Rho, indicating good internal reliability of the MPA Assessor Questions. Correlations ranged from .857 to .955. Given that the three MPA Assessor Questions were found to be measuring MPA consistently, all further analyses used the MP Score.

4.1.2.3 Exploration of the internal consistency of the AMP Video Items

The next stage was to examine the internal consistency of the MP Scores for each Video Item by establishing how well the AMP Video Items correlated with each other. If each Video Item was measuring MPA in a comparable way then they should correlate significantly with each other. A correlation matrix was used to investigate the relationship between the MP Score for each Video Item (the sum of the Descriptive, Reflective and MP Rule awareness scores for the Video Item) and Total MP Score (i.e. the sum of the MP score for all Video Items). The results are shown in Table 12. All Video Items correlated significantly with each other and with the Total MP score.
indicating good internal consistency of the AMP task. Correlations between Video Items ranged from .304 to .669. Correlations between each Video Item and the Total MP Score ranged from .595 to .842.
<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>.529**</td>
<td>.494**</td>
<td>.609**</td>
<td>.473**</td>
<td>.603**</td>
<td>.522**</td>
<td>.555**</td>
<td>.502**</td>
<td>.578**</td>
<td>.585**</td>
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<td>.505**</td>
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<td>.529**</td>
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<td>.304**</td>
<td>.460**</td>
<td>.442**</td>
<td>.516**</td>
<td>.405**</td>
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<td>.305**</td>
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<td>.473**</td>
<td>.442**</td>
<td>.305**</td>
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<td>.617**</td>
<td>.454**</td>
<td>.445**</td>
<td>.343**</td>
<td>.617**</td>
<td>.508**</td>
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<td>1</td>
<td>.576**</td>
<td>.529**</td>
<td>.409**</td>
<td>.669**</td>
<td>.593**</td>
<td>.637**</td>
<td>.646**</td>
</tr>
<tr>
<td>7</td>
<td>.522**</td>
<td>.405**</td>
<td>.354**</td>
<td>.428**</td>
<td>.454**</td>
<td>.576**</td>
<td>1</td>
<td>.353**</td>
<td>.369**</td>
<td>.514**</td>
<td>.533**</td>
<td>.482**</td>
<td>.485**</td>
</tr>
<tr>
<td>8</td>
<td>.555**</td>
<td>.367**</td>
<td>.403**</td>
<td>.345**</td>
<td>.445**</td>
<td>.529**</td>
<td>.353**</td>
<td>1</td>
<td>.304**</td>
<td>.407**</td>
<td>.403**</td>
<td>.414**</td>
<td>.227**</td>
</tr>
<tr>
<td>9</td>
<td>.502**</td>
<td>.314**</td>
<td>.454**</td>
<td>.386**</td>
<td>.343**</td>
<td>.409**</td>
<td>.369**</td>
<td>.304**</td>
<td>1</td>
<td>.362**</td>
<td>.399**</td>
<td>.409**</td>
<td>.409**</td>
</tr>
<tr>
<td>10</td>
<td>.578**</td>
<td>.510**</td>
<td>.470**</td>
<td>.436**</td>
<td>.617**</td>
<td>.669**</td>
<td>.514**</td>
<td>.407**</td>
<td>.362**</td>
<td>1</td>
<td>.644**</td>
<td>.537**</td>
<td>.578**</td>
</tr>
<tr>
<td>11</td>
<td>.585**</td>
<td>.522**</td>
<td>.461**</td>
<td>.554**</td>
<td>.508**</td>
<td>.593**</td>
<td>.533**</td>
<td>.403**</td>
<td>.399**</td>
<td>.644**</td>
<td>1</td>
<td>.508**</td>
<td>.519**</td>
</tr>
<tr>
<td>12</td>
<td>.562**</td>
<td>.537**</td>
<td>.432**</td>
<td>.477**</td>
<td>.481**</td>
<td>.632**</td>
<td>.482**</td>
<td>.414**</td>
<td>.409**</td>
<td>.537**</td>
<td>.508**</td>
<td>1</td>
<td>.528**</td>
</tr>
<tr>
<td>13</td>
<td>.505**</td>
<td>.470**</td>
<td>.452**</td>
<td>.542**</td>
<td>.471**</td>
<td>.646**</td>
<td>.485**</td>
<td>.227*</td>
<td>.409**</td>
<td>.578**</td>
<td>.519**</td>
<td>.528**</td>
<td>1</td>
</tr>
<tr>
<td>----</td>
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<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>---</td>
</tr>
<tr>
<td><strong>TOTAL AMP</strong></td>
<td>.800**</td>
<td>.647**</td>
<td>.653**</td>
<td>.717**</td>
<td>.692**</td>
<td>.842**</td>
<td>.677**</td>
<td>.595**</td>
<td>.646**</td>
<td>.753**</td>
<td>.763**</td>
<td>.741**</td>
<td>.722**</td>
</tr>
</tbody>
</table>

Note: **significant correlation at 0.01 level (1 tailed) spearman’s rho  
* significant correlation at 0.05 level (1 tailed) spearman’s rho  
Total AMP refers to Total MP Composite for all 13 Video Items
4.1.3 Exploration of the sensitivity of the AMP to age-related changes in MPA

**Research Question:** Is the AMP sensitive to age-related changes in MPA?

The next stage was to ascertain that the Video Items retained in the final version of the AMP were sensitive to age-related changes in MPA. All available data from the 88 participants in the TLD, PLI and SLI groups (40 TLD, 34 PLI and 14 SLI) were pooled to maximized power.

A correlational analysis was used to investigate whether the MP score for each Video Item was related to age in months. The results are shown in Table 13. The MP score for each Video Item correlated significantly with age.

Next, a simple regression was used to investigate whether age predicted MP score for each Video Item. The research literature reviewed in section 1.6.2 indicated that MPA does improve with age during childhood. It is therefore expected that if the AMP is measuring MPA, and therefore is sensitive to age-related changes in MPA, then there should be an increase in MP score for each AMP Video Item as age increases. If an AMP Video Item is not sensitive to age-related changes in MPA for the age range being studied then there would be no significant increase in mean scores as age increases. Table 14 shows the mean MP Scores for each Video Item by age band. The p values suggest a significant effect of age band for all Video Items except Video Item 4 “Interlocutor provides minimal response” and Video Item 13 “Speaker dominates the conversation”.

Mean scores for all age bands suggest that there was relative difficulty in providing an MPA response for the Video Item “Speaker does not pick up on hints” and relative ease in providing an MPA response for the items “Speaker stands too close to interlocutor” and “Speaker dominates the conversation”. All AMP Video Items were retained to ensure a spread of items including relatively easy items and relatively difficult items. This ensured a range of difficulty which would enable some items to be accessible for the youngest children and some items to challenge the oldest children.
Table 13: Correlation between Age in Months and MP Score for each Video Item

<table>
<thead>
<tr>
<th>Video Item</th>
<th>Correlation with Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Speaker uses hyperbole</td>
<td>.454**</td>
</tr>
<tr>
<td>2. Overuse of speech act</td>
<td>.395**</td>
</tr>
<tr>
<td>3. Speaker fails to make clarification</td>
<td>.372**</td>
</tr>
<tr>
<td>4. Interlocutor provides minimal response</td>
<td>.272**</td>
</tr>
<tr>
<td>5. Speaker gives a tangential response</td>
<td>.419**</td>
</tr>
<tr>
<td>6. First, second parts of exchange do not match</td>
<td>.482**</td>
</tr>
<tr>
<td>7. Speaker does not pick up on hints</td>
<td>.295**</td>
</tr>
<tr>
<td>8. Speaker provides excessive detail</td>
<td>.522**</td>
</tr>
<tr>
<td>9. Speaker looks away from interlocutor</td>
<td>.464**</td>
</tr>
<tr>
<td>10. Interlocutor responds ambiguously</td>
<td>.412**</td>
</tr>
<tr>
<td>11. Speaker ignores request to change topic</td>
<td>.290**</td>
</tr>
<tr>
<td>12. Speaker stands too close to interlocutor</td>
<td>314**</td>
</tr>
<tr>
<td>13. Speaker dominates the conversation</td>
<td>.247*</td>
</tr>
</tbody>
</table>

Note: ** significant correlation at 0.01 level (1 tailed) spearman’s rho
* significant correlation at 0.05 level (1 tailed) spearman’s rho
<table>
<thead>
<tr>
<th>AMP Video Item</th>
<th>6:00-7:11</th>
<th>8:00-9:11</th>
<th>10:00-11:11</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Speaker uses hyperbole^</td>
<td>1.4 (1.9)</td>
<td>2.4 (2.2)</td>
<td>3.3 (1.9)</td>
<td>.001**</td>
</tr>
<tr>
<td>2. Overuse of speech act^</td>
<td>0.5 (.07)</td>
<td>1.0 (1.3)</td>
<td>1.7 (1.6)</td>
<td>.000**</td>
</tr>
<tr>
<td>3. Speaker fails to make clarification^</td>
<td>1.0 (1.6)</td>
<td>1.9 (2.0)</td>
<td>2.9 (1.9)</td>
<td>.000**</td>
</tr>
<tr>
<td>4. Interlocutor provides minimal response^</td>
<td>1.6 (1.7)</td>
<td>2.0 (1.7)</td>
<td>2.4 (1.8)</td>
<td>.079</td>
</tr>
<tr>
<td>5. Speaker gives a tangential response^</td>
<td>1.2 (1.2)</td>
<td>2.0 (2.1)</td>
<td>2.9 (1.7)</td>
<td>.000**</td>
</tr>
<tr>
<td>6. First, second parts of exchange do not match^</td>
<td>1.8 (1.7)</td>
<td>3.0 (2.1)</td>
<td>4.2 (1.9)</td>
<td>.000**</td>
</tr>
<tr>
<td>7. Speaker does not pick up on hints^</td>
<td>1.0 (1.2)</td>
<td>1.6 (1.3)</td>
<td>1.8 (1.3)</td>
<td>.025*</td>
</tr>
<tr>
<td>8. Speaker provides excessive detail^</td>
<td>0.2 (0.5)</td>
<td>1.6 (2.0)</td>
<td>2.2 (2.1)</td>
<td>.000**</td>
</tr>
<tr>
<td>9. Speaker looks away from interlocutor^</td>
<td>0.6 (1.6)</td>
<td>1.7 (2.3)</td>
<td>3.2 (2.5)</td>
<td>.000**</td>
</tr>
<tr>
<td>10. Interlocutor responds ambiguously^</td>
<td>1.9 (1.5)</td>
<td>3.0 (1.6)</td>
<td>3.5 (1.6)</td>
<td>.000**</td>
</tr>
<tr>
<td>11. Speaker ignores request to change topic^</td>
<td>1.9 (1.8)</td>
<td>2.7 (2.2)</td>
<td>3.1 (2.1)</td>
<td>.033*</td>
</tr>
<tr>
<td>Item</td>
<td>Description</td>
<td>Mean (SD)</td>
<td>Minimum</td>
<td>Maximum</td>
</tr>
<tr>
<td>------</td>
<td>---------------------------------------------------------</td>
<td>-----------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>12</td>
<td>Speaker stands too close to interlocutor^</td>
<td>2.9 (2.1)</td>
<td>0-6</td>
<td>6</td>
</tr>
<tr>
<td>13</td>
<td>Speaker dominates the conversation^</td>
<td>3.0 (2.4)</td>
<td>0-6</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td><strong>Total MP Score</strong>#</td>
<td>18.9 (13.5)</td>
<td>0-45</td>
<td>45</td>
</tr>
</tbody>
</table>

Note:  ^Maximum score for Video Items 1-13 = 6  
#Maximum score for Total MP Score = 78  
*significant at the 0.05 level  
**significant at the 0.005 level
The same data were then subjected to a split-half reliability analysis. In split-half reliability the items in a measurement are randomly assigned to two sets. The level of correlation between the total score for each set is used as a measure of internal consistency. In this case, internal consistency refers to how consistently each Video Item measures MPA.

Cronbach’s alpha is a common form of split-half reliability which is used when there are several items in a measurement, such as the AMP. Split-half reliability was assessed using Cronbach’s alpha which was calculated as $\alpha = 0.915$ suggesting good split-half test reliability (Kline, 1999). Cronbach’s alpha for deletion was calculated to ascertain if any items were reducing overall test reliability. All alpha values were found to be between 0.901 and 0.914. None of the Video Items were shown to increase reliability if deleted and therefore no specific items need to be deleted from the task.
4.2 Investigation of MPA in cwTLD

This section of the results addressed Research Aim 3: To investigate MPA in school-aged cwTLD using the AMP.

To address this research aim the responses of the 40 CwTLD to the Descriptive MPA, Reflective MPA and Metapragmatic Rule Awareness Assessor Questions were analysed. Inclusion criteria for the TLD group are outlined in section 3.3.

4.2.1 Missing data

The MP Score was a composite of the Descriptive, Reflective and Metapragmatic Rule Awareness Assessor Questions. For these questions, responses were missing for five participants across the three age bands. In total, 7 responses were missing for the cwTLD (0.4% of the total MP responses). The maximum number of missing responses for any participant was two out of a possible 39 responses. Responses were missing because either the experimenter had failed to ask the question (N=4) or the participants’ response was inaudible or unintelligible (N=3). To avoid losing statistical power, missing values were dealt with using a pro-rating method. In this method each missing value was replaced with the average of the non-missing values for the same question from the same participant’s data (Field, 2005).
4.2.2 Sample characteristics for cwTLD

Descriptive statistics for age, NVIQ as measured by Raven’s CPM and language ability were calculated for all age bands to ensure comparability between groups and are shown in Table 15 below.

Table 15: Sample characteristic mean, standard deviation (SD) and range for the cwTLD for each age band

<table>
<thead>
<tr>
<th>Age Band</th>
<th>Gender M:F</th>
<th>Mean age in months (SD)</th>
<th>Mean TROG-2 (SD)</th>
<th>Mean ACE~ (SD)</th>
<th>Mean CPM* (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:00-7:11</td>
<td>5:9</td>
<td>83(4.76) 73-93</td>
<td>106 (13) 86-120</td>
<td>12 (3) 7-17</td>
<td>71.57 (26) 25-96</td>
</tr>
<tr>
<td>8:00-9:11</td>
<td>7:6</td>
<td>112(6.84) 96-119</td>
<td>106 (6) 95-113</td>
<td>11 (2) 9-15</td>
<td>58.04 (28) 17.5-96</td>
</tr>
<tr>
<td>10:00-11:11</td>
<td>4:9</td>
<td>129(7.60) 120-140</td>
<td>105 (8) 88-116</td>
<td>11 (2) 7-16</td>
<td>60.00 (25) 17.5-95</td>
</tr>
</tbody>
</table>

Note: * Age-adjusted percentile ranges have been transformed into percentile midpoints e.g. 25th-50th percentile is transformed into the midpoint 37.5th percentile.
^ Standard score (M = 100, SD = 15)
~ Standard score (M = 10, SD = 3)

ACE = Assessment of Comprehension and Expression Naming Subtest
TROG-2 = Test for Reception of Grammar 2
CPM = Raven’s Coloured Progressive Matrices
Initial analysis of the descriptive statistics indicates broadly similar standard scores for ACE Naming, TROG-2 and NVIQ between groups. A one-way ANOVA showed no significant effect of age band for TROG-2 ($F(2,37) = 0.116$, ns), ACE Naming ($F(2,37) = 0.112$, ns) or Raven’s CPM ($F(2,37) = 1.036$, ns) suggesting that the age bands were comparable in underlying language and NVIQ skills. Overall there was a higher number of female participants ($N=24$) than male participants ($N=16$).

4.2.3 Analysis of the MP Scores for the cwTLD

**Research Question:** Are there any differences in performance on the AMP for the cwTLD in the three age bands between 6 and 11 years?

Mean MP Scores, standard deviations and ranges for the cwTLD per age band are shown in Table 16. It was predicted that there would be significant group differences between the 6:00-7:11 age band and the 8:00-9:11 age band. It is not known whether MPA continues to significantly increase after this age and therefore no prediction was made as to whether there would be a significant group difference between the 8:00-9:11 age band and the 10:00-11:11 age band.

**Table 16: Mean MP Score for cwTLD**

<table>
<thead>
<tr>
<th>Age band</th>
<th>(N)</th>
<th>MP Score#</th>
<th>Standard deviation</th>
<th>Range</th>
<th>% MP Score ~</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:00-7:11</td>
<td>14</td>
<td>31.9</td>
<td>7.9</td>
<td>22.45</td>
<td>40.9%</td>
</tr>
<tr>
<td>8:00-9:11</td>
<td>13</td>
<td>43.1</td>
<td>7.1</td>
<td>31-54</td>
<td>55.2%</td>
</tr>
<tr>
<td>10:00-11:11</td>
<td>13</td>
<td>48.0</td>
<td>8.7</td>
<td>34-62</td>
<td>61.5%</td>
</tr>
<tr>
<td>Whole group</td>
<td>40</td>
<td>40.8</td>
<td>10.4</td>
<td>22-62</td>
<td>52.3%</td>
</tr>
</tbody>
</table>

Note: #Maximum score for Total MP Score = 78
~Percentage MP Score = Participant’s Total MP Score as a percentage of the maximum MP Score
Figure 4 shows the median MP Score for each of the age bands. Preliminary inspection of Table 16 and Figure 4 reveal an increase in MP Scores across the age bands. Standard deviations appear similar for each age band. Levene’s test of homogeneity of variance confirmed that equal variances between age bands could be assumed (F (2,37) = .534, ns). Kolmogorov-Smirnov Tests of normality demonstrated that distributions of MP Scores were not significantly different from normal for the 6:00-7:11 age band (D (14) = .141, ns), 8:00-9:11 age band (D (13) = .122, ns) or the 10:00-11:11 age band (D (13) = .204, ns).

Figure 4: Median MP Scores and confidence intervals for the cwTLD in each age band

---

1 For each group the horizontal line represents the median score, the box represents the middle 50% of scores and the horizontal lines represent the lowest and highest 25% of scores.
Analysis of Covariance (ANCOVA) was used to investigate whether mean MP Scores differed between the three age bands. Gender was imbalanced across age bands and was therefore included as covariate. Results of Levene’s test, when gender was included in the model as covariate, indicated that group variances were equal (F(2,37) = .347, ns). The assumption of homogeneity of regression slopes was met (F (2, 37) = .534, ns). The covariate, gender, was not significantly related to MP score (F(1,36) = .897, ns). There was a significant effect of age band on MP score after controlling for gender F(2,36) = 14.8, $p<.001$).

Post-hoc analysis, with a Bonferroni correction for multiple comparisons, revealed that the 6:00-7:11 age band had significantly lower MP Scores than the 8:00-9:11 and 10:00-11:11 age bands, while these latter groups did not significantly differ from each other on MP Score.

**4.2.4 Analysis of the levels of explicitation of MPA responses for the cwTLD**

**Research Question:** Are there any differences in the levels of explicitation of MPA responses given by the cwTLD in each of the three age bands?

The next stage of the analysis investigated differences in level of explicitation of MPA responses. Table 17 shows the percentage of responses categorised as non-awareness, linguistic marker awareness and pragmatic rule awareness for all responses to the MPA Assessor Questions.
Table 17: Mean percentage, standard deviation (SD) and range of MPA responses categorised as non-awareness, linguistic marker or pragmatic rule awareness for cwTLD in each age band

<table>
<thead>
<tr>
<th></th>
<th>6:00-7:11</th>
<th>8:00-9:11</th>
<th>10:00-11:11</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>N=14</td>
<td>N=13</td>
<td>N=13</td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
</tr>
<tr>
<td>Non-awareness</td>
<td>44.7 (11.9)</td>
<td>27.2 (11.4)</td>
<td>22.7 (9.1)</td>
</tr>
<tr>
<td>Range</td>
<td>25.6-61.5</td>
<td>18-43.6</td>
<td>10.3-46.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>7.7-35.9</td>
</tr>
<tr>
<td>Linguistic marker awareness</td>
<td>28.9 (7.8)</td>
<td>35.1 (9.4)</td>
<td>31.6 (6.7)</td>
</tr>
<tr>
<td>Range</td>
<td>18-43.6</td>
<td>23.1-59</td>
<td>20.5-46.2</td>
</tr>
<tr>
<td>Pragmatic rule awareness</td>
<td>26.4 (9.7)</td>
<td>37.7 (8.8)</td>
<td>45.7 (13.8)</td>
</tr>
<tr>
<td>Range</td>
<td>15.4-46.2</td>
<td>25.6-51.3</td>
<td>23.1-66.7</td>
</tr>
</tbody>
</table>

Initial inspection of Table 17 indicates that for all age bands, some children were able to provide responses at the most sophisticated level of explicitation. Furthermore, non-awareness responses were present in all age bands including the oldest children. The proportion of non-awareness responses appears to decrease with age and the proportion of pragmatic rule awareness responses appears to increase with age. The children in the youngest age band were more likely to demonstrate non-awareness and less likely to demonstrate linguistic marker or pragmatic rule awareness responses. The children in the oldest age band were more likely to demonstrate pragmatic rule awareness responses and less likely to demonstrate non-awareness responses. However, within all three age bands, there is a high level of variability and a large degree of overlap between groups. There was a wide range of frequency of responses at each level of explicitation for each age band.
The frequency of linguistic marker awareness responses did not appear to differ between groups. It was therefore not possible to ascertain whether there were between-group differences in this level of explicitation. Planned comparisons were carried out to investigate between-group differences in the frequency of responses in non-awareness and pragmatic rule awareness responses.

Levene’s test indicated equal variances between age bands could be assumed for frequency of non-awareness responses (F (2,37) = .070, ns), and pragmatic rule awareness responses (F (2,37) = .393, ns). Kolmogorov-Smirnov Tests of normality demonstrated that distributions of non-awareness responses were not significantly different from normal for the 6:00-7:11 age band (D (14) = .194, ns), the 8:00-9:11 age band (D (13) = .145, ns) or the 10:00-11:11 age band (D (13) = .189, ns). Kolmogorov-Smirnov Tests of normality demonstrated that distributions of pragmatic rule awareness responses were not significantly different from normal for the 8:00-9:11 age band (D (13) = .127, ns) or the 10:00-11:11 age band (D (13) = .164, ns). Distributions of pragmatic rule awareness responses were significantly different from normal for the 6:00-7:11 age band (D (14) = .228, p<.05).

Group differences were investigated using a one-way ANOVA with post-hoc tests, using Games-Howell correction for multiple comparisons as this test does not assume equal variance and can be used with different sample sizes. A significant effect of age band was found for the non-awareness responses (F(2.37) = 15.4, p<.001) and the pragmatic rule awareness responses (F(2, 37) = 10.7, p<.001). Post-hoc analyses revealed the source of these significant results to be between the 6:00-7:11 age band and both the 8:00-9:11 and 10:00-11:11 age bands. Post hoc analyses revealed no significant difference between the 8:00-9:11 and 10:00-11:11 age band. The 6:00-7:11 year olds were more likely to provide a non-awareness response and less likely to provide a pragmatic rule awareness response than both the 8:00-9:11 and 10:00-11:11 year olds.
4.3 Comparison of MPA in cwTLD, cwPLI and cwSLI

This section of the results addressed Research Aim 4: To compare MPA in school-aged cwTLD, cwPLI and cwSLI using the AMP.

The MP responses from the AMP for the 34 cwPLI and 14 cwSLI were analysed. Assessment data from the Raven’s CPM, ACE Naming, TROG-2, CELF-4 UK, CCC-2 and SCQ were also used in the analysis. In addition to the clinical groups, the data from 34 cwTLD aged 6:01 – 10:10 were selected from the 40 cwTLD to be as close in age range to the cwPLI as possible. These children formed a comparison group.

4.3.1 Missing data for sample characteristics

Data were missing for the SCQ for 2 cwPLI and 1 cwSLI. Missing data were due to parents or caregivers failing to return their completed forms to the research team. To avoid losing statistical power, cases with missing data were not excluded from the study but only from those analyses which included the missing measure.

4.3.2 Sample characteristics for cwTLD, cwPLI and cwSLI

Sample characteristics for the TLD, PLI and SLI groups are provided in Table 18.
### Table 18: Sample characteristics for TLD, PLI and SLI groups

<table>
<thead>
<tr>
<th></th>
<th>TLD</th>
<th>PLI</th>
<th>SLI</th>
</tr>
</thead>
<tbody>
<tr>
<td>N (F:M)</td>
<td>34 (19:15)</td>
<td>34 (3:31)</td>
<td>14 (6:8)</td>
</tr>
<tr>
<td>Age (months)</td>
<td>102.4 (17.5)</td>
<td>101.4 (13.9)</td>
<td>92.8 (18.1)</td>
</tr>
<tr>
<td>Raven’s CPM*</td>
<td>63.1 (26.6)</td>
<td>51.1 (26)</td>
<td>48.4 (18.7)</td>
</tr>
<tr>
<td>TROG^</td>
<td>106.1 (9.2)</td>
<td>79.2 (16.5)</td>
<td>72.2 (14.5)</td>
</tr>
<tr>
<td>ACE Naming~</td>
<td>11.6 (2.2)</td>
<td>8.1 (3)</td>
<td>7.3 (1.2)</td>
</tr>
<tr>
<td>CCC-GCC</td>
<td>-</td>
<td>29.8 (11.6)</td>
<td>29 (12)</td>
</tr>
<tr>
<td>CCC-SIDC</td>
<td>-</td>
<td>-1.7 (8.3)</td>
<td>15.4 (7.1)</td>
</tr>
<tr>
<td>CCC-PRAG</td>
<td>13.7 (5.3)</td>
<td>6-26</td>
<td>19.7 (7.5)</td>
</tr>
<tr>
<td>CELF-CLS^</td>
<td>-</td>
<td>75.2 (18.5)</td>
<td>58.1 (13.6)</td>
</tr>
<tr>
<td>CELF-RLI^</td>
<td>-</td>
<td>80.9 (16.3)</td>
<td>73.4 (14.3)</td>
</tr>
<tr>
<td>CELF-ELI^</td>
<td>-</td>
<td>76 (17.9)</td>
<td>57.9 (11.9)</td>
</tr>
<tr>
<td>SCQ:</td>
<td>-</td>
<td>19.8 (9.3)</td>
<td>11 (6.4)</td>
</tr>
<tr>
<td>Non-autistic</td>
<td>-</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>PDD</td>
<td>-</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>ASD</td>
<td>-</td>
<td>15</td>
<td>1</td>
</tr>
</tbody>
</table>

Note: * Age-adjusted percentile ranges have been transformed into percentile midpoints e.g. 25th-50th percentile is transformed into the midpoint 37.5th percentile.

^ Standard score (M = 100, SD = 15)

~ Standard score (M = 10, SD = 3)
Raven’s CPM = Raven’s Coloured Progressive Matrices
TROG-2 = Test for Reception of Grammar (Second Edition)
ACE = Assessment of Comprehension and Expression
CCC-GCC = Children’s Communication Checklist-2 - General Communication Composite
CCC-SIDC = Children’s Communication Checklist-2 - Social Interaction Deviance Composite.
CCC PRAG = Children’s Communication Checklist-2 – Pragmatic Composite (summed scores for scales E, F, G, and H)
CELF-CLS = Clinical Evaluation of Language Fundamentals-4 UK Core Language Score
CELF-RLI = Clinical Evaluation of Language Fundamentals-4 UK Receptive Language Index
CELF-ELI = Clinical Evaluation of Language Fundamentals-4 UK Expressive Language Index
SCQ = Social Communication Questionnaire (Non-autistic score 0-14, Pervasive Developmental Disorder (PDD) score 15-21, Autistic Spectrum Disorder (ASD) score ≥22)

Differences in mean scores between groups (TLD, PLI, SLI) were investigated using independent samples ANOVA Welch F and post hoc tests, using Games-Howell correction for multiple comparisons. There were no significant differences between groups for age (F(2, 34) = 1.51, ns) or NVIQ as measured by Raven’s CPM percentile midpoints (F(2, 42) = 2.79, ns). Although group differences did not reach statistical significance there was a trend for the cwSLI to have both lower mean ages and lower NVIQ scores than the other two groups.

Comparisons revealed significant group differences on both TROG-2 (F(2, 32) = 55.41, \( p<.001 \)) and ACE Naming (F(2, 40) = 38.83, \( p<.001 \)). Post hoc analysis revealed the TLD group to be significantly different from the PLI and SLI groups whereas the PLI and SLI groups did not differ significantly on these measures. The cwTLD had significantly higher TROG-2 and ACE Naming scores than the cwPLI and cwSLI. Higher scores on these tests indicate better language skills. Group differences on language measures were expected as the cwTLD were recruited to have language skills within the average range. In contrast, language ability was not part of the inclusion criteria for the cwPLI but it was expected, based on previous research
about this population, that at least a percentage of the PLI group were language impaired.

Whilst the TLD group were predominantly comprised of female participants the PLI group were predominantly comprised of male participants (gender was fairly evenly distributed in the SLI group). However, no significant effect of gender on MP scores was found during the TLD analyses and therefore this group difference was not expected to affect the results.

Differences between the PLI and SLI groups on additional measures of language (CELF-4 UK), pragmatics (CCC-PRAG) and history of autistic features (SCQ) were investigated using the Mann-Whitney Test. PLI and SLI groups differed significantly from each other on CELF-CLS standard scores ($U = 109.5, p < .005, r = -.42$), CELF-ELI standard scores ($U = 89.5, p < .005, r = -.49$), CCC-PRAG ($U = 123, p < .005, r = -.38$) and SCQ ($U = 97.5, p < .005, r = -.42$). PLI and SLI groups did not differ significantly from each other on CELF-RLI standard scores ($U = 167, ns, r = -.23$).

Overall, the cwPLI had significantly higher CELF-4 UK scores than the cwSLI, indicating better language skills in the PLI group. The cwPLI also had significantly lower scores on CCC-2 Pragmatic Composite Scores that the cwSLI, indicating that parents or carers of the cwPLI were more likely to identify the presence of features of pragmatic impairment in their children. The cwPLI also had significantly higher SCQ scores than the cwSLI, indicating that parents or carers of the cwPLI were more likely to identify the presence of autistic features in early childhood. It is important to note that the SLI group contains a much smaller number of participants than the other groups and therefore caution must be taken when interpreting the SLI data.

4.3.3 Missing data for MP scores

CwTLD

Responses to the Descriptive, Reflective or Metapragmatic Rule Assessor Questions were missing for 2 participants out of the total sample of 34 children. The total number of missing responses was 3 (0.2% of the sample). The maximum number of
missing responses for any participant was 2. Responses were missing because the experimenter had failed to ask the question (N=3).

**CwPLI**

Responses to the Descriptive, Reflective or Metapragmatic Rule Assessor Questions were missing for 6 participants out of the total sample of 34 children. The total number of missing responses was 11 (0.8% of the sample). The maximum number of missing responses for any participant was 4. Responses were missing for two main reasons, either because the experimenter had failed to ask the question (N=6) or because the participants’ response was inaudible or unintelligible (N=5).

**CwSLI**

Responses to the Descriptive, Reflective or Metapragmatic Rule Assessor Questions were missing for 5 participants out of the total sample of 14 children. The total number of missing responses was 7 (1.3% of the sample). The maximum number of missing responses for any participant was 3. Responses were missing for because the participants’ response was inaudible or unintelligible (N=6). One response was missing because the experimenter had failed to ask the question (N=1).

To avoid losing statistical power, missing values were dealt with using a pro-rating method. In this method each missing value was replaced with the average of the non-missing values for that specific question from the same participant’s data (Field, 2005).

**4.3.4 Comparison of MP Scores for cwTLD, cwPLI and cwSLI**

**Research Question:** Are there any differences in MP Scores between the cwTLD, cwPLI and cwSLI?

In order to compare MPA across groups the MP Scores for the TLD, PLI and SLI groups were analysed. Mean MP Scores, standard deviations and ranges for the TLD, PLI and SLI groups are shown in Table 19.
Table 19: MP Score mean, standard deviation (SD) and range for TLD, PLI and SLI groups

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean (SD)</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>TLD</td>
<td>34</td>
<td>39.6 (10.4)</td>
<td>22-62</td>
</tr>
<tr>
<td>PLI</td>
<td>34</td>
<td>19.1 (13.9)</td>
<td>0-51</td>
</tr>
<tr>
<td>SLI</td>
<td>14</td>
<td>10.2 (13.1)</td>
<td>0-42</td>
</tr>
</tbody>
</table>

Note: # maximum score = 78

Preliminary inspection of the data reveals an advantage for cwTLD in MPA. Figure 5 shows the variance in MPA with each diagnostic group. The larger standard deviations for the PLI and SLI groups indicate more variance in MPA in the PLI and SLI group than in the TLD group, as can be seen in Figure 5.

Levene’s tests of homogeneity of variance confirmed that equal variances between groups could be assumed for MP Score (F(2,79) = 2.198, ns). Kolmogorov-Smirnov Tests of normality demonstrated that distributions of MP Scores were not significantly different from normal for the TLD (D(34) = .086, ns) and PLI (D (34) = .111, ns) groups. The distribution of MP Scores for the SLI group were found to be significantly different from normal (D(14) = .235, p<.05).
Analysis of Covariance (ANCOVA) was used to investigate whether mean MP Scores differed between the TLD, PLI and SLI groups. Age was chosen as a covariate because it was found to be related to MP performance in cWTLD (see section 3). NVIQ as measured by Raven’s CPM was also chosen as a covariate because the cWSLI did tend to have lower NVIQ scores than the cWPLI although this trend did not reach significance. Planned contrasts (simple) were used with PLI as reference category.

Results of Levene’s test when age and Raven’s CPM are included in the model as covariates indicated that group variances were not equal ($F(2,79) = 3.658, p<.05$). The assumption of homogeneity of regression slopes was met ($F(3, 74) = .835, \text{ns}$).

---

2 For each group the horizontal line represents the median score, the box represents the middle 50% of scores and the horizontal lines represent the lowest and highest 25% of scores.
The covariate, age, was significantly related to MP Score (F(1,77) = 29.41, p<.001). There was no significant effect of NVIQ as measured by Raven’s CPM on MP Score after controlling for the effect of age (F(1,77) = 2.084, ns). There was a significant effect of group on MP Score after controlling for age and NVIQ (F(2,77) = 34.47, p<.001).

Planned contrasts revealed that the MP Score for the PLI group was significantly lower compared to the TLD group (t(77) = 7.19, p<.001) but not significantly different to the SLI group (t(77) = -1.47, ns). The estimated group differences (95% CI) were 19.22 (13.9 to 24.54) and -5.11 (-12.03 to 1.82) respectively. Given unequal variances, a percentile bootstrap (Efron & Tibshirani, 1993) (1000 replications) was used to check confidence intervals. Confidence intervals were found to be similar with 95% bootstrap CIs of 14.08 to 24.37 and -12.49 to 2.88 respectively.

### 4.3.5 Comparison of levels of explicitation in MP responses for cwTLD, cwPLI, and cwSLI

**Research Question:** Are there any differences in the level of explicitation of MPA responses given by the cwTLD, cwPLI and cwSLI?

Group comparisons of MP Scores for the cwTLD, cwPLI and cwSLI revealed significantly higher MP Scores for the TLD group when age and NVIQ were controlled for. The next step in the analysis was to investigate group differences in level of explicitation of MPA responses. The frequency of non-awareness, linguistic marker awareness and pragmatic rule awareness were calculated for all MPA responses. The missing data outlined in section 4.3.3 were also applicable to the levels of explicitation analyses. Table 20 shows the mean MPA responses categorised as non-awareness, linguistic marker awareness and pragmatic rule awareness, expressed as a percentage of total responses, for the TLD, PLI and SLI groups.
Table 20: Mean percentage, standard deviation (SD) and range of MPA responses categorised as non-awareness, linguistic marker or pragmatic rule awareness for TLD, PLI and SLI groups

<table>
<thead>
<tr>
<th></th>
<th>TLD N=34</th>
<th>PLI N=34</th>
<th>SLI N=14</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (SD)</td>
<td>Range</td>
<td>Mean (SD)</td>
</tr>
<tr>
<td>Non-awareness</td>
<td>33.1 (15)</td>
<td>7.7-61.5</td>
<td>66.7 (22.4)</td>
</tr>
<tr>
<td>Linguistic marker</td>
<td>32.3 (8.6)</td>
<td>18-59</td>
<td>17.5 (12.8)</td>
</tr>
<tr>
<td>Pragmatic rule</td>
<td>34.6 (13)</td>
<td>15.4-66.7</td>
<td>15.8 (14.7)</td>
</tr>
</tbody>
</table>

The data in Table 20 indicate that at least some children in the PLI and SLI groups were able to provide MPA responses at the most sophisticated level of explicitation, pragmatic rule awareness. However, children in the PLI and SLI groups demonstrated the most sophisticated level of MPA, pragmatic rule awareness less frequently than the TLD group. The PLI and SLI groups also demonstrated non-awareness more frequently than the TLD group. For both of these trends, the cwSLI were more likely to demonstrate non-awareness responses and less likely to demonstrate pragmatic rule awareness responses than the cwPLI. Figure 6 and Figure 7 represent the frequency of non-awareness and pragmatic rule awareness responses for each of the three groups.

Separate ANCOVAs were used to investigate whether frequency of awareness/non-awareness responses and frequency of the most sophisticated pragmatic rule awareness responses differed between the TLD, PLI and SLI groups. Age was used as a covariate as it was significantly related to MP Score (see section 3.1.6). Planned contrasts (simple) were used with PLI as reference category.
Results of Levene’s test, when age is included in the model as covariate, indicated that group variances were not equal for frequency of non-awareness responses \( (F(2,79) = 8.026, p<.005) \) but were equal for frequency of pragmatic rule awareness responses \( (F(2,79) = .599, \text{ ns}) \). The assumption of homogeneity of regression slopes was met for frequency of non-awareness responses \( (F(2, 76) = .066, \text{ ns}) \) and frequency of pragmatic rule awareness responses \( (F(2, 76) = .878, \text{ ns}) \).

The covariate, age, was significantly related to frequency of non-awareness responses \( (F(1,78) = 24.629, p<.001) \). There was a significant effect of group on frequency of non-awareness responses after controlling for age \( (F(2,78) = 41.365, p<.001) \). Planned contrasts revealed that the PLI group were significantly more likely to provide non-awareness responses than the TLD group \( (t(78) = -7.8, p<.001) \) but frequency of non-awareness responses in the PLI group did not significantly differ from the SLI group \( (t(78) = 1.47, \text{ ns}) \). The estimated group differences (95% CI) were -12.9 (-16.19 to -9.6) and 3.224 (-1.162 to 7.61) respectively. Given unequal variances, a percentile bootstrap (Efron & Tibishirani, 1993) (1000 replications) was used to check confidence intervals. Confidence intervals were found to be similar with 95% bootstrap CIs of -15.73 to -9.86 and -1.79 to 7.94 respectively.
The covariate, age, was significantly related to frequency of pragmatic rule awareness responses (F(1,78) = 23.035, \( p < .001 \)). There was a significant effect of group on frequency of pragmatic rule awareness responses after controlling for age (F(2,78) = 29.511, \( p < .001 \)). Planned contrasts revealed that the PLI group were significantly less likely to provide pragmatic rule awareness responses compared to the TLD group (\( t(78) = 6.42, p < .001 \)) but frequency of pragmatic rule awareness responses in the PLI group did not significantly differ from the SLI group (\( t(78) = -1.55, \text{ ns} \)). The estimated group differences (95% CI) were 7.21 (4.97 to 9.44) and -2.31 (-5.29 to .67) respectively.

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3 For each group the horizontal line represents the median score, the box represents the middle 50% of scores and the horizontal lines represent the lowest and highest 25% of scores.
Figure 7: Median and Confidence Intervals for the number of pragmatic rule awareness responses

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Footnote: For each group the horizontal line represents the median score, the box represents the middle 50% of scores and the horizontal lines represent the lowest and highest 25% of scores.
4.3.6 Comparison of age-related changes in MPA for cwTLD, cwPLI and cwSLI

Research Question: Is there any difference in developmental progression of MP Scores for cwPLI and cwSLI compared to cwTLD?

The analyses above revealed that the clinical groups were less likely to provide an explicit metapragmatic response than the cwTLD. Next, the developmental progression in MP Scores for each group was compared. It should be noted that this analysis was a preliminary one due to the small sample size of the SLI group and the cross-sectional nature of the study design. The mean MP Scores for each age band for the children with TLD, PLI and SLI are shown in Table 21.
Table 21: Mean, standard deviation (SD) and range of MP score by age band for TLD, PLI and SLI groups

<table>
<thead>
<tr>
<th>Time Slot</th>
<th>TLD</th>
<th>PLI</th>
<th>SLI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean (SD)</td>
<td>Range</td>
</tr>
<tr>
<td>6:00-7:11</td>
<td>14</td>
<td>31.86 (7.9)</td>
<td>22-45</td>
</tr>
<tr>
<td>8:00-9:11</td>
<td>13</td>
<td>43.08 (7.1)</td>
<td>31-54</td>
</tr>
<tr>
<td>10:00-11:11</td>
<td>7</td>
<td>48.57 (10.2)</td>
<td>34-62</td>
</tr>
</tbody>
</table>
Inspection of Table 21 revealed a similar developmental progression in MP Score for the clinical groups as for the cwTLD. For both the PLI and SLI groups MP Score increased between the 6:00-7:11 age band and the 8:00-9:11 age band, although there was clearly a greater variability in MP Scores for all ages in the PLI and SLI groups. This developmental pattern can be clearly seen in Figure 8 below.

**Figure 8: Median and Confidence Intervals for MP Score by age band for cwTLD, PLI and SLI**

For each group the horizontal line represents the median score, the box represents the middle 50% of scores and the horizontal lines represent the lowest and highest 25% of scores.
4.3.7 Comparison of MP Scores for cwTLD, cwPLI and cwSLI controlling for language ability

**Research Question**: Do cwPLI perform differently to cwTLD and cwSLI on the AMP task when structural language ability is controlled for?

Given that the ability to use language to express ideas is a necessary feature of explicit MPA, there was a strong rationale for exploring the contribution that structural language ability makes to MPA. The most sophisticated MPA responses require the child to use pragmatic rule vocabulary to explicitly define the pragmatic rule violation. Furthermore, given that the MPA task is intended to measure more than language ability (i.e. metapragmatics), it is necessary to look at group differences in MPA when language is controlled for. If differences still remain between the cwTLD and the cwPLI and cwSLI once language is controlled for this would indicate that variance specific to the clinical groups is also contributing to MPA ability. Furthermore if differences between the PLI and SLI groups emerge once language is controlled for this would suggest that PLI status is uniquely contributing to MPA ability.

Analysis of Covariance (ANCOVA) was used to investigate whether mean MP Scores differed between the TLD, PLI and SLI groups after controlling for structural language score measures. Age, ACE Naming and TROG-2 were used as covariates. Age was included as a covariate as MPA has been shown to increase with age. ACE Naming and TROG-2 were included as there is good reason to presume that expressive and receptive language measures might be involved in changes in MPA, as children need to understand both the dialogue in the Video Item and the AMP Assessor Question and formulate a response to answer correctly.

Planned contrasts (simple) were used with PLI as reference category to test the hypothesis that, if MP Score is related to pragmatic impairment status, children with PLI would have poorer MP Scores than cwTLD and cwSLI after language ability was controlled for.
Results of Levene’s test when age, ACE Naming and TROG-2 are included in the model as covariates indicate that group variances are equal (F(2,79) = .921, ns). The assumption of homogeneity of regression slopes was met (F(3, 73) = 2.3, ns).

The covariate, age, was significantly related to MP Score (F(1,76) = 28.734, p<0.001). There was a significant effect of ACE Naming on MP Score after controlling for the effect of age (F(1,76) = 4.92, p<.05). The covariate, TROG-2, was also significantly related to MP Score (F(1,76) = 7.95, p<0.01). There was a significant effect of group on MP Score after controlling for age, ACE Naming and TROG-2 (F(2,76) = 5.369, p<0.01).

Planned contrasts revealed that the PLI group had significantly lower MP Scores compared to the TLD group (t(76) = 2.94, p<0.005) but not significantly different scores to the SLI group after controlling for age and ACE Naming and TROG (t(76) = - .98, ns). The estimated group differences (95% CI) were 9.44 (3.06 to 15.83) and -3.05 (-9.27 to 3.17) respectively.

The results indicate that the PLI and SLI groups have poorer MPA than the TLD group even when age and language ability are controlled for. Group differences in MPA between the PLI and SLI group are not present when language ability is controlled for suggesting that pragmatic impairment does not contribute any unique variance in MP Score.

**Comparison of MP Scores for cwPLI and cwSLI controlling for language ability**

The language measures used for all three groups (ACE Naming and TROG-2) only measure specific aspects of structural language ability. These measures do not cover the breadth of structural language impairments characteristic of the clinical groups of interest in this thesis. The cwPLI and SLI, but not the cwTLD, completed the CELF-4 UK in order to provide a broader measure of language ability. The CELF-4 UK subtests can be summed to provide an expressive language index (CELF-ELI) and a receptive language index (CELF-RLI). Given than inclusion criteria for the cwSLI specified that the participant should score within the impaired range on either an expressive language
measure (ACE Naming) or a receptive language measure (TROG-2) it was important to include both CELF-ELI and CELF-RLI composite scores to further investigate the relationship between language ability and MP ability for the clinical groups.

Analysis of Covariance (ANCOVA) was used to investigate whether mean MP scores differed between the PLI and SLI groups after controlling for language. Age, ACE Naming, TROG-2, CELF-ELI and CELF-RLI were used as covariates. Results of Levene’s test indicated that group variances were equal (F(1,48) = .849, ns). The assumption of homogeneity of regression slopes was met (F (2, 39) = .939, ns).

The covariate, age, was significantly related to MP Score (F(1,41) = 10.41, p<.005). There was no significant effect of ACE Naming (F(1,41) = .668, ns), TROG-2 (F(1,41) = .899, ns) or CELF-RLI (F(1,41) = .052, ns) on MP Score after controlling for the effect of age. The covariate, CELF-ELI, was significantly related to MP Score (F(1,41) = 6.08, p<0.05). There was no significant effect of group on MP Score after controlling for age and structural language measures (F(1,41) = .295, ns).

The results of this ANCOVA confirm that differences in MPA between the PLI and SLI group are not present when age and language ability are controlled for. This suggests that the cwPLI do not appear to have impairments in MPA which are disproportionate to their language abilities even when broader measures of language ability are used.
4.3.8 Exploring the predictors of MPA in cwPLI

**Research Question:** To what extent do measures of pragmatic ability and a history of autistic features account for performance on the AMP task for cwPLI?

To address this question the data from the 34 cwPLI were analysed. Predictors of MPA for the cwPLI were of particular interest, given that the central impairment in cwPLI is pragmatic impairment. Previous between-group comparisons for the cwPLI and cwSLI (see section 4.3.2) indicated that the parents/carers of the cwPLI were more likely to identify the presence of features of pragmatic impairment (as measured by the CCC-2) and autism (as measured by the SCQ) in their children. The next stage of the analyses therefore investigated whether CCC-2 Pragmatic Composite and SCQ score predicted MP Score within the PLI group.

Correlational analyses were undertaken to identify potential predictors of MPA for the PLI group. Spearman’s correlations (one-tailed) revealed no significant correlations between MP Score and either SCQ ($r = -0.077$, ns) or CCC-2 Pragmatic Composite ($r = 0.024$, ns). This indicated that the presence of features of pragmatic impairment and a history of autistic features were not significantly associated with MP Score. Given that no within-group effect was found for these measures the analysis was not repeated for the SLI group.
4.4 Exploration of responses to the Social Understanding Question for the cwTLD, cwPLI and cwSLI

This section of the results will address Research Aim 5: To explore social understanding in cwTLD, cwPLI and cwSLI using an exploratory Social Understanding Assessor Question within the AMP.

The SU responses from the 34 cwPLI and 14 cwSLI were analysed. Assessment data from the Raven’s CPM, ACE Naming, TROG-2, CELF-4 UK, CCC-2 and SCQ were also used in the analysis. In addition to the clinical groups, the data from 34 cwTLD aged 6:01 – 10:10 were selected from the 40 cwTLD to be as close in age range to the cwPLI as possible. These children formed a comparison group.

4.4.1 Missing data for SU Scores

A total of 13 participants across the three groups had missing SU responses. No participant had more than four out of a total of 13 responses missing.

**CwTLD**
A total of two SU responses were missing for one participant in the TLD group (0.2% of the total MP data for this group). The response was missing because the experimenter had failed to ask the question.

**CwPLI**
A total of three SU responses were missing for two participants in the PLI group (0.7% of the total MP data for this group). Responses were missing because the experimenter had failed to ask the question.

**CwSLI**
A total of eight SU responses were missing for five participants in the SLI group (4.4% of the total MP data for this group). Responses were missing because either the experimenter had failed to ask the question (N=4) or because the participant’s response was inaudible or unintelligible (N=4).
To avoid losing statistical power, missing values were dealt with using a pro-rating method. In this method each missing value was replaced with the average of the non-missing values for the SU question from the same participant’s data (Field, 2005).

4.4.2 Comparison of SU Scores for cwTLD, cwPLI and cwSLI

Research Question: Is there any difference in performance on the Social Understanding Assessor Question between the cwTLD, cwPLI and cwSLI?

To answer this question the SU Scores for the TLD, PLI and SLI groups were analysed. Mean SU Scores, standard deviations and ranges for the TLD, PLI and SLI groups are presented in Table 22.

Table 22: Mean SU Score, standard deviation (SD) and range for TLD, PLI and SLI groups

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean (SD)</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>TLD</td>
<td>34</td>
<td>12.38 (5.54)</td>
<td>0-23</td>
</tr>
<tr>
<td>PLI</td>
<td>34</td>
<td>5.24 (5.67)</td>
<td>0-19</td>
</tr>
<tr>
<td>SLI</td>
<td>14</td>
<td>5.36 (6.55)</td>
<td>0-20</td>
</tr>
</tbody>
</table>

Note: ^ maximum score = 26.

Figure 9 shows the median SU Score for each group. Preliminary inspection of the data in Table 22 and Figure 9 reveals a higher mean SU Score for the TLD group compared to PLI and SLI groups, and a higher mean SU Score for the SLI group compared to the PLI group. Variances in SU Scores for the PLI and SLI groups are very similar and appear to be positively skewed towards the lower end of the range.
Kolmogorov-Smirnov Tests of normality demonstrated that distributions of SU Scores were not significantly different from normal for the TLD group (D (34) = .120, ns). The distribution of SU Scores were found to be significantly different from normal for the PLI (D (34) = .212, \( p < .001 \)) and SLI (D (14) = .267, \( p < 0.01 \)) groups. Results of Levene’s test indicate that group variances do not differ significantly (F(2,79) = .819, ns).

Analysis of Covariance (ANCOVA) was used to investigate whether mean SU Scores differed between the TLD, PLI and SLI groups. Age and NVIQ as measured by Raven’s CPM were chosen as covariates. Planned contrasts (simple) were used with PLI as reference category. Results of Levene’s test when age and Raven’s CPM are included in the model as covariates indicate that group variances are equal (F(2,79) = .144, ns). The assumption of homogeneity of regression slopes was met (F(3, 74) = .814, ns).

For each group the horizontal line represents the median score, the box represents the middle 50% of scores and the horizontal lines represent the lowest and highest 25% of scores.

Figure 9: Social Understanding (SU) medians and confidence intervals for the TLD, PLI and SLI groups\(^6\)
The covariate, age, was significantly related to SU Score (F(1,77) = 26.8, p<.001). There was also a significant effect of NVIQ on SU Score after controlling for the effect of age (F(1,77) = 6.33, p<.05). There was a significant effect of group on SU Score after controlling for age and NVIQ (F(2,77) = 12.79, p<.001).

Planned contrasts revealed that the PLI group had significantly lower SU Score compared to the TLD group (t(77) = 5.02, p<.001) but not significantly different SU Score to the SLI group (t(77) = 1.16, ns). The estimated group differences (95% CI) were 6.271 (3.785 to 8.756) and 1.886 (-1.348 to 5.12) respectively.

Group differences in SU Score appeared to mirror the pattern of results found for the MP score. The next step was to examine the relationship between MP Score and SU Score. A correlational analysis was undertaken to identify whether MP Score and SU Score were associated for the sample as a whole (i.e. all of the cwTLD, PLI and SLI). Spearman’s correlations (one-tailed) revealed that there was a significant positive correlation between MP Score and SU Score (r = .737, p<.01). This significant positive correlation remained when each group were analysed separately: cwTLD (r = .454, p<0.01), cwPLI (r = .624, p<0.01), cwSLI (r = .718, p<0.01).
4.4.3 Comparison of levels of SU sophistication for cwTLD, cwPLI and cwSLI

**Research Question:** Is there any difference in sophistication of responses to the Social Understanding Assessor Question between the cwTLD, cwPLI and cwSLI?

Group comparisons of MP scores for the cwTLD, cwPLI and cwSLI revealed a significant advantage for the TLD group. The next step in the analysis was to explore the level of sophistication of SU responses at which the cwPLI and cwSLI might be impaired. Group differences in the level of sophistication of SU responses were analysed. The frequency of non-awareness, pragmatic behaviour awareness and psychological state awareness responses were calculated for all SU responses. Table 23 shows the mean, standard deviation (SD) and range of SU responses categorised at each level, expressed as percentage of total responses, for the TLD, PLI and SLI groups.

**Table 23: Mean percentage, standard deviation (SD) and range of SU responses categorised as non-awareness, pragmatic behaviour and psychological state for TLD, PLI and SLI groups**

<table>
<thead>
<tr>
<th></th>
<th>TLD</th>
<th>PLI</th>
<th>SLI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N=34</td>
<td>N=34</td>
<td>N=14</td>
</tr>
<tr>
<td></td>
<td>Mean (SD)</td>
<td>Range</td>
<td>Mean (SD)</td>
</tr>
<tr>
<td>Non-awareness</td>
<td>27 (28.7)</td>
<td>0-100</td>
<td>67 (34.5)</td>
</tr>
<tr>
<td>Pragmatic behaviour</td>
<td>51 (29.9)</td>
<td>0-92</td>
<td>25 (28.5)</td>
</tr>
<tr>
<td>Psychological state</td>
<td>22 (23)</td>
<td>0-77</td>
<td>8 (13.3)</td>
</tr>
</tbody>
</table>

The data in Table 23 indicate that at least some children in the PLI and SLI groups were able to provide SU responses at the most sophisticated level, psychological state awareness. However, children in the PLI and SLI groups demonstrated psychological state awareness responses less frequently than the TLD group. The PLI and SLI groups also demonstrated non-awareness responses more frequently than the TLD group.
Separate ANCOVAs were used to investigate whether frequency of non-awareness responses and frequency of the most sophisticated psychological state awareness responses differed between the TLD, PLI and SLI groups. Age and NVIQ as measured by Raven’s CPM were chosen as covariates as they were found to be related to SU Score. Planned contrasts (simple) were used with PLI as reference category.

Results of Levene’s test, when age and NVIQ were included in the model as covariates, indicates that group variances were equal for frequency of non-awareness responses \( (F(2,79) = 1.53, \text{ ns}) \) but were not equal for frequency of psychological state awareness responses \( (F(2,79) = 5.33, p<.01) \). The assumption of homogeneity of regression slopes was met for frequency of non-awareness responses \( (F(2, 76) = .220, \text{ ns}) \) and frequency of psychological state awareness responses \( (F(2, 76) = 1.843, \text{ ns}) \).

The covariate, age, was significantly related to frequency of non-awareness responses \( (F(1,77) = 24.35, p<.001) \). There was no significant effect of Raven’s CPM on frequency of non-awareness responses after controlling for the effect of age \( (F(1,77) = 3.34, \text{ ns}) \). There was a significant effect of group on frequency of non-awareness responses after controlling for age and Raven’s CPM \( (F(2,77) = 13.3, p<.001) \).

Planned contrasts revealed that the PLI group were significantly more likely to provide non-awareness responses than the TLD group \( (t(77) = -5.11, p<.001) \) but frequency of non-awareness responses in the PLI group did not significantly differ from the SLI group \( (t(77) = -1.06, \text{ ns}) \). The estimated group differences (95% CI) were \(-4.79 (-6.65 \text{ to } -2.92)\) and \(-1.29 (-3.72 \text{ to } 1.14)\) respectively.

The covariates, age \( (F(1,77) = 10.49, p<.005) \) and Raven’s CPM \( (F(1,77) = 6.35, p<.05) \) were significantly related to frequency of psychological state awareness responses. There was a significant effect of group on frequency of psychological state awareness responses after controlling for age and Raven’s CPM \( (F(2,77) = 3.42, p<.05) \).

Planned contrasts revealed that the PLI group were significantly less likely to provide psychological state awareness responses than the TLD group \( (t(77) = 2.62, p<.05) \) but
frequency of psychological state awareness responses in the PLI group did not significantly differ from the SLI group (t(77) = .812, ns). The estimated group differences (95% CI) were 1.48 (.35 to 2.61) and .6 (-.87 to 2.07) respectively. Given unequal variances, a percentile bootstrap (Efron & Tibshirani, 1993) (1000 replications) was used to check confidence intervals. Confidence intervals were found to be similar with 95% bootstrap CIs of .44 to 2.61 and -.51 and 1.82 respectively.

4.4.4 Comparison of SU Scores for cwTLD, cwPLI and cwSLI controlling for language ability

Research Question: Do cwPLI perform differently to cwTLD and cwSLI on the SU Question when structural language ability is controlled for?

Analysis of Covariance (ANCOVA) was used to investigate whether mean SU Scores differed between the TLD, PLI and SLI groups after controlling for language. Age, Raven’s CPM, ACE Naming and TROG-2 were used as covariates. Planned contrasts (simple) were used with PLI as reference category to test the hypothesis that, if SU Scores are related to pragmatic impairment, cwPLI would have poorer SU Scores than cwTLD and cwSLI when structural language is controlled for. Results of Levene’s test when age, NVIQ as measured by Raven’s CPM, ACE Naming and TROG-2 are included in the model as covariates indicate that group variances are equal (F(2,79) = .137, ns). The assumption of homogeneity of regression slopes was met (F(3, 72) = 1.23, ns).

The covariate, age, was significantly related to SU Score (F(1,75) = 25.284, p<.001). After controlling for the effect of age, the covariate Raven’s CPM was significantly related to SU Score (F(1,75) = 4.329, p<.05). There was no significant effect of ACE Naming (F(1,75) = 3.011, ns) or TROG-2 (F(1,75) = .319, ns) on SU Score after controlling for the effect of age and Raven’s CPM. There was a significant effect of group on SU Score after controlling for age, Raven’s CPM and ACE Naming and TROG-2 (F(2,76) = 3.768, p<0.05).
Planned contrasts revealed that the PLI group had significantly lower SU Scores compared to the TLD group (t(75) = 2.51, p<.05) but not significantly different scores to the SLI group (t(75) = 1.48, ns). The estimated group differences (95% CI) were 4.14 (.849 to 7.42) and 2.38 (-.822 to 5.59) respectively.

The results indicate that the PLI and SLI groups have poorer SU performance than the TLD group even when age and language ability are controlled for. Group differences in SU ability between the PLI and SLI group are not present when language ability is controlled for. This suggests that the cwPLI do not appear to have impairments in SU ability which are disproportionate to their language abilities.

**Comparison of SU Scores for cwPLI and cwSLI controlling for language ability**

As discussed for the MP response score analyses, the language measures used for all three groups (ACE Naming and TROG-2) only measure specific aspects of structural language ability. These measures do not cover the breadth of structural language impairments characteristic of the clinical groups of interest in this thesis. As previously discussed, the cwPLI and SLI completed the CELF-4 UK in order to provide a broader measure of language ability. The CELF-4 UK subtests can be summed to provide an expressive language index (CELF-ELI) and a receptive language index (CELF-RLI). Given than inclusion criteria for the cwSLI specified that the participant should score within the impaired range on either an expressive language measure (ACE Naming) or a receptive language measure (TROG-2) it was important to include both CELF-ELI and CELF-RLI composite scores to further explore the relationship between language ability and SU ability for the clinical groups only.

Analysis of Covariance (ANCOVA) was used to investigate whether mean SU Scores differed between the PLI and SLI groups after controlling for all structural language measures. Age, NVIQ as measured by Raven’s CPM, ACE Naming, TROG-2, CELF-ELI and CELF-RLI were used as covariates. Results of Levene’s test indicated that group variances were equal (F(1,46) = 1.399, ns). The assumption of homogeneity of regression slopes was met. (F (2, 38) = .724, ns).
The covariate, age, was significantly related to SU Score ($F(1,40) = 22.78, p<.001$). There was no significant effect of Raven’s CPM ($F(1,40) = .023, \text{ ns}$), ACE Naming ($F(1,40) = 1.134, \text{ ns}$), TROG-2 ($F(1,40) = 1.98, \text{ ns}$), CELF-RLI ($F(1,40) = 1.95, \text{ ns}$) and, although approaching significance, CELF-ELI ($F(1,40) = 3.54, \text{ ns}$) on SU Score after controlling for the effect of age. There was a significant effect of group on SU Score after controlling for age and structural language measures ($F(1,40) = 8.12, p<.01$) with the PLI group scoring significantly lower than the SLI group ($t(40) = 2.85, p<.01$). The estimated group difference (95% CI) was 4.72 (1.37 to 8.06).

The results of this ANCOVA indicate that the clinical groups can be differentiated on SU Score once structural language ability has been controlled for. This suggests that the cwPLI do appear to have impairments in SU ability which are disproportionate to their language abilities, indicating that the presence of pragmatic impairment (as measured by PLI status) does uniquely contribute to SU ability above the contribution made by the presence of language impairment.
4.4.5 Exploring the predictors of SU in cwPLI

**Research Question:** To what extent do measures of language ability, pragmatic ability and a history of autistic features account for performance on the SU Question for the cwPLI?

The previous analysis indicated that PLI status was shown to contribute unique variance to SU Scores. The next stage of the analysis was to explore predictors of SU ability for cwPLI. Correlational analyses were undertaken to identify potential predictors of SU ability for the PLI group. Spearman’s correlations (one-tailed) revealed that there were significant positive correlations between SU Score and age ($r = .382$, $p < .05$), CELF-ELI ($r = .494$, $p < .005$), TROG-2 ($r = .439$, $p < .01$), and ACE Naming ($r = .355$, $p < .05$). However, no significant correlations were found between SU Score and Raven’s CPM ($r = .046$, ns), CELF-RLI ($r = .251$, $p < .05$), SCQ ($r = -0.112$, ns) or CCC-PRAG ($r = .094$, ns).
4.5 Summary of Results

- Substantial inter-rater agreement was demonstrated for the MP Scores and the SU scores
- Good internal consistency and sensitivity to age-related changes in MPA were demonstrated for the AMP Video Items and the MPA Assessor Questions
- There was a significant increase in MP Scores for cwTLD between 6:00-7:11 years and 8:00-9:11 years with a non-significant tendency for some continuing improvement after this age
  - The frequency of non-awareness responses decreased between 6:00-7:11 years and 8:00-9:11 years
  - The frequency of pragmatic rule awareness responses increased between 6:00-7:11 years and 8:00-9:11 years
- There was a significant difference in MP Scores between the TLD group and both the PLI and SLI group and these differences remained when age and language ability (ACE Naming and TROG-2) were controlled for
- There was no significant difference in MP Scores between the PLI and SLI groups and this difference remained non-significant when age and language ability (ACE Naming, TROG-2, CELF-ELI and CELF-RLI) were controlled for
- There was a significant difference in SU Scores between the TLD group and both the PLI and SLI group and these differences remained when age and language ability (ACE Naming and TROG-2) were controlled for
- There was a significant difference in SU Score between the PLI and SLI groups after controlling for age, nonverbal IQ (Raven’s CPM) and language ability (ACE Naming, TROG-2, CELF-ELI and CELF-RLI)
5 Discussion

It is the aim of this chapter to draw together what is currently known about MPA with the results of the analyses carried out in this thesis. Methodological limitations will be discussed and suggestions for further investigations into MPA will be considered. The clinical implications of the results will be explored, with reference to the assessment and treatment of MPA in cwPLI and suggestions for future clinical applications of the AMP will be outlined.

The central aim of the thesis was to create a novel assessment of MPA which could then be used to measure MPA in school-aged cwTLD, cwPLI and cwSLI. In order to achieve this, the Assessment of Metapragmatics (AMP) was devised, piloted and used to collect data on MPA. The AMP contains 13 videoed interactions of child dyads performing conversational scenarios in which one of the children perform a pragmatic rule violation. The videoed interactions were shown to each research participant. The participant answered a set of pre-scripted Assessor Questions which aimed to measure Descriptive MPA, Reflective MPA and Metapragmatic Rule Awareness. An exploratory Social Understanding (SU) Awareness Question measured the ability to attribute a personality characteristic to the child that made the pragmatic rule violation. For each question, responses were recorded, transcribed and scored according to a scoring scheme developed as part of the thesis. The AMP development phase resulted in a standardised method of AMP task administration, a final list of AMP Video Items which demonstrated good internal consistency, a final list of Assessor Questions which demonstrated sensitivity to age-related changes in MPA and a final scoring scheme for responses which demonstrated substantial inter-rater reliability.

MPA development in cwTLD was explored and age-related changes in MPA were found to occur between the ages of 6:00 and 9:11 years old. Comparisons of MPA were made between cwTLD, cwPLI and cwSLI. Both PLI and SLI groups demonstrated impaired MPA in comparison to the TLD group. In addition, impairments in MPA appeared to be related to language ability, rather than pragmatic ability. The exploratory SU Awareness Question also demonstrated age-related changes. Furthermore SU Scores were impaired in the PLI and SLI groups when compared to the TLD group. However, when structural language abilities were controlled for the PLI group demonstrated
significantly poorer SU Scores than the SLI group, indicating that pragmatic ability may be related to performance on this SU Question. The results of each research aim and the theoretical implications of these results on the body of knowledge pertaining to MPA will now be discussed in more detail in each of the sections below.

5.1 Research Aim 1: The development of the AMP task

The first aim of the thesis was to develop and pilot a clinical tool for assessment of MPA in school-aged children: The Assessment of Metapragmatics (AMP).

5.1.1 Clinical utility of the AMP task

Clinical utility was an important consideration during the pilot phases of the AMP development. Utility here refers to the ease with which the task can be used in a clinical/school setting and the suitability of use for a school-aged population. Overall the results suggest that the AMP task does have appropriate utility. Piloting with the three cwPLI in phase 5 informed the task design and administration protocol. During the piloting the author reflected on whether the task design was child-friendly and enjoyable for the children to take part in. Task demands were judged by the author to be appropriate for the age group under investigation, and special consideration was given to the abilities of those children with language impairments. This was done by viewing each Video Item twice, allowing repetitions of questions and asking three MPA Assessor Questions to maximise the child’s opportunities to provide a metapragmatic response.

The AMP required a basic set of equipment; an AMP DVD, a laptop, a Dictaphone and a list of AMP Assessor Questions. The task was therefore practical and user-friendly to carry out. The mean running time for each AMP Video Item was 1 minute 11 seconds and the AMP task took approximately 20 minutes to carry out on average. The author judged that during AMP testing sessions the child’s attention was maintained. The AMP was therefore a time efficient research task judged by the author not to be excessively lengthy or tiring for the child. The task achieved its aim to be carried out with reasonable brevity whilst still collecting sufficient data to be useful to researchers. However, in its current form a complete set of AMP responses took on average 1 hour
to transcribe and 15-20 minutes to score, arguably a prohibitive length of time for SLTs to use as part of a battery of clinical assessments. The application of the task as part of a clinical assessment for cwPLI and cwSLI will be further discussed in section 5.6.

5.1.2 Evaluation of the AMP Video items

The use of videoed interactions proved to be a successful method for collecting data on children’s explicit MPA. The Video Items were created using pre-scripted conversations written by the author. Feedback from a local Speech and Language Therapist (SLT) was used to develop and refine the scripts before filming to ensure that adequate stage directions (e.g. facial expressions, tone of voice) were written into the scripts to make the pragmatic rule violation salient.

Once the scripts had been filmed and edited into the AMP Video Items the next step was to establish the face validity of the Video Items. Face validity here refers to whether the Video Item adequately portrayed the pragmatic rule violation so that a child could identify the error. During this phase of the pilot study (phase 1) three cwPLI viewed the Video Items and were asked the AMP Assessor Questions for each video. Each Video Item was also scrutinised by the author and a further two qualified SLTs who were told which pragmatic rule violation the Video Item intended to portray. The SLTs were asked to feedback as to whether the item did portray the pragmatic rule violation as intended. The children’s responses to the Assessor Questions and the adults’ feedback were analysed. Any Video Items which were judged not to be an adequate portrayal of the pragmatic rule violation and which did not elicit a metapragmatic response specifically relating to the target pragmatic error were eliminated. Using this method 26 Video Items were judged to have adequate face validity. In pilot phase 2 the 26 Video Items were shown to a larger group of cwPLI and cwTLD to identify which items most consistently elicited an explicit MPA response. This resulted in the selection of the final 13 Video Items.

Whilst face validity of the AMP Video Items was established in the pilot stages of task development, concurrent validity for the AMP task could not be established due to the lack of other published MPA assessments. Concurrent validity would be established by comparing performance on the AMP to another assessment of MPA. The lack of concurrent validity for the AMP is acknowledged as a limitation of the current study.
Videoed interactions were chosen in order to assess MPA in a more naturalistic way than has been achieved by traditional experimental MPA tasks. This was done despite the fact that most previous MPA tasks have favoured comic strip or written narrative methodologies such as narrative completion (Bernicot et al., 2007; Laval, 2003; Sachs et al., 1991) or metapragmatic judgements about the appropriacy of communication in hypothetical situations (Axia & Baroni, 1985; Baroni & Axia, 1989; Bernicot, 1991; Bernicot & Laval, 1996; Wilson & Milosky, 1987). Indeed, only one other study has used videoed interactions to assess explicit MPA (Wilkinson & Milosky, 1987).

It was felt that the videos would enable a more naturalistic portrayal of the pragmatic rules under investigation than those reported in typical experimental studies. There was greater scope to reflect real-life use of language, which arguably should be of central interest to SLTs working with children with language impairment. The videoed interactions also contained richer sources of contextual information than comic strip or written narratives, such as information in the environment, nonverbal information such as facial expression and paralinguistic information such as tone of voice which are known to support pragmatic interpretation (Perkins, 2007).

The AMP provided a standardised methodology for assessing MPA for a range of pragmatic rule violations. Investigations into MPA to date have measured MPA for only a limited range of linguistic pragmatic rules such as politeness and idiom comprehension. In contrast, the AMP measured MPA for the pragmatic rule violations reported most frequently for cwPLI. The majority of pragmatic rule violations reported for these children tend to be linguistic errors such as errors of informativeness (Adams, 2001) or verbosity and dominance (Adams et al., 2005). It can be argued that the AMP did succeed in measuring MPA for these key areas of impairment in cwPLI. For example, errors in dominance were portrayed in the Video Item “Speaker dominates the conversation”, errors in verbosity were portrayed in the Video Item “Speaker provides excessive detail” and errors in informativeness were portrayed in the Video Item “Speaker provides minimal response”.

The AMP was created to be a clinical assessment tool and was therefore designed to include a comprehensive range of linguistic pragmatic rule violations and also the types of paralinguistic and nonverbal pragmatic rule violations demonstrated by some cwPLI,
such as errors of prosody, tone of voice or eye contact (Adams, 2001; MacKay & Anderson, 2000; Perkins, 2007). Indeed, it is common practice for assessments of pragmatics such as the Pragmatic Profile of Early Communication Skills for early years children (Dewart & Summers, 1988) and the Pragmatics Profile (PP) checklist in the CELF-4 UK (Semel et al., 2006) for school-aged children to make reference to linguistic, paralinguistic and nonverbal impairments.

Despite care being taken to include these paralinguistic and nonverbal rule violations in the AMP Video Items, the majority of these items did not make it to the final version of the AMP. In actuality, once the Video Items had been edited to leave only the most accurate portrayals of pragmatic rule violations, there were no Video Items portraying a paralinguistic error and only two Video Items which portrayed a nonverbal pragmatic rule violation (“Speaker looks away from interlocutor” and “Speaker stands too close to interlocutor”). The Video Items portraying paralinguistic rule violations (“Speaker talks too loudly”) were eliminated during the pilot phase as they were judged to not accurately portray the target error and therefore were deemed to have poor face validity. This was due mainly to issues with the quality of acting and the child actors often feeling inhibited to shout during the filming of these scripts. This highlights the difficulty in using this methodology to assess MPA for nonverbal and paralinguistic pragmatic rule violations. Arguably, nonverbal and paralinguistic pragmatic rules have a high impact on communication. Therefore any SLT aiming to remediate pragmatic rule violations in a child with language impairment should assess and treat the child’s paralinguistic and nonverbal communication skills as well as their linguistic communication skills (Perkins, 2007).

The development of the AMP was a costly and time-consuming procedure, involving time for writing, rehearsing and filming scripts as well as the time required to edit, pilot and re-edit the videoed interactions into the final version of the AMP. There was variability in the quality of the acting and the length of time it took to film each Video Item. As previously stated, some pragmatic rule violations such as “Speaker talks too loudly” were difficult for the child actors to perform. Other pragmatic rule violations such as “Speaker looks away from interlocutor” were difficult to film due to the camera angle or stage arrangement. Filming of such Video Items therefore took longer than some of the more straightforward scripts. In fact, despite lots of time and effort put into the filming and editing of the 36 Video Items, only 13 were judged to be of suitable face
validity to be included in the final assessment suggesting a need for careful planning, rehearsal and execution with regards to the way in which the scripts are performed, filmed and edited.

In a future version of the AMP it would be useful to include items which measured MPA for paralinguistic and nonverbal pragmatic rules. As it is now known that these rule violations are difficult to film, it would be necessary to script and film multiple exemplars for each target rule violation to increase the likelihood that at least one example of each rule violation was adequately portrayed. Furthermore, it might be necessary for the author to provide the child actor with detailed demonstrations of the pragmatic rule violation so that they understood what to portray and how to do so. It would also be necessary to apply the AMP in a more systematic way to assessments of pragmatic behaviour in order to allow for direct comparison between pragmatic behaviour and MPA in cwPLI. To do this, a Video Item could be produced for each pragmatic rule violation listed in the TOPICC (Adams et al., 2011) or the Pragmatic Protocol (Prutting & Kirchner, 1983). Further discussion of the current and future clinical applications of the AMP will be provided in sections 5.6 and 5.7.

5.1.3 Evaluation of the AMP Assessor Questions

The Assessor Questions were intended to elicit aspects of MPA which were considered to be of use for a clinical assessment for cwPLI and cwSLI. The challenge here was that most previous MPA tasks were designed for use with cwTLD and there was therefore no precedent for an effective, standardised method of MPA assessment for cwPLI or cwSLI. The final version of the Assessor Questions is listed below:

- **Comprehension Check**
  
  *What were the children talking about?*

- **Descriptive MPA**
  
  *Something went wrong in the conversation.*
  
  *What went wrong?*

- **Reflective MPA**
  
  *Why is that wrong?*

- **MP Rule awareness**
  
  *What could the boy have done differently?*

- **Social understanding**
  
  *What kind of person is the boy?*
Comprehension check

The comprehension check question was judged by the author to be clinically useful for ascertaining whether the child understood at least some content of the dialogue. This question should be retained for clinical assessment purposes.

MPA Assessor Questions

The purpose of the MPA Assessor Questions was to measure explicit MPA for specific pragmatic rule violations. The outcome of phase 3 of the pilot study indicated that a general metapragmatic question (“Tell me how the children were talking”) did not elicit an explicit metapragmatic response. In contrast, the outcomes of phase 4 of the pilot indicated that the MPA Assessor Questions (Descriptive MPA, Reflective MPA and Metapragmatic Rule Awareness Assessor Questions) were able to elicit explicit MPA responses. These questions were then used to collect information on MPA in cwTLD, cwPLI and cwSLI, as will be discussed in sections 5.3 and 5.4.

SU Question

The SU Question provided useful information about the child’s ability to attribute a personality characteristic to the child that violated the pragmatic rule. Whilst not strictly measuring an aspect of MPA it can be viewed as complementing and enriching the examiner’s knowledge of the child’s MPA. From a clinical perspective, the functional impact of an intervention is of central value. When the speaker or interlocutor violates a pragmatic rule this affects the ways in which s/he is perceived by others. Such perceptions of the speaker/interlocutor as “rude” and “unfriendly” or as “polite” and “friendly” are important in shaping the person’s social interactions and communication success. If a child was both socially interested in interacting with others and had awareness of the social impact of violating pragmatic rules this could theoretically motivate the child to abide by the rules. The relationship between social cognition and pragmatics is explored in more detail in section 5.6.2.

In the current formulation of the AMP, the child is given only one opportunity per Video Item to demonstrate their social understanding. In contrast, there were three opportunities for the child to demonstrate MPA. If the child’s social understanding of
the pragmatic rule is of equal clinical importance as MPA, it could be argued that the child should also be given an equal number of opportunities to demonstrate social understanding. In the current version of the AMP only one SU Question was trialled as it was seen as an exploratory question which enabled an examination of the potential relationship between awareness of pragmatic rule violation and awareness of the social consequences of the rule violation. The results of these analyses will be outlined and discussed in section 5.5, together with suggestions for further SU Questions.

**Emotion and Behaviour Awareness Questions**

The Emotion Awareness and Behaviour Awareness questions were removed from the final version of the AMP as they were judged to elicit a response very similar to the Descriptive MPA questions. The questions were intended to tap into the emotional and behavioural consequences of the pragmatic rule violation within the conversation. However, the questions failed to elicit explicit reflection on such emotional and behavioural consequences because the questions were incorrectly worded to do so.

**5.1.4 Reliability of the AMP Scoring Guide**

One of the key outcomes of the development phase was the production of a written scoring scheme which standardised the scoring of responses and demonstrated substantial inter-rater agreement (see section 5.2). The AMP was designed to measure children’s ability to explicitly talk about pragmatic rule violations. During the development of the Scoring Guide, special emphasis was given to creating a scoring scheme which was based on the levels of explicitation framework (Karmiloff-Smith, 1986), a theoretical model of metarepresentation which had previous been successfully used to measure MPA in cwTLD (Baroni & Axia, 1989).

The results of the pilot phase 6 demonstrated that the children’s responses to the AMP Assessor Questions could be scored using the three-point scale. This demonstrated the usefulness of a three-point levels of explicitation scoring scheme (non-awareness, linguistic marker awareness and pragmatic rule awareness) for the measurement of MPA. It is therefore proposed that future investigations of MPA should use this three-point scoring scheme to measure levels of explicitation. In sections 5.3 and 5.4, the
results of data collected using the levels of explicitation scoring scheme used in the AMP will be discussed in relation to MPA for cwTLD, cwPLI and cwSLI.

5.2 Research Aim 2: Sensitivity and Reliability of the AMP

The second aim of the thesis was to determine the reliability and sensitivity of the AMP as a measure of age-related changes in MPA when it was administered to cwTLD, cwPLI and cwSLI.

The analyses sought to answer the following research questions:

1. Does the AMP demonstrate good inter-rater reliability?
2. Does the AMP demonstrate internal consistency reliability?
3. Is the AMP sensitive to age-related changes in MPA?

The results of the analyses for each question will now be discussed in turn.

Research Question: Does the AMP demonstrate good inter-rater reliability?

The results of the inter-rater reliability study indicated substantial inter-rater agreement scores for both the MP Score (86% agreement) and the SU Score (86% agreement). It should be noted that minimal training was given to the research assistant who took part in the inter-rater reliability study. This training consisted of a short talk outlining the purpose of the AMP and time given to the research assistant to read through the scoring guide. This suggests that the AMP could be used by clinicians to reliability assess MPA in school-aged children with minimal training. However, the fact that time had been taken to transcribe the children’s responses may have contributed to the substantial level of inter-rater reliability. Having a written record of responses arguably increased the reliability of scoring because it allowed the coders more time to consider the level of explicitation in the response than if they were attempting to score on-line as the child was speaking. In clinical practice, the time taken to transcribe the AMP responses may be prohibitive and it is not known whether comparable inter-rater reliability would have been established had responses been scored on-line as the assessment was being carried out.
**Research Question:** Does the AMP demonstrate internal consistency?

The results indicate that the AMP Video Items demonstrated good internal consistency, with all Video Items significantly correlated with each other (correlations between .304 to .669) and with the Total MP Score (correlations between .595 to .842). Cronbach’s alpha was $\alpha = 0.915$ indicating good split-half test reliability for the Video Items. Furthermore, when Cronbach’s alpha for deletion was applied, all alpha values were between 0.901 and 0.914, indicating that no Video Items needed to be removed to increase reliability. Taken as a whole, these analyses indicated that the AMP Video Items were measuring MPA in comparable ways to each other, suggesting that this standardised method of eliciting MPA responses can be reliably applied to a range of pragmatic rule violations.

Good internal consistency was also demonstrated for the three MPA Assessor Questions. The Descriptive MPA, Reflective MPA and Metapragmatic Rule Awareness sub-scores all correlated significantly with each other and with the Total MP Score (correlations between .857 to .955). These results indicated that children did produce similar MPA scores for each of the three MPA Assessor Questions, suggesting that these questions were eliciting explicit MPA in comparable ways.

**Research Question:** Is the AMP sensitive to age-related changes in MPA?

The correlational analyses indicated sensitivity to age-related changes in MPA for the 13 AMP Video Items. Regression analysis revealed that the age band significantly predicted MP Scores for 11 of the Video Items. The two Video Items which did not follow this trend were Video Item 4 “Interlocutor provides minimal response” and Video Item 13 “Speaker dominates the conversation”, for which participants appeared able to provide an MPA response with relative ease. However, as stated above, Cronbach’s alpha for deletion indicated that removing these Video Items did not increase reliability. All 13 Video Items were retained to ensure that the relatively easy items would enable the younger children to achieve some success and the relatively difficult items would allow scope for future testing with older age groups.
5.3 Research Aim 3: Investigation of MPA in cwTLD

The third aim of the thesis was to investigate MPA in school-aged cwTLD using the AMP.

The analyses sought to answer the following research questions:

1. Are there any differences in performance on the AMP for the cwTLD in the three age bands between 6 and 11 years?
2. Are there any differences in the level of explicitation (i.e. the level of explicitness) of MPA responses given by the cwTLD in each of the three age bands?

The results of the analyses for each question will now be discussed in turn.

Research Question: Are there any differences in performance on the AMP for the cwTLD in the three age bands between 6 and 11 years?

Performance on the AMP task showed a clear developmental progression in MPA for cwTLD in the school years. Results show a significant increase in total MP Scores between 6:00-7:11 years and 8:00-9:11 years with a non-significant tendency for some continuing improvement after this age. This result concurs with evidence from previous studies that 7 years of age marks a specific point in the development of MPA (Axia & Baroni, 1985; Baroni & Axia, 1989; Bernicot & Laval, 1996).

The children in the youngest age band (6:00-7:11 years) achieved on average only 40.9% of the maximum MP Score. In contrast, the children in the older age bands (8:00-9:11 and 10:00-11:11 years) achieved on average around 55% and 62% respectively of the maximum MP Score indicating that even the oldest children did not achieve the maximum score on the AMP. This suggests that, in addition to a developmental shift in MPA around 7 years of age there is likely to be a more gradual increase in MPA throughout the school years and beyond. Such a gradual improvement in MPA after 7 years of age has been demonstrated in other studies and appears to be a robust effect (Bernicot, 1991; Bernicot & Laval; 1996; Hickmann et al., 1993; Wilkinson & Milosky, 1987).
The finding that the youngest cwTLD, aged 6:00-7:11 years, had significantly lower MP scores than the 8:00-9:11 years also has implications for the relationship between MPA and pragmatic ability. Whilst pragmatic ability is known to improve during the school years, the cwTLD were recruited to have no frank impairment in pragmatic or linguistic ability. Therefore, they are assumed to have typical pragmatic development. The fact that these youngest children did not score highly on the AMP indicates that MPA is not strongly associated with pragmatic ability. This assumption is supported by previous studies which have demonstrated that explicit MPA develops independently from pragmatics (Bernicot et al., 2007; Sachs et al., 1991).

This implies that explicit metapragmatic ability is not necessary for the development of pragmatic functioning in the typically developing population. The assumption in typical development is that children develop implicit MPA alongside typical pragmatic skills but rarely have need of explicit reference to it except when there are specific instances of pragmatic ambiguity or rule breaking. In line with other aspects of metacognition and metalinguistics, self-regulatory aspects of MPA could theoretically run in the ‘background’ whilst the pragmatic behaviour is occurring (Cazden, 1974; Veenman et al., 2006). Therefore the child is not required to have explicit MPA during the task, unless a pragmatic error occurs or they are directly asked to reflect on what happened.

**Research Question:** Are there any differences in the level of explicitation (i.e. the level of explicitness) of MPA responses given by the cwTLD in each of the three age bands?

The next stage of the analysis sought to investigate developmental trends in the level of explicitation for MPA responses for cwTLD. The MPA responses were scored as demonstrating non-awareness, linguistic marker awareness or pragmatic rule awareness. Investigation of the frequency of these responses between age bands revealed a developmental shift for MPA in two directions. Firstly, there was a shift in non-awareness responses between 6:00-7:11 years and 8:00-9:11 years with a tendency for the frequency of responses to decrease in the older age bands. Secondly, there was a shift in pragmatic rule awareness responses between 6:00-7:11 years and 8:00-9:11 years with a tendency for the frequency of responses to increase in the older age band.

The frequency of linguistic marker awareness did not appear to differ between the age bands and was therefore not investigated using statistical analyses. This pattern of
results for the linguistic marker responses was unexpected given that the 7-year-olds in Baroni and Axia’s (1989) study gave significantly more linguistic marker awareness responses and fewer non-awareness responses than the 5-year-olds. Baroni and Axia’s participants were aged between 4:03 and 8:03 years old, whereas the participants in this thesis were aged up to 11:08 years old. The inclusion of slightly older children in this thesis may have driven the significant effect of age on pragmatic rule awareness responses not demonstrated by Baroni and Axia (1989). In fact, there was a non-significant trend for increased pragmatic rule awareness responses in the oldest children in Baroni and Axia’s (1989) study.

The cross-sectional design used in this thesis may also explain the apparent lack of difference between the age bands for the linguistic marker awareness responses. It may be that during development, children progress from non-awareness to linguistic marker awareness and then to metapragmatic awareness for a pragmatic rule. In Karmiloff-Smith’s (1986) original conceptualisation of the levels of explicitation, each level was intended to describe a theoretical distinction from implicit to explicit representational explicitation. This model was intended to describe the emergence of metalinguistic awareness but arguably it can also be applied to metapragmatic awareness. The move from implicit explicitation (termed “non-awareness”) to primary explicitation (termed “redescription”) was seen as the first crucial change in representational explicitation. Karmiloff-Smith (1986) hypothesised that early language involved the use of procedural abilities i.e. children use words that they have learned to say without any explicit awareness of the linguistic rules underlying their use. At the implicit explicitation level the child’s linguistic procedures could run only in their entirety. At the primary explicitation level, the linguistic procedure could be accessed and “operated on” implicitly but could not be operated on explicitly. Both implicit and primary levels of explicitation were not thought to be accessible to conscious awareness and the child could not talk explicitly about her use of the linguistic procedure being represented. As the child’s awareness of the linguistic procedure increased she became able to explicitly reflect on her use at what was termed the secondary level of explicitation. This level of explicitation was referred to as “linguistic marker awareness” by Baroni and Axia (1989). At this level the representation can be accessed explicitly but cannot be fully described. It is only at the next level of explicitation, termed tertiary explicitation, referred to as “pragmatic rule awareness” by Baroni and Axia (1989) that the representation can be explicitly described using a linguistic rule.
Similar changes between non-awareness and redescription may well occur for pragmatic rules as well as linguistic rules. The notion of such a change could add to our theoretical understanding of how a child might progress from non-awareness to linguistic marker awareness as it posits that the pragmatic rules (which are identified at the linguistic marker stage) are represented and redescribed at a stage above non-awareness but below the level of explicit awareness. This suggests that the child should be capable of using pragmatic rules well before he/she is able to talk about these rules explicitly.

Such a developmental progression from linguistic marker to pragmatic rule awareness could be demonstrated through use of a longitudinal design in which MPA could be assessed at a starting point, such as 6-years-old, and then re-assessed at intervals of one to two years, in order to chart developmental progression within the individual.

The small sample sizes in the TLD group age bands may also have contributed to the apparent lack of difference in linguistic marker awareness. There were 14 children in the youngest age band, and 13 children in each of the older age bands. Small sample sizes are more vulnerable to the effects of individual variation with the sample whereas larger sample sizes may have generated adequate power to demonstrate between group differences in linguistic marker awareness. Whilst the effect of small sample sizes cannot be ruled out it is unlikely to explain the disparity between the current results and those of Baroni and Axia (1989), given that they also had small sample sizes (16 children in the 5-year-old group and 16 children in the 7-year-old group).

Despite the trend in the current thesis for pragmatic rule awareness responses to be provided more frequently by the older age bands, approximately one quarter of the responses from the youngest age band demonstrated MPA at this level. This suggests that for at least some cWTLD, pragmatic rules can be explicitly spoken about at the age of 6 or 7 years. Evidence from spontaneous metapragmatic comments also indicates that children aged 2 to 4 years can demonstrate MPA, albeit during on-line reflection of their own or other’s communication (Becker, 1988). The presence of MPA in such young children raises the issue of whether the developmental shift in MPA is a truly conceptual shift in awareness or whether it is an artefact of the way in which MPA is assessed.
It is possible that the lower MPA scores of the youngest age band occurred due to task demands, such as language or memory load, rather than competence issues. A similar debate with regards to competence versus performance in young children has been outlined with regards to other metarepresentational tasks such as ToM (Fodor, 1992; Perner et al., 1987; Wellman et al., 2001). With regards to MPA, the decision to show each AMP video twice was done to reduce receptive language and memory load. In doing so the AMP aimed to measure ability rather than performance. However, in real-life a conversation or interaction is seen or experienced once and rarely repeated. Therefore one criticism of the current AMP task is that it may over-estimate the child’s MPA as pertains to more naturally occurring communications. Furthermore, the fact that the youngest age band did produce some MPA responses at the highest level of explicitation suggests that the task did not constrain their responses for at least some pragmatic rule violations. This may have been due in part to the fact that the children had three opportunities to demonstrate their MPA via the three MPA Assessor Questions. However, the youngest children did not demonstrate explicit MPA for all of the Video Items and therefore an alternative explanation for these findings is that the pragmatic vocabulary for some pragmatic rules emerges earlier in development than for other pragmatic rules. Data collection with a younger sample of cwTLD aged 4 to 6 years is therefore required to ascertain the youngest age at which explicit pragmatic rule awareness responses are elicited for any pragmatic rule using the current AMP task.

Furthermore, if the assessment is to have wider application to younger cwTLD it may be necessary to include measures of implicit and explicit MPA to enable a comparison of their development. The current version of the AMP has not been designed to be sensitive to implicit levels of MPA. Examples of methods which could be used to demonstrate implicit MPA will now be outlined. The most basic way of measuring implicit awareness is through acceptability judgements such as those used by Siegal et al., (2009) i.e. “who did something silly?”. This type of implicit awareness does not require access to specific vocabulary for pragmatic rules. A more linguistically sophisticated level of implicit awareness could be assessed via word knowledge for pragmatic rules. To do this a videoed interaction in which a pragmatic rule is adhered to or violated could be shown to the child. Following this the child could be asked “Did they [insert pragmatic rule]” e.g. “Did they take turns?”. A similar experimental paradigm has been used to assess word knowledge for emotions (Ford & Milosky, 2003). Alternatively, responses to forced choice alternatives could be given e.g. “Did
they take turns or not take turns?”. The use of forced-choice alternatives have been found to elicit more accurate meta-responses than open-ended questions (Annevirta & Vauras, 2001).

There is no published guidance on the assessment of metapragmatics for pre-schoolers but guidance regarding linguistic assessments advises against the use of tasks which require the child to make and talk about judgements (Paul & Norbury, 2012). It is advised that demonstration tasks (e.g. show me/show me how to…) are appropriate for the assessments of linguistic aspects such as syntax and morphology in preschool children (Paul & Norbury, 2012). Comprehension of pragmatic rule vocabulary could also be assessed by asking the child to demonstrate pragmatic rules using toys or in cooperation with peers e.g. the child could be asked to “show me turn taking” or “show me good eye contact”. However, performance on this task would be more susceptible to the effect of limitations in expressive and receptive language and is therefore only indicated for use with children who have sufficient language skills to understand and perform the task.

The age of acquisition of MPA for different pragmatic rule violations is currently unknown. The single study that did compare MPA development for different pragmatic rules did so only for aspects of non-literal language (Bernicot et al., 2007). The authors found that the age of development was different for different types of non-literal language. This evidence tentatively points to a range of developmental progression in MPA for different pragmatic rule violations. The AMP included only one Video Item per pragmatic rule violation, preventing the data collected in this thesis from being used to make generalisations about the developmental progression of MPA for each pragmatic rule. Any replications of the AMP to collect developmental data should include multiple exemplars of each pragmatic rule violation in order to provide more robust evidence in this area.

The participants in the TLD group were all of primary school age. No MPA data was collected for children of secondary school age. Given that metapragmatic responses are affected by linguistic ability and draw on world knowledge and experience of interactions it is therefore likely that MPA continues to develop well into adolescence (Nippold, 2007). One extension to this research would therefore be to assess MPA in adolescents and adults with typical and atypical language abilities.
5.4 Research Aim 4: Investigation of MPA in cwPLI and cwSLI

The fourth aim of the thesis was to compare MPA in school-aged cwPLI and cwSLI using the AMP.

The analyses sought to answer the following research questions:

1. Do cwPLI perform differently to cwTLD and cwSLI on the AMP task? Specifically, three research questions were addressed:
   a) Are there any differences in MP Scores between the cwTLD, cwPLI and cwSLI?
   b) Are there any differences in the level of explicitation of MPA responses given by the cwTLD, cwPLI and cwSLI?
   c) Is there any difference in developmental progression of MP Scores for cwPLI and cwSLI compared to cwTLD?

2. Do cwPLI perform differently to cwTLD and cwSLI on the AMP task when structural language ability is controlled for?

3. To what extent do measures of pragmatic ability and a history of autistic features account for performance on the AMP task for cwPLI?

The results of the analyses for each question will now be discussed in turn.

Research Question: Are there any differences in MP Scores between the cwTLD, cwPLI and cwSLI?

The planned comparisons in this thesis revealed that MPA abilities were impaired in both the PLI and the SLI groups. These impairments persisted even when age and nonverbal ability were controlled for suggesting that the difficulties that the PLI and SLI groups had with the AMP task were not due to differences in general ability or maturational level. Whilst a small number of studies have demonstrated impairments in MPA in cwSLI (Meline & Brackin, 1989; Marton et al., 2005) the finding that MPA impairments are present in cwPLI is an original contribution to the knowledge base.
Research Question: Are there any differences in the level of explicitation of MPA responses given by the cwTLD, cwPLI and cwSLI?

The next step in the analysis was to explore group differences in level of explicitation of MPA responses. The frequency of non-awareness, linguistic marker awareness and pragmatic rule awareness responses were calculated for all MPA responses for the cwPLI and cwSLI. The results indicate that at least some cwPLI and cwSLI demonstrated MPA at the most sophisticated level of explicitation, pragmatic rule awareness. This frequency was much higher in the PLI sample (15.4% responses) than the SLI sample (6.4% responses). Despite some indication that at least some cwPLI and cwSLI could perform at the most sophisticated level of MPA, both clinical groups did so significantly less frequently than the TLD group. Furthermore, the majority of MPA responses for both clinical groups were non-awareness responses. These responses made up 66.7% of the responses given by the PLI sample and 80.2% of responses given by the SLI sample. The PLI and SLI groups were significantly more likely to provide non-awareness responses than the TLD group and significantly less likely to provide pragmatic rule awareness responses than the TLD group. There was a non-significant trend for the cwSLI to demonstrate more non-awareness responses and less pragmatic rule awareness responses than the cwPLI.

The levels of explicitation framework as a measure of MPA was previously untested on children with language impairments but appears to be clinically useful for assessing MPA in cwPLI and cwSLI. The lower level of explicitation outlined in the framework, the linguistic marker level, enables the researcher or SLT to measure the child’s ability to explicitly talk about MPA despite potential limitations in specific expressive vocabulary for pragmatic rules. In the current study, responses at the level of linguistic marker awareness made up 17.5% of the responses of the PLI sample and 13.4% of the responses of the SLI sample, suggesting that for some pragmatic rule violations the children were able to talk about their awareness of the rule violation even if they could not explicitly name the pragmatic rule. This finding supports the argument that the dichotomy of implicit/explicit awareness is insufficient to measure the stages and processes which lead to conscious access (Karmiloff-Smith, 1986). Future clinical assessments of MPA would therefore benefit from use of a levels of explicitation framework to measure the precise level of MPA in cwPLI and cwSLI.

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**Research Question:** Is there any difference in developmental progression of MP Scores for cwPLI and cwSLI compared to cwTLD?

There was a relationship between age and MPA for the cwPLI and cwSLI as demonstrated by the results of the covariate analysis in which age was significantly related to MP score ($F(1,77) = 29.41 \ p<0.001$). Furthermore, the general developmental progression in MPA seen for the TLD group did appear to be replicated for the clinical groups. For both the PLI and SLI groups MP Score increased between the 6:00-7:11 age band and the 8:00-9:11 age band, although there was clearly a greater variability in MP Scores for all ages in the PLI and SLI groups. The sample sizes for the three age bands for the PLI and SLI groups were deemed too small to explore using psychometric testing. Therefore there is no information on the level of significant difference in MP Scores between each age band for the clinical groups. Furthermore, the analyses were conducted using a cross-sectional design and therefore any implications of results are tentative and should ideally be confirmed using a longitudinal design.

**Research Question:** Do cwPLI perform differently to cwTLD and cwSLI on the AMP task when structural language ability is controlled for?

Planned comparisons revealed a significant effect of language ability (ACE Naming and TROG-2) on MP Score for all groups although the PLI and SLI groups continued to have significantly lower MP Scores than the TLD group even when language (ACE Naming and TROG-2) was controlled for. Given the relationship between MPA and language ability it was hypothesised that controlling for language might differentiate the PLI and SLI groups. However, controlling for language using either the ACE Naming and TROG-2 scores or the broader CELF-4 UK Language Indices did not differentiate the PLI group from the SLI group. This suggests that the cwPLI do not appear to have impairments in MPA which are disproportionate to their language abilities. The lack of difference between the PLI and SLI groups also suggests that pragmatic impairment does not contribute any unique variance in MPA score.

The original rationale for the creation of the AMP was to design a task which could measure MPA in children who made pragmatic rule violations. The intention was that such an assessment could then be used to investigate whether children who violate
pragmatic rules have awareness of these rules. The implication of the results from research questions discussed above is that cwPLI may not have MPA for the pragmatic rules that they violate. The fact that MPA is also impaired in a group of children thought to have less frank impairments in pragmatics, the SLI group, indicates that MPA is not strongly related to pragmatic ability. Furthermore, the fact that language ability significantly predicts MPA ability in both the PLI and SLI groups, and that once language ability is controlled for the PLI and SLI groups continue to perform similarly on the AMP task, indicates that MPA is primarily a language task. The next stage of the analysis was to investigate whether the level of pragmatic impairment or features of autistic symptomatology were also contributing to MPA in cwPLI and cwSLI.

**Research Question:** To what extent do measures of pragmatic ability and a history of autistic features account for performance on the AMP task for cwPLI?

The results presented in this thesis suggest that neither measures of pragmatic ability as measured by the CCC-2 Pragmatic Composite nor a history of autistic features as measured by the SCQ accounts for MPA performance on the AMP task. Correlational analyses were undertaken to identify potential predictors of MPA for the PLI group. Neither the presence of features of pragmatic impairment (CCC-2 Pragmatic Composite) nor a history of autistic features (SCQ) were significantly associated with MPA. In contrast, both age and structural language ability were found to predict MPA. It seems likely therefore that MPA is a good measure of the difficulty shared by cwPLI and cwSLI in talking about pragmatic rules but the measure itself is not good at differentiating between the two clinical groups, nor is it sensitive to the unique difficulties in pragmatic development experienced by cwPLI compared to cwSLI.

**Summary of findings for research aim 4**

The findings from research aim 4 concur with the findings of previous studies that at least some children with language impairments can provide explicit metapragmatic comments about hypothetical scenarios. For example, almost half of the 8-year-old cwSLI in Meline and Brackin’s (1989) comprehension monitoring study were able to talk explicitly about the linguistic marker which demonstrated the pragmatic rule violation e.g. “He didn’t tell his mother he wanted orange drink”. The fact that the
children in Meline and Brackin’s (1989) study tended to blame the listener for the communication breakdown but when asked to justify their response they made reference to the speaker not the listener, indicates the importance of measurement type when assessing cwSLI. It suggests that the MPA question should be asked in different ways in order to ensure that any response failure is due to non-awareness rather than task demands. Arguably, the three MPA questions in the AMP provided multiple opportunities for the cwSLI and cwPLI to successfully demonstrate their MPA abilities. The use of an aggregated measure of MPA aimed to ensure that the resultant score was a stronger and more representative estimate of the child’s actual MPA ability than would be provided by a single MPA question (Rushton, Brainerd, & Pressley, 1983).

Although three MPA Assessor Questions were used in the AMP, the performance of the cwSLI in this thesis did not appear to be superior to previous studies of MPA in cwSLI. Despite evidence of explicit MPA in some cwSLI in the current thesis, the overwhelming majority of MPA responses from the SLI group were non-awareness responses and therefore did not demonstrate explicit MPA at any level. This result concurs with Marton et al.’s (2005) finding that cwSLI aged 7 and 10 years had difficulty explicitly talking about how to initiate a conversation, negotiate or resolve conflicts. The concurrence of results in Marton et al.’s (2005) study in which MPA was measured for pragmatic rule adherence and the current study in which MPA was measured for pragmatics rule violation suggest that MPA impairments in cwSLI are a robust feature of the group.

Investigations of MPA in other clinical groups such as children with William’s syndrome have found a significant predictive effect of language ability on MPA (Lacroix et al., 2010) suggesting that MPA is highly reliant on language ability. The results of this thesis suggest that language is an important factor for explicit MPA development as measured in the AMP task. MPA score was significantly related to both expressive and receptive abilities for the cwTLD, cwPLI and cwSLI. It is unsurprising that language skills were related to MPA ability given the linguistic nature of the AMP task. In order to answer the Assessor Questions the child was required to understand the dialogue in the Video Item, understand the question and express their response using language. In addition, to score the maximum number of points the child also had to be able to explicitly describe the pragmatic rule using correct vocabulary.
MPA, as measured here, is also conceptualised here as a higher level language ability. In cwSLI lower level structural language abilities have been associated with other higher level language abilities. For example, in this population expressive syntax is significantly correlated with narrative ability (Hesketh, 2004) and word knowledge for emotional vocabulary significantly predicts inference ability (Ford & Milosky, 2008). Although there was a strong relationship between language ability and MPA for the cwPLI and cwSLI, once language abilities were controlled for the cwTLD continued that have significantly higher MPA scores. This suggests that language ability (as measured by ACE Naming and TROG-2) does not account for all variance in MPA. Although significant differences in MPA performance were found between the TLD group and both the PLI and SLI groups, there was a degree of overlap in MP Scores between the three groups. Inspection of Figure 5 indicates that some children in the PLI and SLI groups had MP Scores that fell within the range of scores found in the TLD group. This suggests that at least some cwPLI and cwSLI are able to explicitly reflect on pragmatic rule violations. However, it should be noted that even the highest MP Scores in the PLI and SLI groups were still below the highest scores in the TLD group.

Whilst the MP Scores in the PLI and SLI groups did overlap there was also substantial variation in these scores within both groups. Such variation in performance mirrors the pattern of performance seen in other higher-level language tasks such as narrative comprehension and inference (Norbury & Bishop, 2002). The PLI group especially appear to be heterogeneous in terms of higher-level language ability, a heterogeneity which appears to be related to structural language deficits (Norbury & Bishop, 2002).

The lack of a clear delineation between the cwPLI and cwSLI has also been found in other studies of higher-level language ability such as narrative comprehension or inferencing impairments (Norbury & Bishop, 2002) lending support to the notion of a continuum of clinical communication impairments, rather than discrete diagnostic categories (Rutter, 2008). Furthermore, overlaps between behavioural, linguistic and cognitive abilities in cwPLI and cwSLI challenge the simple division of PLI as a diagnosis involving primary impairment in pragmatics and SLI as a diagnosis involving a secondary diagnosis of pragmatic impairment. The notion of primary versus secondary pragmatic impairments is therefore redundant. Indeed, recent comparisons of social interaction in cwPLI, cwSLI and cwHFA indicate an intermediate status of PLI between HFA and SLI (Gibson, Adams, Lockton, & Green, 2013). A more clinically
useful way of conceptualising pragmatic impairment as the result of interactions between different linguistic and social cognitive processes is recommended for assessment and treatment (Adams, 2005; Perkins, 2007).

There is evidence that for cwSLI the profile of impairment can change over time, with pragmatic impairments in conversation skills, topic maintenance, asking and answering questions, perspective taking, making inferences, reading emotions from facial expression and body language emerging in later childhood (Brinton, Fujiki, & Robinson, 2005). It could be that for at least some cwSLI their profile of impairment changes as their language difficulties resolve, and their pragmatic impairments become more apparent (Conti-Ramsden & Botting, 2004). The fact that MP Scores in the AMP were associated with the degree of language impairment suggests a positive outcome for such cwSLI. If language impairments resolve, then MPA in these children should be relatively unimpaired. Given that hypothetically their age-appropriate language skills will enable them to acquire and use age-appropriate MPA, then these children should be better equipped to access interventions which utilise MPA to remediate pragmatic impairments. The application of the AMP task for metapragmatic intervention will be further discussed in section 5.6.2.

The Relationship between Pragmatics and Metapragmatics

The lack of clear delineation between the cwPLI and the cwSLI in terms of their MPA has important implications for the relationship between pragmatics and metapragmatics as it suggests that pragmatic ability is not strongly associated with MPA ability. The lack of explicit MPA in the youngest cwTLD, who were presumed to have age-appropriate pragmatic abilities, also supports this hypothesised dissociation. Furthermore, the presence of age-appropriate MPA in some cwPLI and the similarity in MPA impairments for children with severe pragmatic impairments (the cwPLI) and children with less severe pragmatic impairments (the cwSLI) supports the dissociation between MPA and pragmatics. Lastly, once language was controlled for, pragmatic impairment status did not uniquely predict MPA ability suggesting that pragmatic ability may have a relatively weak relationship with MPA. The fact that most cwPLI were impaired in MPA suggests that pragmatic and MPA impairments co-exist although this relationship does not appear to be causal. The strongest relationship discovered here appears to be between MPA and language rather than pragmatic abilities.
The hypothesised dissociation between pragmatics and metapragmatics has two implications. Firstly, low scores on the MPA task do not necessarily indicate that children will be unable to use or understand these pragmatic rules but simply that they cannot talk about these rules in an explicit way. This certainly applies to the cwTLD who scored poorly on the AMP task. These children were considered to be typically developing and therefore to not have any pragmatic impairments. Secondly, appropriate responses on the MPA task do not necessarily imply appropriate pragmatic behaviours. Knowledge about a pragmatic rule (MPA) may not automatically and immediately transfer to the use of this rule in children's behaviour (Sachs et al., 1991). Put simply, knowing what we should do does not always affect what we actually do. Sachs et al. (1991) argued that young cwTLD could not apply what they knew about appropriate pragmatic rules due to "cognitive constraints" (p.370) such as inability to inhibit an action or to retain an intended action in memory. They did not further postulate on the likely cause for these difficulties and it is not clear why the younger cwTLD in their study did not apply what they knew about the pragmatic rule to their own behaviour.

There might therefore be other factors contributing to the inability of cwPLI to adhere to a pragmatic rule despite demonstrating MPA for the rule. Possible reasons for this dissociation will now be discussed. Firstly, inhibition control has been linked to metarepresentational abilities in other areas such as ToM tasks (Carlson & Moses, 2001). It has been argued that the metarepresentational change in ToM which occurs during the preschool years is linked to changes in executive function such as inhibitory control (Frye, Zelazo, & Palfai, 1995; Kochanska, Murray, & Coy, 1997). The child’s ability to inhibit a preferred response and to hold two actions in mind has been shown to develop rapidly between 3- to 6-years-old (Diamond & Taylor, 1996; Gerstadt, Hong, & Diamond, 1994; Jerger, Martin, & Pirozzolo, 1988). Furthermore, the developmental period in which changes in ToM and inhibitory control are occurring also coincides with a period of rapid development in the frontal cortex (Luria, 1973), an area thought to be involved in executive functioning (Baron-Cohen et al., 1994; Fletcher et al., 1995; Goel, Grafman, Sadato, & Hallett, 1995; Romine & Reynolds, 2005; Sabbagh & Taylor, 2000). However, it is not thought that inhibitory control alone can explain the development of ToM and it is likely that other aspects of cognitive functioning such as working memory (WM) and the ability to integrate information or to make inferences are also involved (Carlson & Moses, 2001; Sabbagh & Taylor, 2000). Therefore, for the
group of cwPLI who demonstrate dissociation between awareness of pragmatic rules and adherence to pragmatic rules, inhibitory control could potentially go some way towards explaining such an occurrence. It may be that for these children, awareness of pragmatic rules does not inhibit the child’s preferred, but less pragmatically appropriate, response. Further research investigating inhibitory control and MPA in cwPLI would be required to address this issue.

Another aspect of executive function which might be involved relates to the generation of ideas and flexibility of thought. Bishop and Norbury (2005) found that the ability to flexibly generate ideas was impaired in cwHFA but not in cwPLI. They suggested that this impaired generativity could explain the difficulties with behavioural and cognitive flexibility characteristic of cwASD. One aspect of inflexibility found in cwASD are restricted and repetitive behaviours and interests (RRBIs) (Frazier et al., 2012; Mandy, Charman, & Skuse, 2012). Such RRBIs include low level aspects such as repetitive sensory or motor behaviours and higher level behaviours such as rigidity of routines or specific interests. ASD is considered to be a disorder in which social aspects of interaction and communication are significantly impaired. Whilst RRBIs are considered to be a non-social aspect of impairment, rigidity for routines or conversational roles/topics could theoretically have a detrimental effect on social interaction (Gibson, 2012). Whilst RRBIs appear to be a feature of HFA such behaviours were not associated with the presence of PLI or SLI (Gibson et al., 2013). Therefore, some children with pragmatic impairments, including cwHFA, might be aware of a pragmatic rule but might be unable to adhere to the rule because it interferes with a rigid or repetitive behavioural routine. For example, the child might have awareness that conversational partners should discuss a shared topic, but the awareness may be overridden by the child’s rigid need to talk about their favoured topic. Given that RRBIs have been associated with the presence of HFA rather than with PLI this explanation has limited scope in terms of the failure of cwPLI to adhere to pragmatic rules despite MPA for these rules.

The emphasis on inhibitory aspects of executive functioning has overlooked another important aspect of cognitive control, that of motivation. Some argue that impairments in social interaction are not necessarily due to problems inhibiting behaviour and may in fact be due to a lack of motivation to carry out the behaviour (Moll, Zahn, de Oliveira-Souza, Krueger, & Grafman, 2005). One aspect of social cognition which might
motivate pragmatic behaviour could be awareness of the social consequences of adhering to or violating the pragmatic rule. This might suggest that metapragmatic training should include both awareness of pragmatic rules and the social consequences of these pragmatic rules. To this end, the results of the exploratory SU Assessor Question will now be discussed. This will include a discussion of the relationship between MPA and social understanding of the impact of violating or adhering to the pragmatic rule.

5.5 Research Aim 5: Exploration of Social Understanding responses for cwTLD, cwPLI and cwSLI

The fifth aim of the thesis was to explore social understanding in cwTLD, cwPLI and cwSLI using an exploratory Social Understanding Assessor Question (SU Question) within the AMP.

The analyses sought to investigate the following research questions:

1) Are there any differences in performance on the SU Question between the cwTLD, cwPLI and cwSLI?
2) Are there any differences in the level of sophistication in SU Question responses given by the cwTLD, cwPLI and cwSLI?
3) Do cwPLI perform differently to cwTLD and cwSLI on the SU Question when structural language ability is controlled for?
4) To what extent do measures of language ability, pragmatic ability and a history of autistic features account for performance on the SU Question for the cwPLI?

The results of the analyses for each question will now be discussed in turn.
**Research Question:** Are there any differences in performance on the SU Question between the cwTLD, cwPLI and cwSLI?

Data were collected on children’s social understanding for the pragmatic rule violation as part of the thesis. Results from the cwTLD will be discussed first followed by a discussion of the responses to the SU Question of the cwPLI and cwSLI.

For the SU Question the child was required to give a description of the psychological, social or emotional characteristics of the child who had performed the pragmatic rule violation e.g. “She was rude” or “He was boring”. This was judged to be measuring social understanding of the personal characteristics conferred on a person violating the specific pragmatic rule. The performance of the cwTLD on the SU question showed a clear developmental progression which mirrored the progression seen for the MP Scores. Results indicated a distinct shift in SU Scores between 6:00-7:11 years and 8:00-9:11 years with a tendency for scores to plateau after that time. The SU Scores for the PLI and SLI groups were significantly lower than the scores for the TLD group. No significant group differences in SU Score were found between the PLI and SLI groups. This result also mirrored the pattern of results found for the MP Score analyses, suggesting that the PLI and SLI groups had more difficulty than the TLD group in explicitly reflecting on both the pragmatic rule violation and the personality characteristics of the child who violated the pragmatic rule.

**Research Question:** Are there any differences in the level of sophistication in SU Question given by the cwTLD, cwPLI and cwSLI?

A three-point scoring scale was developed for the SU Question responses which classified responses as either demonstrating non-awareness, pragmatic behaviour awareness or psychological state awareness. Results from the cwTLD will be discussed first followed by a discussion of the levels of sophistication of social understanding responses provided by the cwPLI and cwSLI.

Investigation of age-related differences in cwTLD revealed significantly more non-awareness responses in the youngest age band (6:00-7:11) as compared to both of the older age bands (8:00-9:11 and 10:00-11:11). In contrast, the pragmatic behaviour responses demonstrated a more gradual increase between the youngest group and the
oldest group. At the most sophisticated level there were significantly more psychological state responses in the 8:00-9:11 year old age band than the younger 6:00-7:11 year old age band. No significant differences in psychological state responses were found between the oldest 10:00-11:11 year age band and either the 6:00-7:11 or 8:00-9:11 year old age bands. Mean scores for this response indicate a rise in the frequency of psychological state responses between 6:00-7:11 and 8:00-9:11 years and then a slight dip in frequency of these responses between 8:00-9:11 and 10:00-11:11 years. It is unclear why this pattern of results would occur for the psychological state responses.

One interpretation is that perhaps the older children, having been aware that a pragmatic behaviour response was required in the metapragmatic questions, were slightly biased towards giving these answers rather than a psychological state response. Even if this only occurred for a few of the participants in the oldest group the small sample could explain why this had an effect on the pattern of significance levels seen here. In fact the pragmatic behaviour responses were the most frequently given response for both of the older age bands (53% of the responses for the 8:00-9:11 year group and 73.4% of the responses for the 10:00-11:11 year old group) and were given 40% of the time by the youngest group. Furthermore, the psychological state descriptions targeted were all fairly negative descriptions e.g. rude, unfriendly, boring etc. It could be that the oldest group were more socially aware of the rules of politeness, and therefore less inclined to label someone as “rude” or “unfriendly” as this might in itself appear rude. The author did note that during testing, the older participants tended to find reasons to excuse the child’s behaviour. This was perhaps done to avoid having to ascribe a negative characteristic to the child.

A very small number of children in the PLI (8%) and SLI (8%) groups were able to provide SU responses at the most sophisticated level, psychological state awareness. However, children in the PLI and SLI groups demonstrated psychological state awareness responses less frequently than the TLD group. The cwPLI (67%) and cwSLI (67%) also demonstrated non-awareness responses more frequently than the cwTLD (27%). Planned contrasts revealed that the cwPLI and cwSLI were significantly more likely to provide non-awareness responses and significantly less likely to provide psychological state awareness responses than the cwTLD. This indicated that the children in the PLI and SLI groups found it difficult to provide a psychological, social or personality label to describe the child who violated the pragmatic rule. This may have
been either because they were not aware of the personality characteristic ascribed to the person who violated the pragmatic rule or because they were not aware that a pragmatic rule had been violated, thereby negating the assumption that the person was perceived to be rude/unfriendly etc. However, they may have been aware of the rule violation and aware that the person who violated the rule was perceived negatively but simply did not have the vocabulary to describe the associated personality characteristic.

**Research Question:** Do cwPLI perform differently to cwTLD and cwSLI on the SU Question when structural language ability is controlled for?

Given the robust relationship between MP Score and language ability for the cwPLI and SLI, investigations were undertaken to ascertain whether a similar relationship existed between SU Score and language ability. Firstly, when language ability (ACE Naming and TROG-2) was controlled for the PLI and SLI groups continued to have significantly lower SU Scores than the TLD group. However, further analysis revealed that when the CELF-4 UK language scores and age were controlled for there was a significant effect of group on SU Score with the PLI group scoring significantly lower than the SLI group. This suggests that the cwPLI do appear to have impairments in SU Question ability which are disproportionate to their language abilities, indicating that the presence of pragmatic impairment (as measured by PLI status) does uniquely contribute to SU Question ability above the contribution made by the presence of language impairment.

The relationship between MPA and SU Question ability was also subject to correlational analyses. These analyses revealed that for each group (TLD, PLI, SLI) there was a significant correlational relationship between the MP Score and the SU Score. The psychological state SU responses were social value judgements e.g. “rude” or “unfriendly”. Arguably the main reason for following pragmatic rules is to achieve a socially motivated goal such as friendship, cooperation or positive self-worth. If the child’s ability to talk explicitly about pragmatic rules and the abstract cognitive-emotional representations underlying this skill are not associated with the social value then there should be no link between ability to identify the pragmatic rule violation and the ability to define the sort of person that breaks this rule. The fact that this association did occur might suggest that the ability to describe the person’s social value is part of the child’s representation of the cognitive-emotional information attached to the
pragmatic behaviour. Such evidence would posit that the conceptual representation for pragmatic rules includes not just information on behaviours but also on the social value, social motivation and social outcome of adhering to or violating the pragmatic rule pertaining to the specific pragmatic behaviour (Tomasello, 1999, 2003).

It should be noted that the strength of correlation between the SU Score and MP Score ($r = .737$) was weaker than the correlation between MP Score and each of the MPA Assessor Questions ($r = .857$ to .955) indicating that the MPA and SU Assessor Questions are measuring associated but separate constructs. Whilst some shared variance between MP and SU Scores could theoretically be due to the child’s awareness of the social outcome of violating the pragmatic rule it is also likely that the MP and SU Scores are associated via a shared common factor, language ability. The possible factors which were contributing to the SU Question abilities of the cwPLI are discussed below.

**Research Question**: To what extent do measures of language ability, pragmatic ability and a history of autistic features account for performance on the SU Question for the cwPLI?

It is presumed that the SU Question measured aspects of both language processing and social cognition. In order to answer the question with a psychological state description the child was required to have an awareness of shared social knowledge pertaining to the personal characteristics conferred on a person violating the specific pragmatic rule. They were then required to express this knowledge using language and sophisticated vocabulary. Correlational analyses using the data from the cwPLI revealed that there were significant positive correlations between SU Score and age and expressive and receptive language abilities as measured by the CELF-ELI, TROG-2 and ACE Naming. This confirmed the association between SU Question ability and language ability. In contrast, no significant correlations were found between SU Score and a history of either pragmatic impairment as measured by the CCC-2 Pragmatic Composite score or autistic symptomatology as measured by the SCQ.

The finding that SU ability was not associated with these measures of pragmatic behaviour or autistic symptoms was surprising, given the significantly poorer SU Scores
in the PLI group. It may be that social understanding is not strongly associated with pragmatic ability or that the chosen measures used in this thesis were not sensitive enough to aspects of pragmatic impairment or social understanding. Further investigations into MPA and SU which use the AMP should therefore include other social understanding questions in order to further investigate the relationship between social understanding and pragmatic impairment as pertains to the violation of pragmatic rules.

Whilst other assessments of social understanding exist, such as Klin’s (2000) Social Attribution Task (SAT), in their current form they do not allow the clinician to assess social understanding for the pragmatic rule violations of interest. The fact that the AMP does allow for this provides a unique opportunity for the clinician to assess the child’s MPA for the pragmatic rule violation alongside their social understanding for that specific pragmatic rule. The SAT will now be described followed by a discussion of its adaptability as part of the AMP task.

In the SAT (Klin, 2000) the child watches a silent animation which lasts for one minute. During the animation a big triangle bullies a small triangle and a small circle, the latter two help each other and eventually escape from the big triangle. The child is required to watch the animation then retell the story and describe the personalities of the three characters. Responses are analysed using a salience index (calculated by the child’s ability to ascribe intentions to the characters) and a person index (calculated by the level of psychologically-derived features attributed to describe the character of the shape e.g. bully, shy, naughty). The person index has already been applied to the AMP task as it was used as the basis for the SU Question. However, the aspects of social cognition measured by the SAT salience index could be adapted as part of a future version of the AMP. These are the ability to (i) ascribe intentions to the speaker who violated the pragmatic rule and (ii) to ascribe thought to the interlocutor who experienced the pragmatic rule violation. In future versions of the AMP the SU questions might include:

- **Ascribing intentions to the speaker:** Why did the boy [insert pragmatic rule violation] e.g. “Why did the boy shout at the girl?”
- **Ascribing thoughts to the interlocutor:** What did the girl think when the boy [insert pragmatic rule violation] e.g. “What did the girl think when the boy shouted at her?”
Furthermore, when the speaker violates or adheres to a pragmatic rule this can cause an emotional and/or behavioural response in the interlocutor. In order for the child to understand the social implications of adhering to or violating the pragmatic rule they need to be aware of these emotional and behavioural implications. It is therefore of clinical relevance to measure emotional and behavioural aspects of MPA. In subsequent versions of the AMP, a question which measures awareness of the speaker or interlocutor’s emotional or behavioural response to the pragmatic rule violation could be included. Examples of these questions are given below:

**Emotion awareness:**
- How did the boy/girl feel when [insert pragmatic rule violation]?  
  e.g. “How did the boy feel when the girl did not answer his questions?”
- How would you feel if someone [insert pragmatic rule violation]  
  e.g. “How would you feel if someone did not answer your questions?”

**Behaviour awareness:**
- What did the boy/girl do when [insert pragmatic rule violation]?  
  e.g. “What did the boy do when the girl did not answer his questions?”
- What would you do if someone [insert pragmatic rule violation]  
  e.g. “What would you do if someone did not answer your questions?”

Based on the Framework of Social Communication put forward by Adams et al. (2005, 2006) the Emotion Awareness Assessor Questions appear to measure social cognition (i.e. the possession of shared social knowledge) and might therefore be suitable as SU Questions in future versions of the AMP. In contrast, the Behaviour Awareness Assessor Questions appear to measure social interaction (i.e. the ability to interact and empathise with others). Any future version of the AMP might include these Behaviour Awareness Assessor Questions to enable investigation of the child’s awareness of the behavioural effect of violating the pragmatic rule on the interlocutor alongside their social understanding of the pragmatic rule violation. The implications of the AMP for clinical assessment and intervention are discussed below.
5.6 Implications of the AMP task for assessment and intervention of pragmatic impairment

5.6.1 Implications of the AMP task for metapragmatic assessment

The AMP was designed to be a clinical assessment task which could be used to measure MPA in children with language impairments. It has been argued that cwPLI are especially difficult to identify using formal assessments of language as they often score within the normal range on these tests (Conti-Ramsden, Crutchley & Botting, 1997). There is a paucity of appropriate formal assessment for children suspected of having pragmatic impairments (Adams & Bishop, 1989; Bishop & Adams, 1989) and clinicians all too often must use their clinical judgement to ascertain a diagnosis of PLI. There has therefore been a call for more research to establish assessment tasks to identify pragmatic impairments (Conti-Ramsden et al., 1997).

The AMP has been found to be a reliable and sensitive measure of MPA for school-aged children with both typical language and language impairments. As such it could be a useful tool for clinicians in identifying one aspect of impairment for cwPLI and also cwSLI. It should be noted that the AMP is not a diagnostic test and can be failed for many reasons including language impairment and developmental immaturity, as well as impairments in MPA. Impairments in MPA were found for some but not all of the cwPLI and cwSLI in the study, suggesting that MPA ability is heterogeneous within this population. Such heterogeneity warrants measurement as part of the initial battery of assessments before treatment plans can be put into place, as the child’s awareness of pragmatic rules and their ability to talk about these pragmatic rules might have a bearing on how such rules are taught. The precise nature of MPA as an intervention tool will be outlined in more detail in section 5.6.2.

In the current section proposals for the use of the AMP as an assessment of MPA will be discussed. The debate centres on the use of assessments in children with language impairments. It is argued that children with language impairments do not always perform at their true potential on static assessments, leading some to argue that static assessments are unreliable with this population (Hasson, Dodd, & Botting, 2012). Some performance difficulties may be due to specific task demands such as problems understanding the question or problems remembering verbally presented information.
Children may score poorly due to performance issues such as shyness, lack of concentration, lack of familiarity with formal assessments or cultural and linguistic differences (Law & Camilleri, 2007; Letts, Edwards, Sinka, Schaefer, & Gibbons, 2013). The fact that static assessments are not sensitive enough to be used to predict change or response to intervention has led some to advocate for the use of dynamic assessment (DA) (Hasson & Joffe, 2007).

In contrast to static assessments in which adult support is required to be held at a minimum, dynamic assessment (DA) utilises adult-led cues and prompts to measure the child’s learning potential rather than their current ability (Olswang, Bain, & Johnson, 1992). Vygotsky (1986) proposed that cognitive ability developed through the child’s culturally mediated social interactions with more able partners such as adults or older children. Cognitive development was therefore argued to occur within the child’s zone of proximal development (ZPD) (Vygotsky, 1986). The ZPD refers to the difference between the child’s independent task performance as compared with task performance with graduated adult support.

In the DA model such support may include feedback on performance, cues to elicit the correct response and the use of metacognitive or metalinguistic learning strategies to enhance performance via cognitive processes. Whilst static assessments may provide a deflated projection of a child’s aptitude, DA can be used to identify those individuals whose abilities are stimulable to change by analysing their response to a series of graded prompts which become systematically more directive (Campione, 1989). The child’s response to this graduated support is then analysed to determine the child’s potential ability and the cues which facilitate performance (Minick, 1987). Such a process would lead not just to the identification of a difficulty but to a “prescriptive” diagnosis including the reasons for the difficulty and the potential types of intervention deemed most effective (Campione & Brown, 1987).

DA procedures have been successfully applied to mediated interventions for impairments in phonology (Glaspey & Stoel-Gammon, 2007), phonological awareness (Spector, 1992), narrative (Peña et al., 2006; Peña, Resendiz, & Gillam, 2007), receptive vocabulary (Alony & Kozulin, 2007; Camilleri & Law, 2007) and expressive language (Hasson & Botting, 2010; Hasson et al., 2012; Olswang & Bain, 1996).
Metalinguistic DA procedures have been successfully used with children aged 8 years and older (Hasson et al., 2012).

5.6.1.1 Application of DA to the AMP task

In its current form the AMP is a static task in that it provides a measure of the child’s MPA ability at one point in time. This was in fact the aim of the thesis, to create an assessment task which could identify MPA impairment. However, as previously stated, performance on the AMP can be affected by factors such as linguistic ability and maturational level suggesting that performance on a static one-off assessment of MPA may not accurately reflect the child’s true level of MPA or potential. There is scope therefore to modify the AMP into a more dynamic assessment of MPA.

SLTs are interested in how limitations in language, social cognition or world knowledge affect the child’s ability to understand language in context (Adams, 2002). A DA approach which focuses on the processes underlying pragmatic ability would therefore be ideal for application to MPA assessment. For the child with pragmatic impairments assessment for a range of abilities including pragmatic behaviour and language abilities as well as abilities in social cognition, inference and MPA is required in order to provide a complete picture of the child’s functioning. Therefore, the AMP could be used as part of a pragmatic processing assessment.

Furthermore, the use of DA has been recommended to assess whether cwPLI can use pragmatic rules such as turn taking and eye-contact in situations which are complex or demanding (Hasson & Botting, 2010). The use of DA allows the intervention programme to be tailored to the child’s specific needs in terms of intervention type and intensity (Hasson & Joffe, 2007). This would be beneficial given the heterogeneous nature of children with language and communication impairments. Clinician’s judgements of the child’s metacognitive abilities have been used effectively to predicting response to intervention (Peña et al., 2006; Peña et al., 2007) suggesting that judgements of metapragmatic abilities could be similarly effective for predicting response to pragmatic intervention.
A proposed DA model for the AMP Assessor Questions would use prompts which lend themselves to a graduated model of MPA from tasks which tap explicit MPA to tasks which tap implicit MPA. If the DA method was applied to the AMP as a whole, specific pre-specified graded prompts would be required for each Video Item and Assessor Question in order to ensure that issues of reliability between testers or between testing sessions were controlled for (Gutiérrez-Clellen & Peña, 2001; Hasson & Botting, 2010). This would increase the depth of information on the child’s MPA which could be collected, although it would also increase testing time. Any application of the DA method to the AMP would require careful testing with children and adolescents who have pragmatic impairments to assess viability of the method.

Currently the AMP has only been tested in its present form with primary school-aged children and the task therefore has no known utility for secondary school-aged students. It is reasonable to assume that the pragmatic rules most important for communicative success change with age and with situation. For example, the ability to initiate and to use nonverbal communication might be the most important aspects of pragmatics for a child in preverbal and single word stages of language development whereas for a child at a conversational level reciprocity and topic maintenance might be more important. What is seen as contextually appropriate may also change based on age, with a conversation between a child and unfamiliar adult appearing appropriate during primary school but less so by the end of adolescence. Furthermore, during adolescence a heightened awareness of and interest in peer-relationships and peer-acceptance may also lead to specific pragmatic behaviours being prioritised over other behaviours.

Therefore, the pragmatic rules that are important to use, and by extension to assess and treat, may change during child development. This has implications for the utility of the current AMP assessment with a wider age group. In a study of typically developing adolescents three areas of pragmatics were rated as most important: perspective-taking, nonverbal comprehension and interpreting tone of voice, all of which are socially driven and link to successful social understanding and interaction (Reed, McLeod, & McAllister, 1999). It may therefore be that additional AMP Video Items, including nonverbal and paralinguistic errors, would be required to assess MPA in an adolescent population in a clinically useful way.
5.6.2 Implications of the AMP task for metapragmatic intervention

5.6.2.1 The role of MPA in intervention

The AMP task can be applied for use in interventions in three ways. Firstly, it is argued that SLTs need to understand a clinical condition in its entirety in order to plan effective intervention (Perkins, 2007). Therefore, knowledge of typical developmental milestones for MPA would enable SLTs to ascertain if a child with pragmatic impairments had developmentally appropriate levels of MPA. Secondly and subsequently, the child’s level of MPA would enable SLTs to decide whether MPA should be a target of intervention or a tool for intervention. If a child with pragmatic impairments had difficulty in adhering to a specific pragmatic rule but demonstrated MPA for the pragmatic rule, intervention might focus on self-detection and self-correction of rule violation or perhaps on motivation to self-regulate and adhere to the rule. If the child did not have MPA for the specific pragmatic rule that they were violating, intervention might focus on raising the child’s awareness of the rule before behaviour was changed. Finally, the AMP provides clinicians with a pre- and post-intervention measure of MPA which can be used to identify change in response to therapy.

One criticism of the use of MPA intervention techniques for cwPLI was the paucity of evidence regarding the MPA abilities of these children. The results of this thesis provide novel evidence that level of MPA in cwPLI is generally impaired as compared to that of typically developing peers. As such, an argument can be made that improving the child’s awareness of pragmatic rules might also improve their adherence to pragmatic rules. However, the evidence from this thesis that pragmatic impairment was not a significant predictor of MPA indicates that pragmatics and metapragmatics are not directly related. Furthermore, research with cwTLD indicates that MPA does not predict behaviour on a pragmatic task (Sachs et al., 1991) and that pragmatic behaviours do not develop in parallel with metapragmatic awareness (Bernicot et al., 2007).

The research on pragmatic and metapragmatic development in cwTLD and cwPLI appears to be counter-indicative of the use of MPA as a sole method of intervention for pragmatic impairment. Similarly counter-intuitive uses of meta-awareness tasks have been cited in the phonological therapy literature. Clinical intervention for speech sound difficulties often target phonological awareness skills that cwTLD do not possess (Hesketh, Dima, & Nelson, 2007). Furthermore, outcomes for children with
phonological disorders do not tend to differ regardless of whether the child has good or poor phonological awareness suggesting that awareness of speech does not drive speech development (Hesketh, Adams, Nightingale, & Hall, 2000). It appears that in many aspects of meta-awareness our understanding of their effective use in intervention continues to be limited.

Despite this cwTLD have benefitted from MPA interventions to improve awareness of request clarification, explanation adequacy and the ability to ask and answer questions (Cosgrove & Patterson, 1977, 1978; Kaufman, Prelock, Weiler, Creaghead, & Donnelly, 1995; Patterson et al., 1978; Robinson & Robinson, 1981, 1982). Furthermore, there is some theoretical support for the use of explicit MPA as a method of intervention for children who have pragmatic impairments. The procedural deficit hypothesis (Ullman & Pierpoint, 2005) argues that where language impairment leads to difficulties with implicit learning, explicit rule-based learning procedures may theoretically be required to improve specific skills. Therefore, cwPLI who possess age-appropriate MPA may make greater behavioural change as a response to intervention than cwPLI who possess impaired MPA because they will be more receptive to explicit metapragmatic instruction targeting the pragmatic rules that they currently violate. In contrast, cwPLI who possess impaired MPA may require a longer period of intervention which first establishes MPA for the pragmatic rules that they are violating before they are coached to change their own pragmatic behaviour.

In fact, children with PLI are reported to make slow progress in response to traditional interventions (Botting, 1998). Perhaps the child’s hitherto overlooked MPA ability is one of the reasons for a lack of progress. Successful interventions in the research literature have cited MPA as part of the intervention methodology (Adams, 2005; Adams et al., 2005; Adams et al., 2006; Adams et al., 2012; Anderson-Wood & Smith, 1997; Dollaghan & Katson, 1986; Timler et al., 2005; Willcox & Mogford-Bevan, 1995). The metapragmatic methods cited used explicit discussions and demonstrations of specific pragmatic rules, behavioural practice of adherence to and violation of these rules and an emphasis on self-monitoring. What remains to be demonstrated is whether MPA techniques uniquely add to the effectiveness of the intervention.

Hypothetically, a randomised controlled intervention trial could be used to compare a purely behavioural intervention with an intervention which included a metapragmatic
aspect to training pragmatic behaviours. However, it is possible that MPA techniques are only of benefit for some cwPLI. As previously discussed MPA is known to be affected by age and linguistic ability but there may be other reasons why MPA interventions might not necessarily be most suitable for remediation of pragmatic impairments. The potential reasons that a pragmatic rule might be violated have previously been discussed and include issues such as inhibition control and executive function, motivation, and RRBIs. It may be these issues that require intervention rather than MPA for the pragmatic rule per se. A series of case studies comparing cwPLI with different profiles in terms of the issues outlined above might help to elucidate the role of MPA in intervention, and highlight the profile of children who may benefit from MPA interventions to remediate their pragmatic impairments.

Despite a lack of clarity in the research literature, there has been an increased focus on metapragmatic methods of intervention for cwPLI and cwSLI in published programmes based on expert clinical opinion such as Talkabout (Kelly, 1997) or the Social Use of Language Programme (Rinaldi, 2004). The Social Use of Language Programme (Rinaldi, 2004) encourages a “metacognitive” approach which involves raising the children’s awareness of pragmatic rules such as turn-taking, proximity and volume through the observation of role plays in which an adult follows or violates the pragmatic rule. At the end of the role-play the children are asked metacognitive questions such as “What was good or not good?”, “What was wrong?” and “What can I do [differently]?”. Although Rinaldi refers to these questions as metacognitive here they will be described as metapragmatic because they encourage the children to explicitly reflect on the pragmatic rule. Following on from the metapragmatic task the children are then given the opportunity to practice the pragmatic rule within structured tasks. Rinaldi argues that the use of these metapragmatic techniques increases the child’s awareness of how and when they can apply their skills outside of the therapeutic intervention, thereby increasing the chance of generalisation (Rinaldi, 2004).

Rinaldi’s programme, designed for children aged 5- to 11-years-old, recommends that the metapragmatic approach be used for all children without reference to developmental norms of MPA and with no acknowledgement that explicit MPA activities may not be developmentally appropriate either for young children or children with language impairments. It is unclear whether the children are expected to be able to answer the questions or whether scaffolding of the correct metapragmatic response, such as is
recommended in the DA approach, is required. If the children are expected to be able to answer the metapragmatic questions presumably MPA for the pragmatic rule is already present, and the children are simply not applying the rule to their own pragmatic behaviour. If the children are not expected to be able to answer the metapragmatic questions with ease it can be assumed that improvements in MPA are central to the therapeutic effect. It is therefore unclear whether the task is designed to improve the children’s MPA or conversely whether eliciting MPA that is already possessed is designed to improve the child’s pragmatic behaviour.

The issue of developmental appropriateness for MPA intervention techniques does not appear to be broached in the published therapeutic literature. Metapragmatic techniques have been recommended even for preschool children (Dewart & Summers, 1988) without reference to the fact that explicit MPA is not developmentally indicated at this age. This would lead us to question whether such treatments are effective, and if so, whether this means that children with communication impairments are acquiring pragmatic rule awareness via a different developmental pathway to their typically developing peers. For example, the emergentist theory of pragmatics (Perkins, 2007) argues that when pragmatics is impaired compensatory strategies occur to improve the child’s ability to function. The greater awareness of compensatory strategies within the realm of clinical research emphasises the importance of investigation into how these compensatory strategies might apply to assessment and intervention (Joffe, Cruice, & Chiat, 2008). The potential role of explicit MPA as a compensatory strategy for children with atypically developing pragmatics therefore requires further investigation.

A further criticism of the MPA intervention literature is the lack of specificity provided by the authors with regards to the level of explicitation at which the metapragmatic awareness is taught. The levels of explicitation framework (Karmiloff-Smith, 1986) utilised in the AMP provides a clinically useful framework for specifying the level of explicitation required for an MPA task. Such a framework could be applied to intervention and would enable developmentally appropriate levels of MPA to be used in the remediation of pragmatic impairments. For example, with younger cwPLI it might be that the use of MPA at the level of linguistic marker awareness might be recommended. This might involve teaching the child about specific pragmatic rule violations by reflecting back the language that they have used. For example, if the pragmatic rule violated was topic maintenance, specific feedback would relate to what
was said and what should have been said e.g. “We are talking about the Egyptians. You are talking about dinosaurs. Dinosaurs are not part of the Egyptians lesson. You need to talk about the Egyptians”. There is no assumption that once linguistic marker feedback has been given that the child will automatically re-describe this knowledge at the pragmatic rule awareness level. Put another way, there is no assumption that they will automatically be aware that they have “changed the topic”. Teaching at this level of pragmatic rule marker awareness MPA might only be advocated for cwPLI who are older and more linguistically able.

It should be noted that in the original formulation the levels of explicitation were not intended to represent age-related stages of processing (Karmiloff-Smith, 1986). Each level was intended as a way of explaining why a child might be able to use linguistic rules, thereby demonstrating some level of representation for the rules, without explicit awareness. Through the process of explicitation it was argued that representations which were once implicit could become explicit and accessible to conscious awareness. Such a theory implies that a child might demonstrate explicit MPA for a specific pragmatic rule whilst demonstrating implicit MPA for another pragmatic rule. The notion that children are performing at a specific level of MPA or representational explicitation should be used with caution. Where MPA is used in therapeutic interventions it would therefore be advisable to assess MPA for each specific pragmatic rule that will be targeted in intervention as it cannot be assumed that the child’s awareness is at the same level for each pragmatic rule. The factors which might affect MPA intervention for pragmatic rule violations will now be discussed.

Both the Neuroconstructivist and Emergentist Theories entail that the development of competent pragmatic behaviour in childhood will be a complex process involving multiple linguistic, cognitive, sensory and motor elements (Karmiloff-Smith, 1998, 2009; Perkins, 2007; Thomas et al., 2009). There has been demand within the clinical literature for investigations which focus on the underlying cause of impairment rather than behavioural features (Adams et al., 2005; Adams et al., 2006; Brinton & Fujiki, 2005; Leinonen et al., 2000). In respect to MPA capability, the ability to reflect on and hypothesise about pragmatic aspects of communication is therefore likely to draw on a wide variety of competencies within the child as well as the child’s experience of the contexts of interactions. Communicative competence therefore goes well beyond rule-learning. This implies that simply being able to identify a pragmatic rule or rule
violation does not mean that the child will adhere to this pragmatic rule within their own behaviour.

One factor involved is clearly the child’s linguistic ability, as demonstrated by the robust relationship between MPA and language impairment in this thesis. Such a relationship suggests that at a broad level impairments in structural language processes should be remediated before MPA is a target or tool of intervention or at least alongside MPA interventions as mutually supportive strategies. Furthermore, specific interventions which target the language or vocabulary required to talk about pragmatic rules might be indicated. Intervention which improves syntactic ability and mental state vocabulary has been found to improve social perspective taking (Clements, Rustin, & McCallum, 2000; Hale & Tager-Flusberg, 2003; Lohmann & Tomasello, 2003). Theoretically then, intervention which explicitly teaches pragmatic rule vocabulary may have an effect the child’s MPA for the pragmatic rule. This might be truer still in language impaired populations, where difficulties acquiring vocabulary and the concepts underlying the vocabulary may be greater than in cwTLD.

The child’s access to language (both expressive and receptive) has also been posited to underpin the development of social understanding (Tomasello, 1999, 2003). Firstly, linguistic impairments in cwPLI and cwSLI will affect their ability to take part in and understand social interactions, leading to poorly developed social understanding for the interaction. This is argued to occur because children lack the frequent exposure to or engagement in discourse processes such as disagreement and negotiation that support the development of social cognition. The effect of pragmatic impairments generally on verbal interactions (Brinton et al., 1997; Hadley & Rice, 1991; Rice et al., 1991) and specifically on social interactions and friendships (Brinton & Fujiki, 1999; Fujiki et al., 1999a; Fujiki et al., 1999b; Redmond & Rice, 1998) is well documented.

Secondly, Tomasello (1999, 2003) argued that language is also used by the child to represent the intentions and beliefs of the interlocutor. As the child develops an understanding of the speaker’s intentions and beliefs this affects their ability to internalise mental states (Dennis et al., 2001). Without this social cognitive ability it is difficult for the child to put into perspective the informational and social needs of the interlocutor or to interpret the interlocutor’s meaning (Twachtman-Cullen, 1998). Social cognition therefore enables the speaker to make assumptions about the interlocutor’s
prior knowledge and to use this information to make decisions about both what the speaker should say and the way in which the speaker should say it (i.e. the pragmatic rules governing the utterance). Evidence regarding the potential influence of certain aspects of social understanding on pragmatic behaviours also supports this view. For example, pragmatic behaviour has been argued to be influenced by the ability to understand and represent knowledge states of others (Baron-Cohen & Swettenham, 1997; Hughes & Leekam, 2004), awareness of social roles (Baron-Cohen, 1988) and awareness of emotional states (Hughes & Leekam, 2004; Twatchman-Cullen, 1998).

The clinical frameworks of pragmatic impairment of Adams et al. (2005, 2006) makes similar predictions about the importance of social understanding for successful social interactions. The implications of the framework suggest that the ability to empathise or hold a shared perspective (social interaction) and the ability to develop shared knowledge about social rules (social cognition) should therefore be assessed alongside the child’s MPA to inform and influence intervention. Where a child has difficulty talking the perspective of another person this may prevent them from developing pragmatic rules which are inherently social. Furthermore, difficulties perceiving the influence that a pragmatic rule violation might have on the interlocutor’s emotions (e.g. hurt, embarrassment) or on the interlocutor’s perceptions of the speaker (e.g. that the speaker is rude or unfriendly) may also affect the child’s response to pragmatic intervention. The results of this thesis indicated a possible association between linguistic ability, MPA and a measure of social understanding (the SU Question). This possible association suggests that alongside knowledge of the linguistic ability and awareness of the pragmatic rule, awareness about the social implications of adherence to the pragmatic rule should also be taught as part of the pragmatic intervention.

MPA also has the potential to be used as a self-regulatory mechanism for pragmatic behaviours. Meta-strategic knowledge is argued to include both knowledge of how to achieve a task goal and the ability to self-monitor during the task (Kuhn, 2000). MPA could be viewed as a form of meta-strategic knowledge both specifying how a behavioural goal can be achieved and enabling the child to self-monitor his/her own communicative success. For example, meta-strategic knowledge about how to achieve a good conversation might include knowledge of pragmatic rules pertaining to eye contact, turn taking and topic maintenance. For instructional change to have a lasting effect on behaviour, change must occur at the meta-strategic level (Kuhn, 2000).
self-monitoring aspect of this instruction ensures that when instruction is withdrawn, the individual monitors and maintains their new behaviour.

This self-regulating function of MPA (Becker, 1988) can only be applied if the child is motivated to do so. Motivation to utilise such newly learned rules can only occur if the child is aware that they are capable of self-regulation (McCombs & Marzano, 1990). Therefore, the child needs the skill and the will in order to adhere to the pragmatic rule. Motivation or will to adhere to the pragmatic rule is intrinsically related to the child’s awareness of the pragmatic rule and the social consequences of adhering to or violating it. This implies that any form of MPA intervention should teach not just rule awareness and the social impact of adherence to or violation of pragmatic rule but also self-awareness, self-monitoring and self-correction of pragmatic rule adherence/violations.

The broader meta-strategic and self-regulatory aspects of MPA intervention are arguably metacognitive and can be applied to a range of tasks outside of the domain of MPA (Flavell, 1999). This raises an important question about the underlying role of metacognitive abilities in MPA intervention. The lack of information on the metacognitive abilities of the participants in this thesis is a limitation of the current study and prevents any conclusions from being drawn regarding the relationship between MPA and metacognition. Furthermore, it is not clear when the self-regulatory effects of MPA training might be expected to occur and hypothetically they may not been seen until later on in development. Such a down-stream effect of intervention has also been seen in other meta-representational training studies such as cognitive monitoring (Dignath & Buttner, 2008) and ToM training (Lockl & Schneider, 2006).

5.7 Future research into MPA for cwTLD, cwPLI and cwSLI

Although it has been established that cwPLI and cwSLI have depressed levels of MPA and SU compared to cwTLD, some cwPLI and SLI were able to provide MPA and SU responses at the most sophisticated level of explicitation. Such performance does not conclusively prove that these children have age-appropriate MPA abilities. If the development of MPA is seen from the neuroconstructivist perspective (Karmiloff-Smith, 2009) then it is plausible that cwPLI and SLI who appear to have age-
appropriate MPA and SU abilities may actually be using different and compensatory cognitive processes to perform these judgements than cwTLD.

Secondly, the developmental trajectory of MPA and SU abilities for these children are not yet apparent. The results of this thesis suggest that the developmental progression in MPA for the PLI and SLI groups was similar to that of the TLDs, albeit at a lower overall level of ability, indicating that further gains might be seen in an older sample. However, we do not know whether these children ‘catch up’ with their peers or whether they continue to have impaired MPA during adolescence and adulthood.

To address the two issues outlined above the neuroconstructivist focus on emergent properties of development can be applied. Neuroconstructivism implies that rather than study MPA using cross-sectional design, a longitudinal study of the pragmatic and MPA development is required. Longitudinal methods are valuable for comparing the interaction and development of different cognitive abilities over time (Rutter, 2008). This would provide information on developmental pathways for children with typical and atypical profiles, helping to specify the relationship between behaviour and awareness (Karmiloff-Smith, 1998).

It can be assumed that to some extent the emergence of language, pragmatics and social cognitive abilities are interdependent (Tomblin, 2011). Given both the identified relationship between MPA and language and the proposed relationship between MPA and social cognition, investigating aspects of language and social cognition would also be of interest. A longitudinal study of the development of pragmatics, metapragmatics, social cognition and language in children with typical and atypical communication abilities into adolescents and adulthood could illuminate the relationship between these abilities, inform our knowledge of prognosis for cwPLI and cwSLI and provide much needed information about when intervention for these impairments is indicated. In addition, neuroconstructivist models of cognitive development suggest that understanding development itself informs our understanding of developmental disorders (Karmiloff-Smith, 1998). Therefore the developmental trajectory of impairments in SLI, PLI and ASD may reveal something about the nature of each disorder as a discrete diagnostic entity. It has been noted that overall there is very little research about adolescents with language disorders (Joffe et al., 2008). Information on the
development of MPA and SU abilities in cwPLI and cwSLI into adolescence and adulthood would help to address the areas of future research discussed above.

Predicted relationships between metapragmatics and other behavioural and cognitive abilities such as pragmatics, language and social cognition could also be explored using computational modelling. These models could simulate emerging pragmatic and metapragmatic behaviours without the need for lengthy longitudinal studies. This use of computational modelling has also been applied to aspects of language acquisition (Elman, 1990, 1993; Thomas & Karmiloff-Smith, 2003; Tomasello, 2003) and to communication disorders such as ASD (Thomas, Knowland, & Karmiloff-Smith, 2011).

One limitation of the investigations in this thesis was the small sample size of the SLI group. Difficulties with recruitment and time constraints meant that only a small sample of cwSLI were recruited to the study therefore limiting the generalizability of the results to the wider SLI cohort. Furthermore, a separate sample of cwASD was not recruited and therefore no conclusions about the MPA in this group can be made. There are currently no published systematic comparison studies of MPA in SLI, PLI and ASD and clinical assessment and intervention practice would benefit from further investigation in this area. Despite these limitations this thesis did produce novel information on MPA in children with language impairments which can be applied to clinical assessment and intervention.

Future research into the clinical applications of the AMP will now be outlined. The overall goal of intervention for cwPLI is for the children to adhere to pragmatic rules in order to communicate in socially appropriate ways. In order to do this intervention must first teach the child to alter their pragmatic rule violations and this was the rationale for measuring MPA for rule violations in the AMP. However, intervention must then teach the child to adhere to pragmatic rules. Whilst the AMP did reveal that most cwPLI had limited MPA for pragmatic rule violations, no comparable information on MPA for adherence to pragmatic rules was collected, given that the AMP task did not contain Video Items in which the pragmatic rule was adhered to. The wording of the Descriptive MPA Question, “Something went wrong in the talking. What went wrong?”, also indicated to the children that something had been violated. This did not allow for a judgement question to be asked to assess whether the child could identify when a rule had or had not been adhered to. In future versions of the AMP such Video
Items should be developed in order to collect information on MPA for rule adherence and rule violations.

Thus far discussions regarding the application of the AMP methodology have focused on the child’s ability to use and be aware of pragmatic rules in their own talking. The AMP task itself required the child to make metapragmatic judgements about the pragmatic rule violations in another person’s talking. Therefore a weakness of the AMP is that it only measures the child’s MPA abilities as a listener, not as a speaker. Therapeutic interventions which use MPA require the child to reflect on their own pragmatic performance and to monitor and correct their own pragmatic errors. The aim of intervention is rarely, if ever, to improve the child’s ability to monitor other people’s pragmatic errors. The one exception to this would be comprehension monitoring, where awareness of the other person’s errors is just as important as awareness of own errors.

Whilst the findings of this study shed light on children’s MPA skills as a listener, it is not clear to what extent this information can be generalised to children’s MPA skills as a speaker. Research from other aspects of reasoning about the self indicates that children are just as good at making judgements about others as they are at making judgements about themselves (Nicholls & Miller, 1984). Systematic study of the child’s MPA for their own and other’s pragmatic rule violations is required to ascertain whether this is true of MPA judgements. Application of such a methodology to clinical intervention would need to be done sensitively, in order to progress the child’s awareness from errors made by others to errors made by the child.

Furthermore, all AMP Video Items portrayed a conversation between a dyad and therefore only provide information on the child’s MPA for communication with one communicative partner. The AMP does not provide any information on the child’s MPA for pragmatic rules utilised during communication with more than one communicative partner i.e. group communication. It is argued that group interactions are more complex than dyadic interactions both because communication breakdowns or interruptions are more likely to occur (such as issues with turn taking) and because there is likely to be less opportunity to repair such breakdowns (Anderson, 2000). Remediation of pragmatic impairments must surely aim to improve pragmatic abilities within dyadic and group interactions, therefore necessitating assessment of MPA for the pragmatic rules required for group interactions. Indeed, videoed interactions have been used to assess the strategies that cwTLD could use to cope with situations such as joining in.
with a peer group, responding to teachers’ instructions in the classroom or coping with teasing. In this case the child simply watched the videoed interaction and then either predicted an appropriate ending or selected an ending from choices displayed on the screen (Walker et al., 1994).

Children are also expected to interact successfully with a range of communicative partners. The dyadic interactions portrayed in the AMP were limited to peer-to-peer communication, preventing the AMP from collecting information on MPA for peer-to-adult interactions. Children’s MPA judgements have been found to be sensitive to the communicative partner (Baroni & Axia, 1989; Axia & Baroni, 1985) and therefore it cannot be assumed that metapragmatic judgements will be the same for peer-to-peer and peer-to-adult interactions. This becomes especially pertinent in later language development when adolescents become more aware of the differential importance of compliance to specific pragmatic rules in different situations (Reed et al., 1999). For example, typically developing adolescents in one study thought that when evaluating peer-to-peer communication the ability to be empathetic was important but when evaluating peer-to-teacher communication the ability to use discourse management strategies was more important (Reed et al., 1999). Further research into MPA should therefore investigate and compare MPA for peer-to-peer and peer-to-adult dyadic and group interactions.

Appreciation of the role played by other conversational partners such as peers, teachers and care-givers raises the role these partners might play in intervention. For example, evidence from the field of metarepresentational abilities shows that children use more mental state verbs in talk with peers or siblings than they do with caregivers (Brown, Donelan-McCall, & Dunn, 1996). The implication is that meta-awareness interventions which include peers might maximise the frequency of the child’s metarepresentational talk. Furthermore, the application of a DA approach to MPA intervention implies that where a ZPD is identified for the child’s MPA, performance could be facilitated by support from adults or more able peers (Vygotsky, 1986). MPA intervention could potentially be applied to group work or peer facilitated activities, as well as to the more traditional SLT-child dyadic interactions. Metapragmatic approaches to the development of pragmatic abilities could also theoretically be applied to a small group or whole class approach, as has been the case for metacognitive approaches to
mainstream teaching and learning such as Philosophy for Children (Topping & Trickey, 2007; Trickey & Topping, 2004).

A further population not studied in the current thesis were bilingual language learners. The AMP was used to assess MPA in children for whom English was their primary method of communication. No assessment of bilingualism was made and no specific bilingual sample was recruited. The AMP in its current form is culturally biased to pragmatic rules used by monolingual English speakers and presents no evidence regarding MPA in bilingual language learners. There is an acknowledge need for culturally and linguistically appropriate assessments and interventions (RCSLT, 2006). Therefore the lack of information on MPA in bilingual children is a limitation of the current study.

Evidence on cross-linguistic variation in metalinguistic awareness (Duncan et al., 2009; Serratrice et al., 2009) and theory of mind (Frank & Temple, 2009; Vinden, 1999) together with cultural differences in a wide range of pragmatic rules such as initiation and maintenance of a conversation, topic, proximity, volume, tone and eye contact (Anderson, 2000) suggest that cross-linguistic differences in explicit MPA are also likely. If bilingual language learners adhere to different pragmatic rules for each language that they speak then this might lead to a different developmental progression in MPA for specific pragmatic rules depending on which language is assessed. The fact that different languages adhere to different pragmatic rules may also facilitate earlier development of MPA for bilingual language learners, as is the case for semantic development. Children who are bilingual language learners become aware that words are arbitrary in terms of their relation to meaning at an earlier age than monolingual children (Edwards & Christophersen, 1988; Ianco-Worrall, 1972). This hypothesis is supported by the demonstrable advantage for bilingual language learners in implicit MPA tasks (Siegal et al., 2009). Future research into explicit MPA development should therefore include an identified group of bilingual language learners. The AMP task has potential scope to be developed into a standardised assessment of MPA. Future research involving a longer period of task development with a larger sample of children would be required to produce norm-referenced or standardised AMP scores.
5.8 Conclusions

Research Aim 1 to develop and pilot a clinical tool for assessment of MPA in school-aged children was achieved. This thesis has established the AMP task as a useful way of measuring MPA in school-aged cwTLD, cwPLI and cwSLI, judged to have face validity and good clinical utility.

Research Aim 2 intended to determine the reliability and sensitivity of the AMP as a measure of age-related changes in MPA for cwTLD, cwPLI and cwSLI. Substantial inter-rater reliability was demonstrated. Furthermore, both the AMP Assessor Questions and the AMP Video Items demonstrated good internal consistency reliability and were sensitive to age-related changes in MPA.

Research Aim 3 investigated MPA in school-aged cwTLD. Analyses revealed that a significant increase in MP Scores occurred between 6:00-7:11 years and 8:00-9:11 years supporting previous evidence of a shift in explicit MPA around 7 years of age (Axia & Baroni, 1985; Baroni & Axia, 1989; Bernicot & Laval, 1996). This shift in MPA was both a reduction in non-awareness responses and an increase in pragmatic rule awareness responses between 6:00-7:11 years and 8:00-9:11 years.

Research Aim 4 compared MPA in school-aged cwTLD, cwPLI and cwSLI using the AMP. Both the PLI and the SLI groups had impaired MP Scores as compared to the TLD group. Both age and language ability accounted for significant variance in MPA. Impairments in MPA for the PLI and SLI groups were present even when language ability was controlled for.

Research Aim 5 compared performance on a Social Understanding Question in school-aged cwTLD, cwPLI and cwSLI using the AMP. Again, there was an advantage for the TLD group as compared to both the PLI and the SLI groups. Performance on the Social Understanding question was associated with age and language ability. Furthermore, when language ability was controlled for there was an advantage for the SLI group over the PLI group. This suggests that the cwPLI may have social understanding impairments which are disproportionate to their language abilities.
Pragmatics appears to be the interface between social, cognitive and linguistic ability and is fundamental to successful communication and social functioning (Baltaxe, 1977). It is through our use of language that we express our opinions, thoughts, emotions, desires and needs. We also use our knowledge of the interlocutor’s thoughts, emotions, desires and needs to comprehend the illocutionary force of the linguistic utterance within a given context. To be a successful communicator requires sophisticated perspective-taking, social cognition and flexibility which are often lacking in children with severe pragmatic impairments (Baltaxe, 1977; Tager-Flusberg, 1993). The connections between language, pragmatics and social cognition appear to be complex and not yet well understood in terms of their implications for clinical practice. Such practice would benefit from further research to illuminate how and why these connections occur in development and most importantly how to provide interventions that facilitate these connections to improve pragmatic functioning (Adams et al., 2005, 2006; Brinton & Fujiki, 2005). This information would provide SLTs with the strong evidence base that they require to make decisions regarding diagnosis, treatment and prioritization (Joffe, 2012).

Metapragmatics may prove to have a valuable role in therapy outcomes for children with pragmatic impairments. The results of this thesis suggest that aspects of cognition, such as language ability and social understanding, should be taught either before or alongside MPA to maximise therapeutic effectiveness. The implication that MPA and self-awareness are required for therapeutic change in pragmatic behaviour requires further exploration. Further intervention studies for pragmatic impairments are also required to provide evidence of the effectiveness of MPA intervention. The AMP task is ideally placed to provide pre- and post-test measures of MPA which could be used as signals of change or indicators of success in intervention studies.
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Appendix 1 - Pre-Screening Inclusion Criteria for cwPLI

Instructions
For each child whom you think may be suitable for the project please complete the following form (i.e. one form for each child). Send completed forms to your team leader who will collate these forms.

<table>
<thead>
<tr>
<th>Initial considerations</th>
<th>Yes/No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is aged 6 – 11 years</td>
<td></td>
</tr>
<tr>
<td>Attends mainstream primary school</td>
<td></td>
</tr>
<tr>
<td>English as primary language of communication and learning</td>
<td></td>
</tr>
<tr>
<td>Is able to co-operate with therapy activities</td>
<td></td>
</tr>
<tr>
<td>And shows none of the following:</td>
<td></td>
</tr>
<tr>
<td>▪ Severe emotional or behaviour needs</td>
<td></td>
</tr>
<tr>
<td>▪ Severely unintelligible speech</td>
<td></td>
</tr>
<tr>
<td>▪ Severe physical difficulties</td>
<td></td>
</tr>
<tr>
<td>▪ Severe hearing loss</td>
<td></td>
</tr>
</tbody>
</table>

Criteria to progress to screening: answers as underlined  Yes/No

<table>
<thead>
<tr>
<th>Social communication considerations</th>
<th>Yes/No</th>
</tr>
</thead>
<tbody>
<tr>
<td>A) The child has trouble understanding and interpreting the social context and friendship, e.g. social roles, emotions</td>
<td></td>
</tr>
<tr>
<td>B) The child has trouble understanding and/or using nonverbal aspects of communication e.g. facial expression, intonation</td>
<td></td>
</tr>
<tr>
<td>C) The child has trouble with aspects of conversation e.g. beginning and ending, taking turns, giving relevant and sufficient information</td>
<td></td>
</tr>
<tr>
<td>D) The child makes bizarre, tangential or inappropriate comments</td>
<td></td>
</tr>
<tr>
<td>E) The child has difficulty using and understanding non-literal language</td>
<td></td>
</tr>
</tbody>
</table>

Criteria to progress to screening: 2/5 above  Yes
Appendix 2 - Pre-Screening Inclusion Criteria for cwSLI

Instructions
For each child whom you think may be suitable for the project please complete the following form (i.e. one form for each child). Send completed forms to your team leader who will collate these forms.

<table>
<thead>
<tr>
<th>Initial considerations</th>
<th>Yes/No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has a language impairment</td>
<td>Yes/No</td>
</tr>
<tr>
<td>Is aged 6 – 11 years</td>
<td>Yes/No</td>
</tr>
<tr>
<td>Attends mainstream primary school or a language unit within an integrated provision</td>
<td>Yes/No</td>
</tr>
<tr>
<td>English as primary language of communication and learning</td>
<td>Yes/No</td>
</tr>
<tr>
<td>Is able to co-operate with adult led activities</td>
<td>Yes/No</td>
</tr>
</tbody>
</table>

And shows none of the following:
- Severe emotional and behavioural difficulties | Yes/No |
- Severely unintelligible speech | Yes/No |
- Severe physical difficulties | Yes/No |
- Severe hearing loss | Yes/No |

Criteria to progress to screening: answers as underlined | Yes / No |

<table>
<thead>
<tr>
<th>Social communication considerations</th>
<th>Yes/No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Please complete for information only – Yes/No scores do not affect the child’s suitability to take part</td>
<td></td>
</tr>
<tr>
<td>A) The child has trouble understanding and interpreting the social context and friendship, e.g. social roles, emotions</td>
<td></td>
</tr>
<tr>
<td>B) The child has trouble understanding and/or using nonverbal aspects of communication e.g. facial expression, intonation</td>
<td></td>
</tr>
<tr>
<td>C) The child has trouble with aspects of conversation e.g. beginning and ending, taking turns, giving relevant and sufficient information</td>
<td></td>
</tr>
<tr>
<td>D) The child makes bizarre, tangential or inappropriate comments</td>
<td></td>
</tr>
<tr>
<td>E) The child has difficulty using and understanding non-literal language</td>
<td></td>
</tr>
</tbody>
</table>

Criteria to progress to screening: N/a | n/a
Appendix 3 - Pre-Screening Inclusion Criteria for cwTLD

Instructions
If the child meets these criteria, we ask that a teacher from the child’s school contacts the child’s parents asking permission for the teacher to send an information pack to the parents regarding participation in the study.

<table>
<thead>
<tr>
<th>Initial considerations</th>
<th>Yes/No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is aged 6 – 11 years</td>
<td>Yes/No</td>
</tr>
<tr>
<td>Attends mainstream primary school</td>
<td>Yes/No</td>
</tr>
<tr>
<td>English as primary language of communication and learning</td>
<td>Yes/No</td>
</tr>
<tr>
<td>Has no history of special educational needs</td>
<td>Yes/No</td>
</tr>
<tr>
<td>Has no history of speech and language therapy involvement</td>
<td>Yes/No</td>
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<tr>
<td>Is able to co-operate with adult led activities</td>
<td>Yes/No</td>
</tr>
<tr>
<td>And shows none of the following:</td>
<td>Yes/No</td>
</tr>
<tr>
<td>- Severe emotional or behaviour needs</td>
<td>Yes/No</td>
</tr>
<tr>
<td>- Severely unintelligible speech</td>
<td>Yes/No</td>
</tr>
<tr>
<td>- Severe physical difficulties</td>
<td>Yes/No</td>
</tr>
<tr>
<td>- Severe hearing loss</td>
<td>Yes/No</td>
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</table>

<table>
<thead>
<tr>
<th>Criteria to progress to screening: answers as underlined</th>
<th>Yes/No</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Social communication considerations</th>
<th>Yes/No</th>
</tr>
</thead>
<tbody>
<tr>
<td>A) The child has trouble understanding and interpreting the social context and friendship, e.g. social roles, emotions</td>
<td>Yes/No</td>
</tr>
<tr>
<td>B) The child has trouble understanding and/or using nonverbal aspects of communication e.g. facial expression, intonation</td>
<td>Yes/No</td>
</tr>
<tr>
<td>C) The child has trouble with aspects of conversation e.g. beginning and ending, taking turns, giving relevant and sufficient information</td>
<td>Yes/No</td>
</tr>
<tr>
<td>D) The child makes bizarre, tangential or inappropriate comments</td>
<td>Yes/No</td>
</tr>
<tr>
<td>E) The child has difficulty using and understanding non-literal language</td>
<td>Yes/No</td>
</tr>
</tbody>
</table>

| Criteria to progress to screening: answers as underlined | Yes/No |
Appendix 4 - Scripts

Practise 1: “Speaker says hello instead of goodbye”
(The children are talking and playing with cars).
Child 1: Neoamm, vroom (driving a toy car around the table).
Child 2: I’m chasing you! Nee naa nee naa! Stop! (driving a toy car around the floor and chasing the other child’s toy car).
Child 1: Oh no! I think I’m gonna crash the cars (the toy cars crash together).
Child 2: Crash! (Laughs).
Child 1: Is it time for lunch yet?
Child 2: Yep.
Child 1: Go and check.
Child 2: Ok (gets up to go).
Child 1: See ya.
Child 2: (Waves goodbye to the girl) Hello.
Child 1: (Looks puzzled).

Practise 2: “Speaker has their back to the interlocutor”
(2 children are sitting on the floor).
Child 1: I’m off to Florida in the holidays!
Child 2: Cool! Are you going with your mum?
Child 1: Yeah and dad as well.
Child 2: We’re going to Blackpool. Gonna go on the pier.
Child 1: You better send me a post card.
Child 2: Yeah if I’ve got any money.
(Child 2 turns their chair around, away from Child 1. Child 1 looks puzzled).
Child 1: We’re going on the rapids and the fun fair. I’m so excited!
Child 2: When are you going?
Child 1: Two weeks (Child 1 peers round at Child 2).
Child 2: We’re going in three weeks.
Child 1: When you come back do you wanna go to the park? (Child 1 peers round at Child 2).
Child 2: I’ll ask my mum.
**Practice 3: “Interlocutor whispers to speaker”**

(Child 1 is sitting at a table and Child 2 enters the scene).
Child 1: (Playing with small world toys).
Child 2: Can I sit next to you?
Child 1: Ok (speaks in a quiet voice).
Child 2: Pardon?
Child 1: Uhuh (speaks in a quiet voice and nods).
Child 2: (sitting down) Can I play?
Child 1: Here you go (speaks in a quiet voice and gives a toy to Child 2).
Child 2: Where’s the man?
Child 1: In the box (speaks in a quiet voice).
Child 2: (Pause) Ok, thanks (looks confused).
Child 1: Alright (in quiet voice).

**Video 1: “Speaker uses hyperbole”**

(Two children are sitting at a table with toy animals on the table).
Child 1: I’ve bumped my knee!
Child 2: Oh no, what happened?
Child 1: I fell off the swing.
Child 2: Were you high up?
Child 1: Yeah I was swinging so high I saw the top of the school roof.
Child 2: (Pause) No you didn’t!
Child 1: Yeah I did and then I fell off and bumped my knee.
Child 2: Oh that must have hurt.
Child 1: Yeah and there was loads and loads of blood everywhere.
Child 2: Did you get a plaster?
Child 1: Yeah and I nearly died, ambulance came and I went to hospital.
Child 2: Yeah right!
Child 1: And I had to push my knee back into my leg.
Child 2: Ok (Child 2 looks like they don’t believe Child 1).
Video 2: “Overuse of speech act”
(The children are sitting at a table with dinosaurs and a box).
Child 1: Do you want to play a game?
Child 2: Yeah ok.
Child 1: Do you like playing games?
Child 2: (Pause) I suppose so (sounds annoyed).
Child 1: Is it too cold to play outside?
Child 2: (Pause) Suppose so. Let’s play a game here! (sounds very annoyed).
Child 1: Do you like board games? Do you like action games?
Child 2: (Pauses and looks surprised) Mmm.
Child 1: Do you like car games?
Child 2: Let’s just play a game! (speaks very quickly and sounds annoyed).
Child 1: Ok.

Video 3: “Speaker fails to make clarification”
(Two children are sitting at a table holding photos of their pets).
Child 1: Peter says she’s smelly.
Child 2: (Pause) Who’s Peter?
Child 1: Peter throws a ball and Brook chases it.
Child 2: (Pauses and looks confused) Oh.
Child 1: Mark and Jane chase Brook round the garden.
Child 2: (Pause) Who’s Jane?
Child 1: Jane’s got a dog too, he’s called Archie.
Child 2: (Sounding annoyed) Yeah but is Jane your sister?
Child 1: Jane and Archie play fetch the ball.
Child 2: (Sounded more and more annoyed) I’m gonna go and speak to Sarah now. Bye.
Video 4: “Interlocutor provides minimal response”
(Two children are sitting at a table. There are some toy farm yard animals in front of them).
Child 1: Hello. Guess what we did in the school holidays?
Child 2: What?
Child 1: We went to the farm. It was so much fun!
Child 2: Mmm.
Child 1: Yeah and we saw the cows and the pigs, guess what guess what?
Child 2: What?
Child 1: I fed a sheep!
Child 2: Mmm.
Child 1: (Sounding annoyed) What did you do in the holidays?
Child 2: Don’t know.
Child 1: (After pause of few seconds Child 1 speaks but sounds annoyed) Do you want to play with these animals?
Child 2: (Child 2 is silent and stares at the animals).

Video 5: “Speaker gives a tangential response”
(Two children are sitting at a table and talking).
Child 1: So did you see the football game last night?
Child 2: Yeah I watched it with my mum.
Child 1: Me too. Did you see the bit where they scored the goal?
Child 2: Yeah it was cool (pause) the car went really fast.
Child 1: (Child 1 pauses and sounds surprised) Huh?
Child 2: He was driving round the track.
Child 1: (Child 1 pauses and sounds surprised) What car?
Child 2: The racing car.
Child 1: In the football match?
Child 2: No in the races! (Pause) The monkey went oo oo ah ah.
Child 1: In the match, the races? I mean where?
Child 2: In the zoo and we saw giraffes and lions and stuff.
Child 1: Oh I don’t get it (walks off set).
Video 6: “First and second parts of exchange do not match”

(Two children are sitting at a table and talking).
Child 1: Did you go in the sea?
Child 2: The sea was very blue and it was a two minute walk from our bed and breakfast.
Child 1: Mmm did you play in the sea?
Child 2: Me and mum played in the sea loads.
Child 1: Did you play in the sand?
Child 2: I played tiggit with Tom.
Child 1: Did you go to the Blackpool fun fair? My brother says it’s wicked.
Child 2: I had candy floss.
Child 1: (Child 1 pauses and looks surprised) At the fun fair?
Child 2: And a sticky apple. Felt sick then.
Child 1: So did you go on the big wheel?
Child 2: It was a massive one.
Child 1: (Sounding annoyed) Did you go on it?
Child 2: It stopped right at the top and you could see everything!
Child 1: Was it scary up there?
Child 2: It went round and round like this (moves hand round in a wheel motion).
Child 1: (Sounding more annoyed) Yeah but was it scary?
Child 2: It went round twice.
Child 1: Right (Child 1 folds his/her arms and looks fed up, looks away from Child 2 and stops talking).
Video 7: “Speaker does not pick up on hints”
(Two children are sitting at a table. There is a jigsaw and Buckaroo on the table).
Child 1: Do you want to play with the jigsaw?
Child 2: Yeah please (putting a piece in the jigsaw).
Child 1: No, that goes there (pointing to a space).
Child 2: Oh, that looks cool (looking at the buckaroo).
Child 1: Mmm, what?
Child 2: That game looks like fun (pointing to the buckaroo).
Child 1: Yeah.
Child 2: I think I’ve finished my jigsaw now.
Child 1: Yeah, me too. Do you want to do another jigsaw?
Child 2: The other game looks really really fun (gazing at buckaroo).
Child 1: I think I have a seaside jigsaw.
Child 2: Oh (looking disappointed) we could play the other game.
Child 1: Look! Here it is!
Child 2: Mmm, great. (Sounding disappointed).
Child 1: (Tips the jigsaw pieces out of the box onto the table).

Video 8: “Speaker provides excessive detail”
(Two children are sitting at a table and talking).
Child 1: What did you do for your holidays?
Child 2: We went to the seaside on the 26th July.
Child 1: (Child 1 pauses and looks surprised) How long did you go for?
Child 2: We stayed for 4 days that’s 96 hours.
Child 1: (Child 1 pauses and looks surprised) Did you stay in a hotel?
Child 2: No we stayed at Waterside B&B, 2 Wallaby Avenue., Blackpool. Have you been to Blackpool?
Child 1: (Pause) No. We go to Wales. Camping. It rains all the time!
Child 2: Blackpool was 25 degrees on the 26th July, 24 degrees on 27th July, 28 degrees on 28th July and 22 degrees on the 29th July 2007.
Child 1: (Child 1 pauses and looks surprised) Mmm, sounds warm.
Video 9: “Speaker looks away from interlocutor”

(Two children are standing up having a conversation. During the whole conversation Child 1 looks away from Child 2, staring either side of the girl and either looking at the ceiling or the floor).

Child 1: Where is my mum? I want to go home.
Child 2: Dunno. My dad’s not come yet.
Child 1: I’m so hungry. I can’t wait to go home and have my tea (still looking away from the Child 2).
Child 2: Yeah me too. We’re having sausages and mash tonight.
Child 1: We’re having curry and rice (still looking away from Child 2).
Child 2: And I’m gonna watch cartoons and play with my cars.
(Child 2 tries to get Child 1 to look at her by looking at Child 1’s face. When Child 1 still does not look at her she looks fed up).
Child 1: I’m going to play on my computer (still looking away).
Child 2: What games have you got?
(Child 2 tries to get Child 1 look at her by tilting her head round in front of Child 1’s head and looking even more fed up that Child 1 won’t look at her).
Child 1: Erm, football and stuff like that (still looking away).
Child 2: Oh (Child 2 tries to get Child 1 to look at her by moving so that her face is a bit closer to Child 1’s face but not too close and looking even more fed up that Child 1 won’t look at her).
Child 1: There’s my mum! Hi Mum! (Child 1 still not looking at Child 2).
Child 2: There’s my dad too. (Folds arms and sighs) See you tomorrow. (Looks away from the Child 1 and walks off set).
Child 1: Bye.
**Video 10: “Interlocutor responds ambiguously”**

(Two children are standing outside a school).
Child 1: Are you still coming for tea tomorrow night?
Child 2: Yes.
Child 1: My mum says, do you want to eat sausages or would you like pizza?
Child 2: Yes.
Child 1: (Child 1 pauses and looks surprised) Which one? Sausage or pizza?
Child 2: Yes.
Child 1: Ok we’ll just have pizza coz I like that. And my mum says we can go out somewhere. Do you want to go bowling or would you want to go to the cinema?
Child 2: Yes.
Child 1: (Child 1 pauses and looks confused) Which one? Cinema or bowling?
Child 2: Yes.
Child 1: We’ll go bowling then, I really like that.
Child 2: Ok that sounds cool.

**Video 11: “Speaker ignores request to change topic”**

(Two children are sitting at table and talking).
Child 2: Uhuh, cars are so so boring.
Child 1: And my dad’s got a van too.
Child 2: Mmm.
Child 1: It’s got three seats in the front.
Child 2: Yeah.
Child 1: And it’s got a big engine.
Child 2: I don’t wanna talk about cars.
Child 1: When I’m big I’m gonna have a blue car.
Child 2: I don’t want to talk about cars any more (huffs and looks cross).
Child 1: And I can have a fast car and drive really fast.
Child 2: I don’t want to talk about cars. Stop talking about cars. Let’s talk about something else. Let’s go and play outside.
Child 1: Wanna look at the cars outside (points to window).
Child 2: You’re boring! Cars are boring! I’m going to play on my bike (walks off in a huff).
**Video 12: “Speaker stands too close to interlocutor”**

Child 1: It’s my birthday tomorrow!
Child 2: What are you getting?
Child 1: Not sure, computer games and stuff.
Child 2: (Jumping up close to Child 1’s face) Are you having a party?
Child 1: At my house.
Child 2: That sounds fun!
Child 1: Yeah.
Child 2: Cool! Can I come (Child 2 stands with his/her body close to Child 1).
Child 1: Erm… I’ll have to ask my mum.
Child 2: Ok.
Child 1: Get out my face (Moves backwards away from Child 2).
Child 2: Who else is coming to your party? (moving closer to Child 1).
Child 1: James and Max and Kirsty. I’m going (Runs away).

**Video 13: “Speaker dominates the conversation”**

(Two children are sitting at a table holding photos of their pets).
Child 1: Aww! It’s a cat! Is it yours? (Pointing to photo of cat).
Child 2: Yeah, she’s called tiggles.
Child 1: This is my dog. She’s called brook (Showing a photo of his dog).
Child 2: Ah cute.
Child 1: And she runs around the house neaowmmm.
Child 2: She’s so.
Child 1: And she chews bones and.
Child 2: My cat scratches.
Child 1: Brook got told off yesterday. She had to stay in the kitchen, naughty dog!
Child 2: Did she bark?
Child 1: But then we let her out and I played with her. I throw her a ball and say fetch and she runs after it.
Child 2: My cat chases.
Child 1: And she eats bones and chews bones but mum says she can’t have them all the time.
Child 2: My cat likes.
## Appendix 5 - List of Video Items included in phase 1 of the pilot study

<table>
<thead>
<tr>
<th>Script Number</th>
<th>Pragmatic rule violation</th>
<th>Social scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practice1</td>
<td>Speaker says hello instead of goodbye</td>
<td>Playing with cars</td>
</tr>
<tr>
<td>Practice2</td>
<td>Speaker talks with their back to the interlocutor</td>
<td>Talking about holidays</td>
</tr>
<tr>
<td>Practice3</td>
<td>Interlocutor whispers to speaker</td>
<td>Playing with dolls</td>
</tr>
<tr>
<td>1</td>
<td>First, second parts of exchange do not match</td>
<td>Talking about a birthday party</td>
</tr>
<tr>
<td>2</td>
<td>First, second parts of exchange do not match</td>
<td>Talking about a funfair</td>
</tr>
<tr>
<td>3</td>
<td>Interlocutor provides minimal response</td>
<td>Talking about a farm trip</td>
</tr>
<tr>
<td>4</td>
<td>Interlocutor provides minimal response</td>
<td>Talking about sports day</td>
</tr>
<tr>
<td>5</td>
<td>Interlocutor provides no response</td>
<td>Playing with animals</td>
</tr>
<tr>
<td>6</td>
<td>Interlocutor provides no response</td>
<td>Talking about a bean bag race</td>
</tr>
<tr>
<td>7</td>
<td>Interlocutor responds ambiguously</td>
<td>Playing with animals</td>
</tr>
<tr>
<td>8</td>
<td>Interlocutor responds ambiguously</td>
<td>Talking about visiting a friend’s house for tea</td>
</tr>
<tr>
<td>9</td>
<td>Overuse of speech act</td>
<td>Playing with dinosaurs</td>
</tr>
<tr>
<td>10</td>
<td>Overuse of speech act</td>
<td>Talking about a new jumper</td>
</tr>
<tr>
<td>11</td>
<td>Speaker abruptly ends the conversation</td>
<td>Talking about the cinema</td>
</tr>
<tr>
<td>12</td>
<td>Speaker abruptly ends the conversation</td>
<td>Playing with dinosaurs</td>
</tr>
<tr>
<td>13</td>
<td>Speaker does not pick up on hints</td>
<td>Asking for chocolate buttons</td>
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<tr>
<td>14</td>
<td>Speaker does not pick up on hints</td>
<td>Playing games</td>
</tr>
<tr>
<td>15</td>
<td>Speaker dominates the conversation</td>
<td>Talking about pets</td>
</tr>
<tr>
<td>16</td>
<td>Speaker dominates the conversation</td>
<td>Talking about football</td>
</tr>
<tr>
<td>17</td>
<td>Speaker fails to make clarification</td>
<td>Talking about dogs</td>
</tr>
<tr>
<td>18</td>
<td>Speaker fails to make clarification</td>
<td>Talking about a football team</td>
</tr>
<tr>
<td>19</td>
<td>Speaker gives a tangential response</td>
<td>Talking about a football match</td>
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<tr>
<td></td>
<td>Speaker action</td>
<td>Topic</td>
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<tr>
<td>20</td>
<td>Speaker gives a tangential response</td>
<td>Talking about holidays</td>
</tr>
<tr>
<td>21</td>
<td>Speaker ignores request to change topic</td>
<td>Talking about Spiderman</td>
</tr>
<tr>
<td>22</td>
<td>Speaker ignores request to change topic</td>
<td>Talking about cars</td>
</tr>
<tr>
<td>23</td>
<td>Speaker looks away from interlocutor</td>
<td>Waiting to be collected by a parent at home time</td>
</tr>
<tr>
<td>24</td>
<td>Speaker looks away from interlocutor</td>
<td>Talking about the park</td>
</tr>
<tr>
<td>25</td>
<td>Speaker provides excessive detail</td>
<td>Talking about a birthday present</td>
</tr>
<tr>
<td>26</td>
<td>Speaker provides excessive detail</td>
<td>Talking about holidays</td>
</tr>
<tr>
<td>27</td>
<td>Speaker stands too close to interlocutor</td>
<td>Asking for a party invitation</td>
</tr>
<tr>
<td>28</td>
<td>Speaker stands too close to interlocutor</td>
<td>Playing I spy</td>
</tr>
<tr>
<td>29</td>
<td>Speaker stares at interlocutor</td>
<td>Talking about a swimming race</td>
</tr>
<tr>
<td>30</td>
<td>Speaker stares at interlocutor</td>
<td>Talking about Christmas</td>
</tr>
<tr>
<td>31</td>
<td>Speaker talks obsessively about one topic</td>
<td>Talking about cars</td>
</tr>
<tr>
<td>32</td>
<td>Speaker talks obsessively about one topic</td>
<td>Talking about Spiderman</td>
</tr>
<tr>
<td>33</td>
<td>Speaker talks too loudly</td>
<td>Drawing pictures</td>
</tr>
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<td>34</td>
<td>Speaker talks too loudly</td>
<td>Talking about lunch time</td>
</tr>
<tr>
<td>35</td>
<td>Speaker uses hyperbole</td>
<td>Talking about a bumped knee</td>
</tr>
<tr>
<td>36</td>
<td>Speaker uses hyperbole</td>
<td>Talking about a burglary</td>
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### Appendix 6 – AMP Administration Instruction Sheet for Assessor

<table>
<thead>
<tr>
<th>Step</th>
<th>Instruction and/or spoken input by assessor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Say “We are going to watch some videos of children talking. We will watch each video twice. After we have watched a video I will ask you some questions and we will do some talking. There are no right or wrong answers. I am just interested in what you think about the way the children are talking. Do you have any questions?”</td>
</tr>
<tr>
<td>2</td>
<td>Say: “First we will watch some practice videos. When we are watching these videos you can ask me any questions and I will try to answer your questions.”</td>
</tr>
<tr>
<td>3</td>
<td>Say “Let’s watch practice 1” <em>Show practice 1 for the first time.</em> Then say “That was the first time. Now let’s watch it again. Then I’ll ask you some questions.”</td>
</tr>
<tr>
<td>4</td>
<td>Show practice 1 for the second time. Pause the video at the freeze-frame clip of the two children.</td>
</tr>
<tr>
<td>5</td>
<td>Turn on the Dictaphone and say “Now I will ask you some questions”. Ask the AMP questions as specified on the assessment form.</td>
</tr>
<tr>
<td>6</td>
<td>Repeat Step 3-5 for practice 2 and practice 3.</td>
</tr>
<tr>
<td>7</td>
<td>Say “Now we will watch all of the videos. Remember there are no right or wrong answers. I am just interested in what you think.”</td>
</tr>
<tr>
<td>8</td>
<td>Show the remaining AMP Video Items. Repeat Step 3-5 for each Video Item. Show each Video Item twice and ask the questions as specified on the assessment form.</td>
</tr>
<tr>
<td>9</td>
<td>Turn off the recorder and provide a debrief for the participant: Ask the child what they thought about the videos and remind them that you were only interested in what they thought about the way the children were talking.</td>
</tr>
</tbody>
</table>
# Appendix 7 – Sample Transcription Sheet

VIDEO 1 – Speaker uses hyperbole

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
<th>Child’s response</th>
<th>Repetition</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>What were the children talking about?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Something went wrong in the talking. What went wrong?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Why is that wrong?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>What could the boy have done differently?</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>What kind of person is the boy?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix 8 – Scoring Guide

Video Item Scoring Rules and Requirements

For each Video Item there are 5 Assessor Questions that require scoring. Score all responses to all Question Stimuli for all Video Items.

- Comprehension Check: What were the children talking about? Comprehension Score
- Descriptive MPA: Something went wrong in the talking. What went wrong? MP Score
- Reflective MPA: Why is it wrong? MP Score
- MP Rule awareness: What could the boy/girl have done differently? MP Score
- Social Understanding awareness: What kind of person is the boy/girl? SU Score

The comprehension score levels of response are given below:

<table>
<thead>
<tr>
<th>Score 0</th>
<th>Score 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incorrect response</td>
<td>Any correct response from the selection given or other appropriate response</td>
</tr>
</tbody>
</table>

The MP Score levels of response are given below:

<table>
<thead>
<tr>
<th>Score 0</th>
<th>Score 1</th>
<th>Score 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non awareness / Redescription</td>
<td>Linguistic marker awareness</td>
<td>Pragmatic marker awareness</td>
</tr>
<tr>
<td>No linguistic awareness e.g. “don’t know”, no response, irrelevant response</td>
<td>The child identifies the part of the language used in the dialogue which signals the pragmatic rule violation</td>
<td>The child explicitly states the pragmatic rule</td>
</tr>
<tr>
<td>The child repeats a part of the dialogue but this does not signal the pragmatic rule violation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The SU Score levels of response are given below:

<table>
<thead>
<tr>
<th>Score 0</th>
<th>Score 1</th>
<th>Score 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Non awareness</strong></td>
<td><strong>Redescription of pragmatic behaviour</strong></td>
<td><strong>Psychological / social description</strong></td>
</tr>
<tr>
<td>The response provides no response or an irrelevant/incorrect response</td>
<td>The response describes the behaviour of the child</td>
<td>The responder describes the social or psychological characteristic of the child</td>
</tr>
</tbody>
</table>

Where there is uncertainty about the score to be given the examiner should refer to the description of each level of response.

Unintelligible or incoherent responses cannot be scored and should be given a score of 0.

Errors in sentence structure, grammar or pronunciation are acceptable and should not affect the score given.
Video 1 - Speaker Uses Hyperbole  
**Comprehension Check**  
What were the children talking about?

<table>
<thead>
<tr>
<th>Correct response</th>
<th>Park, swings, bumped knee, hurt knee, accident, hospital, school roof</th>
</tr>
</thead>
</table>

Video 1 - Speaker Uses Hyperbole  
**Descriptive MPA Question**  
Something went wrong in the talking. What went wrong?

<table>
<thead>
<tr>
<th>Non awareness / Redescription</th>
<th>Linguistic marker awareness</th>
<th>Pragmatic marker awareness</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>The girl was confused.</td>
<td>The boy said he nearly died but he didn’t.</td>
<td>The boy was exaggerating.</td>
</tr>
<tr>
<td>The girl said the boy didn’t have to go to hospital when he did.</td>
<td>The girl didn’t believe the boy.</td>
<td>The boy was lying.</td>
</tr>
<tr>
<td>The girl frowned at the boy.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The girl said no you never.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The girl said yeah right.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Video 1 - Speaker Uses Hyperbole  
**Reflective MPA Question**  
Why is that wrong?

<table>
<thead>
<tr>
<th>Non awareness / Redescription</th>
<th>Linguistic marker awareness</th>
<th>Pragmatic marker awareness</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>The girl isn’t kind.</td>
<td>Because you should say I cried.</td>
<td>When you talk you should not go overboard or people will not want to talk to you.</td>
</tr>
<tr>
<td>The boy is kind.</td>
<td>If you don’t know the truth you should believe what the person is saying.</td>
<td>Because you’re supposed to tell the truth when someone asks you a question.</td>
</tr>
<tr>
<td>You should nod or say “ok”.</td>
<td></td>
<td>Because you should tell the truth.</td>
</tr>
<tr>
<td>Because you don’t just put a plaster over it you need a bandage.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The girl mustn’t like dirty things.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The girl didn’t think the boy broke his knee.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The boys sounds a bit weird.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The boy says he pushed his knee back in his leg.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The boy could not have died.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>It was only a cut.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The girl is getting annoyed with him. The boy was lying to the girl. If you are swinging on the swing you don’t go that high.

Video 1 - Speaker Uses Hyperbole MP Rule awareness Question What could the boy have done differently?

<table>
<thead>
<tr>
<th>Non awareness / Redescription 0</th>
<th>Linguistic marker awareness 1</th>
<th>Pragmatic marker awareness 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>He likes telling lies.</td>
<td>He could have said that he fell off the swing.</td>
<td>Told the truth. Not lied to the girl. He could have talked about something else which she would have believed.</td>
</tr>
<tr>
<td>Said yes I did.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Talked about something.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Played with the toys.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not talked at all.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Video 1 - Speaker Uses Hyperbole Social Understanding Question What kind of person is the boy?

<table>
<thead>
<tr>
<th>Non awareness 0</th>
<th>Redescription of pragmatic behaviour 1</th>
<th>Psychological / social description 2</th>
</tr>
</thead>
</table>
### Video 2 – Overuse of speech act

<table>
<thead>
<tr>
<th>Comprehension Check</th>
<th>What were the children talking about?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Correct response</strong></td>
<td>1</td>
</tr>
<tr>
<td>Dinosaurs, playing, games</td>
<td></td>
</tr>
</tbody>
</table>

### Descriptive MPA

<table>
<thead>
<tr>
<th>Non awareness / Redescription</th>
<th>Linguistic marker awareness</th>
<th>Pragmatic marker awareness</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>The girl was sad/fed up.</td>
<td>The girl kept on going on about different types of games.</td>
<td>The girl just kept asking questions.</td>
</tr>
<tr>
<td>She didn’t like any games.</td>
<td>The girl kept asking if the other girl liked games.</td>
<td></td>
</tr>
<tr>
<td>She started speaking too quickly.</td>
<td>She was asking her about all the games.</td>
<td></td>
</tr>
<tr>
<td>She didn’t let her get a word in.</td>
<td>The girl kept asking which type of game she liked.</td>
<td></td>
</tr>
<tr>
<td>She didn’t say what games she wanted to play.</td>
<td>That girl just saying oh I want to play a game oh can we play a game no I don’t want to go outside can we play a game.</td>
<td></td>
</tr>
<tr>
<td>They were arguing about what to play.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>One of the girls didn’t really answer the other girl.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The girl said let’s just play a game.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>She didn’t say what she wanted.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Reflective MPA

<table>
<thead>
<tr>
<th>Non awareness / Redescription</th>
<th>Linguistic marker awareness</th>
<th>Pragmatic marker awareness</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>I thought they were going to play a game.</td>
<td>Because she just wanted to play a game and that girl kept on asking her what games does she like.</td>
<td>Because you shouldn’t just ask questions.</td>
</tr>
<tr>
<td>It’s fun playing games.</td>
<td>Because she was just repeating herself all the time and you only need to say it once.</td>
<td>Because you should get an answer before you ask another question / continue talking.</td>
</tr>
<tr>
<td>Because you say if you want to play it.</td>
<td>Because they should just decide on something.</td>
<td>Because you’re supposed to ask about one game and then wait for the answer.</td>
</tr>
<tr>
<td>Because the girl just wanted to play the game.</td>
<td>Because they should not go on and on about all the things that they could play.</td>
<td></td>
</tr>
<tr>
<td>Because the girl just wanted to get on with it.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Video 2 – Overuse of speech act  
**MP Rule awareness**
**What could that girl have done differently?**

<table>
<thead>
<tr>
<th><strong>Non awareness / Redescription</strong></th>
<th><strong>Linguistic marker awareness</strong></th>
<th><strong>Pragmatic marker awareness</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Say “Never mind let’s just play a game”.</td>
<td>She could have just let her answer the questions.</td>
</tr>
<tr>
<td></td>
<td>Let her make her mind up.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Asked her then wait for about half a minute.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Said should we play an action game.</td>
<td></td>
</tr>
<tr>
<td>Talked about games.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shout.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Just found the game.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Just not wasted time.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Video 2 – Overuse of speech act  
**Social Understanding**
**What kind of person is that girl?**

<table>
<thead>
<tr>
<th><strong>Non awareness</strong></th>
<th><strong>Redescription of pragmatic behaviour</strong></th>
<th><strong>Psychological / social description</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>She’s a happy girl.</td>
<td>A bit too over the top.</td>
<td></td>
</tr>
<tr>
<td>Bit silly.</td>
<td>A chatty girl. Somebody who talks quite fast.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Someone who says everything on their mind.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Somebody who likes to play different games.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Someone who plays games.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A game lover.</td>
<td></td>
</tr>
</tbody>
</table>


**Video 3 – Speaker fails to make clarification**

**Comprehension Check**
What were the children talking about?

| Correct response | Dog, pets, friends, Jane, Brook, Michael, Archie, people, family |

**Video 3 – Speaker fails to make clarification**

**Descriptive MPA**
Something went wrong in the talking. What went wrong?

<table>
<thead>
<tr>
<th>Non awareness / Redescription</th>
<th>Linguistic marker awareness</th>
<th>Pragmatic marker awareness</th>
</tr>
</thead>
<tbody>
<tr>
<td>The boy on the right walked away. That boy just left without speaking. He keeps mixing up names. He said “I want to speak to Sarah now.” He was going on and on about these people and what they do and if they have a dog. He kept talking over him.</td>
<td>Well he didn’t really understand who he was talking about. The boy wouldn’t tell the boy who the people were. That boy was just going on when he was trying to ask him something. That boy kept on asking questions and that boy wasn’t really listening he was talking about something else.</td>
<td>He kept asking questions and he didn’t answer back. He wasn’t answering the other boy. He wasn’t answering his questions properly.</td>
</tr>
</tbody>
</table>

**Video 3 – Speaker fails to make clarification**

**Reflective MPA**
Why is that wrong?

<table>
<thead>
<tr>
<th>Non awareness / Redescription</th>
<th>Linguistic marker awareness</th>
<th>Pragmatic marker awareness</th>
</tr>
</thead>
<tbody>
<tr>
<td>He’s not like me. The dog should not be in the story. Because you should let other people talk. You should wait until the conversation’s finished until you get up and go. People would normally talk about normal things instead of speaking in story. People would normally be polite. Most people don’t stutter.</td>
<td>Well they need to understand what the other one was talking about. You’re supposed to let someone understand someone before you carry on.</td>
<td>He was supposed to answer the question. When someone asks you a question you should answer it. You normally answer the questions.</td>
</tr>
</tbody>
</table>
He just ignored the boy. He was going on about different people and it wasn’t very interesting. He got on his nerves.

Video 3 – Speaker fails to make clarification

<table>
<thead>
<tr>
<th>Non awareness / Redescription</th>
<th>Linguistic marker awareness</th>
<th>Pragmatic marker awareness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Talk about dogs.</td>
<td>He could have told the boy the people that the boy wanted to know who they were.</td>
<td>Answer him.</td>
</tr>
<tr>
<td>Let him talk.</td>
<td>Told him what he was gonna speak about.</td>
<td>Answered the other boy’s questions.</td>
</tr>
<tr>
<td>Talked about something else.</td>
<td></td>
<td>Answered his questions properly</td>
</tr>
<tr>
<td>Talked about the same subject.</td>
<td></td>
<td>Answered the other boy correctly</td>
</tr>
<tr>
<td>Listened more.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Video 3 – Speaker fails to make clarification

<table>
<thead>
<tr>
<th>Non awareness</th>
<th>Redescription of pragmatic behaviour</th>
<th>Psychological / social description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crazy one.</td>
<td>A chatty boy.</td>
<td>Annoying.</td>
</tr>
<tr>
<td>Kind.</td>
<td>One that never listens.</td>
<td>Ignorant.</td>
</tr>
<tr>
<td>A person to answer very quicker.</td>
<td>A chattery boy.</td>
<td>Rude.</td>
</tr>
<tr>
<td>Bit silly.</td>
<td>He doesn’t listen a lot.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>He wanted to carry on with the story.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>He likes to say everything in a conversation.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Somebody who likes to say what they want.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Person who loves dogs.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>One with a loud voice.</td>
<td></td>
</tr>
</tbody>
</table>
Video 4 – Interlocutor provides minimal response

Comprehension Check

What were the children talking about?

<table>
<thead>
<tr>
<th>Correct response</th>
<th>Farm trip, animals, holidays</th>
</tr>
</thead>
</table>

Video 4 – Interlocutor provides minimal response

Descriptive MPA

Something went wrong in the talking. What went wrong?

<table>
<thead>
<tr>
<th>Non awareness / Redescription</th>
<th>Linguistic marker awareness</th>
<th>Pragmatic marker awareness</th>
</tr>
</thead>
<tbody>
<tr>
<td>The girl said “what did you do in the holidays” twice.  That girl didn’t talk about the same thing.  She was bragging about what she had done in the school holidays.  The other girl just looked away from the other girl who was talking.</td>
<td>The girl on the right just shrugged when the girl on the left asked her what she did.  The girl was a bit shy and didn’t really want to be there.  She just said mmm.  She didn’t look interested at all.</td>
<td>She wouldn’t answer.  She wasn’t answering the questions properly.</td>
</tr>
</tbody>
</table>

Video 4 – Interlocutor provides minimal response

Reflective MPA

Why is that wrong?

<table>
<thead>
<tr>
<th>Non awareness / Redescription</th>
<th>Linguistic marker awareness</th>
<th>Pragmatic marker awareness</th>
</tr>
</thead>
<tbody>
<tr>
<td>The girl got fed up of the other girl speaking about animals.  If you brag too much then you’re gonna get people upset.  The girl was sad.  One girl was kind and the other wasn’t.  Because people would talk loudly.  Because the other girl was pressurising her into playing the farm.  That girl didn’t know what she was saying.</td>
<td>Because she should have gone like this “Oh yeah that’s good, I wish I could go to the farm” or something like that.</td>
<td>Because it’s like ignoring people.  Because you’re supposed to answer a question.  You should answer the questions when someone asks them.</td>
</tr>
</tbody>
</table>
Video 4 – Interlocutor provides minimal response

### MP Rule awareness

**What could that girl have done differently?**

<table>
<thead>
<tr>
<th>Non awareness / Redescription 0</th>
<th>Linguistic marker awareness 1</th>
<th>Pragmatic marker awareness 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not speak to her. Do it.</td>
<td>Maybe listened.</td>
<td>Answered her questions.</td>
</tr>
<tr>
<td>She could have looked at the other girl.</td>
<td>She should have said what did you do in the holidays.</td>
<td>Just talked back.</td>
</tr>
<tr>
<td>She could have talked loudly.</td>
<td>I think she could have been more polite when she asked her what she did.</td>
<td>She could have spoken to that girl.</td>
</tr>
<tr>
<td>Speak properly.</td>
<td></td>
<td>Talked more.</td>
</tr>
</tbody>
</table>

### Social Understanding

**What kind of person is that girl?**

<table>
<thead>
<tr>
<th>Non awareness 0</th>
<th>Redescription of pragmatic behaviour 1</th>
<th>Psychological / social description 2</th>
</tr>
</thead>
</table>
### Video 5 – Speaker gives a tangential response

**Comprehension Check**

What were the children talking about?

<table>
<thead>
<tr>
<th>Correct response</th>
<th>Watching TV, football, races, zoo, monkey, lions.</th>
</tr>
</thead>
</table>

### Video 5 – Speaker gives a tangential response

**Descriptive MPA**

Something went wrong in the talking. What went wrong?

<table>
<thead>
<tr>
<th>Non awareness / Redescription</th>
<th>Linguistic marker awareness</th>
<th>Pragmatic marker awareness</th>
</tr>
</thead>
<tbody>
<tr>
<td>That girl walked away because she was really a dummy. The girl was all worried. That girl kept on going straight on to the next thing what she did.</td>
<td>She kept talking about different things. She didn’t tell her what she was talking about. She was saying something that wouldn’t have happened in a football match. She kept changing what she was watching like she watched football to the car racing.</td>
<td>She kept switching the topic. When she answered her she went to a completely different subject. The girl was talking about something completely different to the other girl. One of the girls was changing the subject. She was talking about something different to the other girl.</td>
</tr>
</tbody>
</table>
Video 5 – Speaker gives a tangential response

<table>
<thead>
<tr>
<th>Non awareness / Redescription</th>
<th>Linguistic marker awareness</th>
<th>Pragmatic marker awareness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coz the girl went really sad. Because she asked her a question and she said “yes”.</td>
<td>Because there’s no such thing as a zoo or racing matches in football matches. Because this one with the orange hair is thinking that they were talking about football. Because the girl on the left wouldn’t actually talk properly and talk about what the girl on the right was talking about. Because you should tell them what you’re doing. Coz that is not what they were talking about. Because you’re supposed to do something that would be in a football match.</td>
<td>Coz when you’re trying to have a conversation there’s no point in starting a conversation and then starting a new one coz you’re never really gonna get anywhere. Because you should just keep to one subject in the same conversation. Because if someone asked you a question you wouldn’t change the subject coz you’d tell them the answer. Coz you’re meant to tell the other person what you’re talking about. Because she should talk about one thing and then maybe move onto another thing. Coz you normally just talk about one thing and then don’t just go onto the next thing. Because then you wouldn’t know what each other would be saying.</td>
</tr>
</tbody>
</table>

Reflective MPA

Why is that wrong?
### Video 5 – Speaker gives a tangential response

<table>
<thead>
<tr>
<th>Non awareness / Redescription</th>
<th>Linguistic marker awareness</th>
<th>Pragmatic marker awareness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Talk about car races.</td>
<td>She could have said I saw someone score a goal in the football match did you see it.</td>
<td>Stayed on the subject. Not talked about something completely different.</td>
</tr>
<tr>
<td>Not have showed off as much.</td>
<td>Well she could have said if she actually watched the football match.</td>
<td></td>
</tr>
<tr>
<td>Spoke just not lied to that girl.</td>
<td>Talked about the football.</td>
<td></td>
</tr>
<tr>
<td>Talked for a bit longer.</td>
<td>Talked about one thing.</td>
<td></td>
</tr>
<tr>
<td>Not rushed at anything.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Video 5 – Speaker gives a tangential response

<table>
<thead>
<tr>
<th>Non awareness</th>
<th>Redescription of pragmatic behaviour</th>
<th>Psychological / social description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A girl from a different school.</td>
<td>A girl that doesn’t listen a lot.</td>
<td>Annoying.</td>
</tr>
<tr>
<td>A car lover.</td>
<td>A girl who moves conversations on quickly.</td>
<td>Ignorant.</td>
</tr>
<tr>
<td>Quite boastful.</td>
<td>A chatty girl.</td>
<td></td>
</tr>
<tr>
<td>Happy.</td>
<td>A bit cheeky.</td>
<td></td>
</tr>
<tr>
<td>A nasty person.</td>
<td>Somebody who has to talk about everything in one sentence.</td>
<td></td>
</tr>
</tbody>
</table>
Video 6 – First and second parts of exchange do not match

**Comprehension Check**  What were the children talking about?

<table>
<thead>
<tr>
<th>Correct response</th>
<th>Seaside, beach, funfair, big wheel, candyfloss.</th>
</tr>
</thead>
</table>

**Descriptive MPA**   Something went wrong in the talking. What went wrong?

<table>
<thead>
<tr>
<th>Non awareness / Redescription</th>
<th>Linguistic marker awareness</th>
<th>Pragmatic marker awareness</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

The girl went sad. She didn’t say what she said. She spoke about something but didn’t say she actually did it.

The girl said “did you go in it?” and she said “it went round and round”. She kept on saying “is it scary?” and she kept on saying “it went round twice”. She was just asking questions and she was saying the completely different thing. They were both speaking about different things.

This one asked some questions and she just kept saying the wrong answers. The girl on the left wouldn’t answer the questions properly. One of the girls didn’t answer the questions how they should have been. She was not answering the questions correctly. She wasn’t answering her questions.

**Reflective MPA**  Why is that wrong?

<table>
<thead>
<tr>
<th>Non awareness / Redescription</th>
<th>Linguistic marker awareness</th>
<th>Pragmatic marker awareness</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

She didn’t know that she can’t remember. That girl got fed up. She said “to go round round twice yeah I went on it”.

When someone’s speaking you’re supposed to be listening. It doesn’t make sense and she doesn’t know what she is talking about. It’s just giving a description of it. You normally say yes I did it. That girl didn’t know what that girl was saying.

She needs to answer her questions. You should really answer people because it’s polite. People would normally answer the questions and then carry on. It’s not answering the question.
Video 6 – First and second parts of exchange do not match  

**MP Rule awareness**

<table>
<thead>
<tr>
<th>Non awareness / Redescription</th>
<th>Linguistic marker awareness</th>
<th>Pragmatic marker awareness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Talk about something different.</td>
<td>She could have said “I did go on it, it was really good”.</td>
<td>Answered her questions.</td>
</tr>
<tr>
<td>Really kind.</td>
<td></td>
<td>Maybe answered her a bit more.</td>
</tr>
<tr>
<td>Talked about the funfair.</td>
<td></td>
<td>Answered the questions how the other girl wanted them to be answered.</td>
</tr>
<tr>
<td>Talked about the holiday.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Social Understanding**

What kind of person is that girl?

<table>
<thead>
<tr>
<th>Non awareness</th>
<th>Redescription of pragmatic behaviour</th>
<th>Psychological / social description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A girl from nursery.</td>
<td>Silly girl that doesn’t answer her questions.</td>
<td>Annoying.</td>
</tr>
<tr>
<td>A big wheel lover.</td>
<td>She was just talking about what she did and she wasn’t really answering the questions.</td>
<td>Ignorant.</td>
</tr>
<tr>
<td>One that’s boasty.</td>
<td>I think she’s quite younger than her and doesn’t know how to answer her questions.</td>
<td></td>
</tr>
<tr>
<td>Nasty.</td>
<td>She likes talking about something but not answering the questions.</td>
<td></td>
</tr>
<tr>
<td>Kind.</td>
<td>Someone who wants to get everything that they did in and is a bit chatty.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A girl that doesn’t listen.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A girl who wants to talk about what she’s done.</td>
<td></td>
</tr>
</tbody>
</table>
**Video 7 – Speaker does not pick up on hints**  
Comprehension check  
What were the children talking about?

<table>
<thead>
<tr>
<th>Correct response</th>
<th>Playing, games, jigsaw, buckaroo</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Correct response</strong></td>
<td>1</td>
</tr>
</tbody>
</table>

**Video 7 – Speaker does not pick up on hints**  
Descriptive MPA  
Something went wrong in the talking. What went wrong?

<table>
<thead>
<tr>
<th>Non awareness / Redescription</th>
<th>Linguistic marker awareness</th>
<th>Pragmatic marker awareness</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Non awareness / Redescription</strong></td>
<td><strong>Linguistic marker awareness</strong></td>
<td><strong>Pragmatic marker awareness</strong></td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>
| Girl went hhhh (sigh).  
She was getting fed up coz she wanted to play that.  
She didn’t do what the other girl wanted to do.  
They wanted to play with different things. | This one wanted to play buckaroo but she chose a jigsaw  
She didn’t listen to her for anything.  
One of the girls doesn’t listen.  
The girl on the left was not letting her play with the other game.  
I think the other girl got a bit fed up with doing jigsaws and I think she wanted to play something else.  
They both got annoyed coz that girl really wanted to play that game but that girl didn’t let her choose it.  
She really wanted to play that game but she didn’t know it.  
She was trying to say that a game looked good and she wasn’t really listening she was just saying ah yeah.  
One of the girls didn’t want to do what the other girl wanted to do so she decided to do what she wanted to do. | The girl ignored the other girl’s hint.  
The girl was hinting and the other girl ignored it.  
The girl did not listen to the other girl’s hint. |
<table>
<thead>
<tr>
<th>Non awareness / Redescription</th>
<th>Linguistic marker awareness</th>
<th>Pragmatic marker awareness</th>
</tr>
</thead>
<tbody>
<tr>
<td>I think buckaroo is really funny. She just said oh yeah do you wanna play. To show the other girl that she would like to play it. They wanted to do different things. The girl was really sad. They should have just done a jigsaw. She should have just said I don’t really want to play that game why don’t we just do something else. Because you should always be friends with people. She looks older than her. She wanted to play buckaroo instead of doing jigsaws. The other girl should have told her that she wanted to play the game and not just say mmm that game looks really good. Because it’s not fair.</td>
<td>You should always see what the other person wanted to do. The girl on the left had already had her go at picking the game so I think it would be a bit fairer if the girl on the left would have let the other girl play with a different game. You should do something both of you want to do.</td>
<td>You should listen to the person who is talking to you coz it’s polite.</td>
</tr>
</tbody>
</table>
Video 7 – Speaker does not pick up on hints

<table>
<thead>
<tr>
<th>Non awareness / Redescription 0</th>
<th>Linguistic marker awareness 1</th>
<th>Pragmatic marker awareness 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Just could have just said let’s do another puzzle instead because that game’s not really fun it’s really boring. Play it. Played that game. Let her play it. Asked if she wanted to play it. Play that game with her. Maybe be a bit kinder and listen more.</td>
<td>Got the buckaroo out and played together. Instead of doing another jigsaw she should have asked the girl what she wanted to do. She could have listened more and let her play with the game that she wanted to play with. Just have let that girl choose that time. She could have said well do you want to do a jigsaw or play that game.</td>
<td>Listened to the hint.</td>
</tr>
</tbody>
</table>

**Social Understanding**

<table>
<thead>
<tr>
<th>Non awareness</th>
<th>Redescription of pragmatic behaviour 1</th>
<th>Psychological / social description 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>From year two. Crazy. Kind. A bit not unfair. A jigsaw lover</td>
<td>A person who doesn’t listen. Somebody who doesn’t really catch what other people are saying. She wants to play with the games. Person who doesn’t like doing other games. Somebody who likes to play.</td>
<td>Ignorant. Selfish. Mean girl. Annoying.</td>
</tr>
</tbody>
</table>
### Comprehension Check

What were the children talking about?

<table>
<thead>
<tr>
<th>Correct response</th>
<th>Holidays, Blackpool, Wales, camping, hotel, bed and breakfast, weather</th>
</tr>
</thead>
</table>

### Video 8 – Speaker provides excessive detail

#### Descriptive MPA

**Something went wrong in the talking. What went wrong?**

<table>
<thead>
<tr>
<th>Non awareness / Redescription</th>
<th>Linguistic marker awareness</th>
<th>Pragmatic marker awareness</th>
</tr>
</thead>
<tbody>
<tr>
<td>The other girl wasn’t fed up this time. That girl wanted to talk about Blackpool and she didn’t. The girl was upset and the other girl was happy. She wasn’t looking at her. She was being a know it all. She kept saying the same things. They were talking about going on holiday. That girl got confused because she didn’t know what that girl was saying.</td>
<td>She kept being silly and saying degrees and all that stuff. She was not really answering her questions. That girl kept on saying what degrees it was and what she did. She was always overdoing it.</td>
<td>She was giving too much information. The girl was saying too much information. One of the girls was telling her all of the details. You wouldn’t say every little detail. She put all the details in.</td>
</tr>
</tbody>
</table>
Video 8 – Speaker provides excessive detail  

<table>
<thead>
<tr>
<th>Non awareness / Redescription 0</th>
<th>Linguistic marker awareness 1</th>
<th>Pragmatic marker awareness 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>She didn’t like Blackpool. If you pretend to be a know it all then teachers will give you harder work. You’re supposed to look at someone when you’re talking to them. If somebody asks you a question they might think you’re smart person.</td>
<td>People just say how it is not the temperatures and the place where it is. That girl didn’t really want to know about the temperatures. That girl didn’t know what she was speaking about.</td>
<td>She should be giving her the right amount of information. Just give them the interesting details. You wouldn’t add things on to the answer that you’ve already given because the girl or the boy might get bored. You should answer in short sentences.</td>
</tr>
</tbody>
</table>

Video 8 – Speaker provides excessive detail  

<table>
<thead>
<tr>
<th>Non awareness / Redescription 0</th>
<th>Linguistic marker awareness 1</th>
<th>Pragmatic marker awareness 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not pretended to be a know it all. Smiled. Said how hot it was. Talked about something that she wanted to do. Let her speak. Not talk as smart. Just say “yes, no”. Just do the answers.</td>
<td>She could have said to the other girl it was really hot in wales. She could have left it at the first part of the answer of everything. Could have just said that she didn’t go in a hotel it was warm. Could she have just had a normal conversation about what she did.</td>
<td>Not given her so much information. Just said a little bit of it not all the information. Given her less information. She just she could have just said the interesting details.</td>
</tr>
</tbody>
</table>
Video 8 – Speaker provides excessive detail  
Social Understanding  
What kind of person is that girl?

<table>
<thead>
<tr>
<th>Non awareness</th>
<th>0</th>
<th>Redescription of pragmatic behaviour 1</th>
<th>Psychological / social description 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>From the nursery. Kind. Ignorant. Nasty. Silly.</td>
<td>She’s someone who wants to give someone else loads and loads of information. She just always wants to talk about where she’s been and what she’s done. Somebody who is always exact. Somebody who likes to describe the things that they’ve done. A Blackpool lover.</td>
<td>Boring. Strange. Weird.</td>
<td></td>
</tr>
</tbody>
</table>
**Video 9 – Speaker looks away from interlocutor**  
**Comprehension Check**  
What were the children talking about?

<table>
<thead>
<tr>
<th>Correct response</th>
<th>1</th>
<th>Going home, waiting for parents, tea, games.</th>
</tr>
</thead>
</table>

**Video 9 – Speaker looks away from interlocutor**  
**Descriptive MPA**  
Something went wrong in the talking. What went wrong?

<table>
<thead>
<tr>
<th>Non awareness / Redescription</th>
<th>0</th>
<th>Linguistic marker awareness</th>
<th>1</th>
<th>Pragmatic marker awareness</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>That girl lied to that girl coz she said she could see her mum. She couldn’t wait to have her tea. The girl went away to have her tea and the girl said “I need to wait for my mum”. She was just talking about that she wanted to go home probably made the other girl think that she just didn’t want to talk to her. The other girl turned away and she looked a bit surprised. She said she liked footy and stuff.</td>
<td>She wasn’t really paying attention to her.</td>
<td>She wasn’t looking. The girl on the left wouldn’t look at the girl on the right. She was not looking at her when she was talking. That girl she was just facing one way and she wasn’t looking the other one. That girl was looking away from the other girl.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Video 9 – Speaker looks away from interlocutor**  
**Reflective MPA**  
Why is that wrong?

<table>
<thead>
<tr>
<th>Non awareness / Redescription</th>
<th>0</th>
<th>Linguistic marker awareness</th>
<th>1</th>
<th>Pragmatic marker awareness</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>She really wanted to go home. It’s nasty. You normally say what games. You normally talk nicely. You normally talk to your friend properly. You should listen if people are talking.</td>
<td>If you don’t pay attention to people they’re gonna really get fed up with people and fall out with you. It’s the easiest way of listening.</td>
<td>You normally look at the person you’re talking to. They’re supposed to be looking at each other when they’re talking to each other. You’re meant to look at the person you’re talking to.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Video 9 – Speaker looks away from interlocutor**  
**MP Rule awareness**  
What could that girl have done differently?

<table>
<thead>
<tr>
<th><strong>Non awareness / Redescription</strong> 0</th>
<th><strong>Linguistic marker awareness</strong> 1</th>
<th><strong>Pragmatic marker awareness</strong> 2</th>
</tr>
</thead>
</table>
| Go home.  
Let that girl talk.  
She could have talked about a different thing.  
She could have talked about things that the other girl talked about instead of just making her feel like she didn’t want to be there.  
She could have at least said bye.  
Said bye my mum’s here. | She should have paid attention more. | Just looked at her.  
Made eye contact with the person she was talking to.  
Looked up and talked.  
Looked at her friend when she was talking.  
She could have looked at the girl. |

**Video 9 – Speaker looks away from interlocutor**  
**Social Understanding**  
What kind of person is that girl?

<table>
<thead>
<tr>
<th><strong>Non awareness</strong> 0</th>
<th><strong>Redescription of pragmatic behaviour</strong> 1</th>
<th><strong>Psychological / social description</strong> 2</th>
</tr>
</thead>
</table>
| Kind.  
She’s a curious girl.  
A cheeky girl.  
Nasty.  
Someone who’s always happy. | A bad listener.  
Not very good to talk to. | In her own world.  
A day dreamer.  
Annoying.  
She’s not very nice. |
### Comprehension Check

**Video 10 – Interlocutor responds ambiguously**

#### What were the children talking about?

<table>
<thead>
<tr>
<th><strong>Correct response</strong></th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bowling, cinema, sausages, pizza, coming round for tea, going to each other’s house</td>
<td></td>
</tr>
</tbody>
</table>

### Descriptive MPA

#### Something went wrong in the talking. What went wrong?

<table>
<thead>
<tr>
<th><strong>Non awareness / Redescription</strong></th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>The girl said “hhh” (head in hands). They were talking about going out. They were talking about food.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Linguistic marker awareness</strong></th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>She kept on saying yeah. She wasn’t really listening. The other girl was just answering yeah all the time. That girl kept saying do you wanna go bowling or cinema and that girl kept saying yeah and she said which one and then that girl said yeah again. The girl was saying yeah when she had an option to choose bowling or cinemas or pizza or sausage. She kept saying “yeah” and she was meant to like answer “pizza” or “sausage” or “cinemas” or “bowling”</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Pragmatic marker awareness</strong></th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>She didn’t really answer. The girl wasn’t answering the questions properly.</td>
<td></td>
</tr>
</tbody>
</table>
**Video 10 – Interlocutor responds ambiguously**

<table>
<thead>
<tr>
<th>Non awareness / Redescription</th>
<th>Linguistic marker awareness</th>
<th>Pragmatic marker awareness</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>0</strong></td>
<td><strong>1</strong></td>
<td><strong>2</strong></td>
</tr>
<tr>
<td>That’s just being silly.</td>
<td>She’s asking her a question and she keeps saying “yeah” and saying “which one” and she keeps saying “yeah”.</td>
<td>When people ask you questions you should really answer them.</td>
</tr>
<tr>
<td>She didn’t like the girl keep saying yeah.</td>
<td>She isn’t saying what she wants to do. If someone asks a question you wouldn’t keep on saying yeah. You should say pizza or bowling. She didn’t really know what she wanted to do.</td>
<td>She’s meant to answer not just say yeah. You don’t just say yeah coz that’s not an answer you’ve got to say an answer. You should answer people properly instead of just saying one word answers.</td>
</tr>
</tbody>
</table>

**Video 10 – Interlocutor responds ambiguously**

<table>
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</thead>
<tbody>
<tr>
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<td><strong>1</strong></td>
<td><strong>2</strong></td>
</tr>
</tbody>
</table>
| She keeps on saying yes.      | Stopped saying “yeah”.
Kind.                        | Answered her. |
| Not been silly.               | She could have stopped saying “yeah” and made a decision.
Talked properly.              | Answered properly. |
| Talked to the girl.           | Said which ones she wanted to go to.
Just like chose one like sausages and the cinema. | Gave her a more detailed answer saying which one what she wanted to do. |
|                                | Decided and not said yeah all the time. | Answered the questions better. |
**Video 10 – Interlocutor responds ambiguously**

**Social Understanding**

What kind of person is that girl?

<table>
<thead>
<tr>
<th>Non awareness</th>
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<th>Redescription of pragmatic behaviour</th>
<th>1</th>
<th>Psychological / social description</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Person who likes stuff.</td>
<td></td>
<td>The one who didn’t really pay attention.</td>
<td></td>
<td>Annoying.</td>
<td></td>
</tr>
<tr>
<td>Quite greedy.</td>
<td></td>
<td>She’s a girl that doesn’t listen.</td>
<td></td>
<td>A girl that likes makes people annoyed.</td>
<td></td>
</tr>
<tr>
<td>Good person to talk.</td>
<td></td>
<td>She likes everything / easily pleased.</td>
<td></td>
<td>Rude.</td>
<td></td>
</tr>
<tr>
<td>Nice.</td>
<td></td>
<td>She doesn’t answer the people’s questions.</td>
<td></td>
<td>Weird.</td>
<td></td>
</tr>
<tr>
<td>Good attitude.</td>
<td></td>
<td>Someone who keeps saying “yeah”</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silly.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Video 11 – Speaker ignores request to change topic**

**Comprehension Check**

What were the children talking about?

<table>
<thead>
<tr>
<th>Correct response</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cars, playing outside, playing on bike</td>
<td></td>
</tr>
</tbody>
</table>

**Video 11 – Speaker ignores request to change topic**

**Descriptive MPA**

Something went wrong in the talking. What went wrong?

<table>
<thead>
<tr>
<th>Non awareness / Redescription</th>
<th>0</th>
<th>Linguistic marker awareness</th>
<th>1</th>
<th>Pragmatic marker awareness</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>The girl said “no I don’t want to talk about vans”.</td>
<td></td>
<td>She kept talking about cars.</td>
<td></td>
<td>She said to change the subject and she didn’t.</td>
<td></td>
</tr>
<tr>
<td>She wanted to play on her bike and she wanted to look at the cars outside.</td>
<td></td>
<td>One of the girls she just got up and went because she was bored of talking about the same thing.</td>
<td></td>
<td>She asked her to change the topic and she ignored her.</td>
<td></td>
</tr>
<tr>
<td>She wouldn’t listen to her she was just like boasting.</td>
<td></td>
<td>The girl on the left didn’t stop talking about cars and the girl on the right really wanted to play out or talk about something else.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The girls they were arguing.</td>
<td></td>
<td>The girl was just saying that she liked cars and that she was going to have a blue car when she was older.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non awareness / Redescription 0</td>
<td>Linguistic marker awareness 1</td>
<td>Pragmatic marker awareness 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-------------------------------</td>
<td>------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>They were being nasty to each other. You shouldn’t get annoyed with people really easily. The girl went really cross. They’ve been talking about it for ages.</td>
<td>She got a bit fed up with the other one. If you go overboard, like they showed there, then someone’s going to get really annoyed. She should talk about something else.</td>
<td>If someone asks you to change the subject then you’d do that. If somebody asked you to stop talking about it you normally stop talking about it.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Video 11 – Speaker ignores request to change topic**  
**MP Rule awareness**  
**What could the girl have done differently?**

<table>
<thead>
<tr>
<th>Non awareness / Redescription 0</th>
<th>Linguistic marker awareness 1</th>
<th>Pragmatic marker awareness 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Talked about cars. Got really mad. Just have not wasted the time playing</td>
<td>Said “ok we’ll talk about it next time”. Said “let’s just go outside we’ll go on our bikes”.</td>
<td>Done something that they both agree on. Talked about something that the other girl wanted to talk about.</td>
</tr>
</tbody>
</table>

**Video 11 – Speaker ignores request to change topic**  
**Social Understanding**  
**What kind of person is the girl?**

<table>
<thead>
<tr>
<th>Non awareness 0</th>
<th>Redescription of pragmatic behaviour 1</th>
<th>Psychological / social description 2</th>
</tr>
</thead>
</table>
Video 12 – Speaker stands too close to interlocutor  

Comprehension Check  

What were the children talking about?

<table>
<thead>
<tr>
<th>Correct response</th>
<th>Birthday party, birthday</th>
</tr>
</thead>
</table>

Video 12 – Speaker stands too close to interlocutor  

Descriptive MPA  

Something went wrong in the talking. What went wrong?

<table>
<thead>
<tr>
<th>Non awareness / Redescription</th>
<th>0</th>
<th>Linguistic marker awareness</th>
<th>1</th>
<th>Pragmatic marker awareness</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>That “please can I come please can I come?” the girl said “no me and Katy are going”. They were talking about the party and moving about and back and forward.</td>
<td></td>
<td></td>
<td>She kept going too close to her face.</td>
<td>She was too close to the other girl.</td>
<td>One of the girls she just wouldn’t get out of the other girl’s face.</td>
</tr>
<tr>
<td>When she said “get out of my face.”</td>
<td></td>
<td></td>
<td>When she was talking she went right into her face.</td>
<td>The girl kept on like leaning into the other girl’s face.</td>
<td>The girl was going too close up to the other girl.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>She kept putting her face in hers.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Video 12 – Speaker stands too close to interlocutor  

Reflective MPA  

Why is that wrong?

<table>
<thead>
<tr>
<th>Non awareness / Redescription</th>
<th>0</th>
<th>Linguistic marker awareness</th>
<th>1</th>
<th>Pragmatic marker awareness</th>
<th>2</th>
</tr>
</thead>
</table>
| It’s a bit cheeky.  
It’s nasty. | | | Because she doesn’t like it.  
You’re not supposed to be that close. | | | |
| | | | She should be further away from her.  
You have to stand still and talk.  
The other person doesn’t usually want you to do that.  
You need space to breathe/personal space. | | You normally just speak to them without going right in. |
Video 12 – Speaker stands too close to interlocutor  MP Rule awareness  What could the girl have done differently?

<table>
<thead>
<tr>
<th>Non awareness / Redescription 0</th>
<th>Linguistic marker awareness 1</th>
<th>Pragmatic marker awareness 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Go in her face.</td>
<td>Just stood about at that bar.</td>
<td>Stood back from her face.</td>
</tr>
<tr>
<td>Upset.</td>
<td>Stepped away.</td>
<td>Stop leaning in her face and speak from where she was standing.</td>
</tr>
<tr>
<td>Just do as you’re told.</td>
<td></td>
<td>When she told her to get out of her face she should have done it.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Talk without going right near her.</td>
</tr>
</tbody>
</table>

Video 12 – Speaker stands too close to interlocutor  Social Understanding  What kind of person is that girl?

<table>
<thead>
<tr>
<th>Non awareness 0</th>
<th>Redescription of pragmatic behaviour 1</th>
<th>Psychological / social description 2</th>
</tr>
</thead>
</table>
Video 13 – Speaker dominates the conversation  

**Comprehension Check**

What were the children talking about?

<table>
<thead>
<tr>
<th>Correct response</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cat, brook, tiggles, dog</td>
<td></td>
</tr>
</tbody>
</table>

**Descriptive MPA**

Something went wrong in the talking. What went wrong?

<table>
<thead>
<tr>
<th>Non awareness / Redescription</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>He wanted to speak about his cats. The dog bit. When one of the boys thought the other one just started talking.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Linguistic marker awareness</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>The boy on the left kept talking about his dog and never let the boy on the right talk about his cat. The boy on the left wouldn’t stop talking about his dog and let the boy on the right talk about his cat for a few minutes. He was talking just about his dog when he wanted to talk about his cat.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pragmatic marker awareness</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kept talking on top of each other wouldn’t stop interrupting. He won’t let that boy get word in. That boy was talking too much and not letting the other boy talk. He was talking over the other boy. One of the boys wouldn’t let the other boy talk. That boy kept on interrupting the other boy. They kept interrupting each other.</td>
<td></td>
</tr>
</tbody>
</table>
The boy on the left kept on speaking about his dog. It’s nasty.

He wasn’t really listening.

You need to wait till the first person who’s speaking is finished before you speak. You need to let someone get a word in. You have to let another person speak. He should let the other boy talk. You’re supposed to listen to what the other person says and then answer back and not interrupt them. You should always let the other person talk. You’ve got to let the other person speak if you’re having a conversation. You should let people talk equally. You normally wait for the other person to finish talking.
<table>
<thead>
<tr>
<th>Non awareness / Redescription</th>
<th>Linguistic marker awareness</th>
<th>Pragmatic marker awareness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Talked to each other.</td>
<td>Not talked about his pet so much.</td>
<td>Wait till his turn.</td>
</tr>
<tr>
<td></td>
<td>Listened to him saying something about his cat.</td>
<td>Let that boy get a word in it.</td>
</tr>
<tr>
<td></td>
<td>Just listened to him.</td>
<td>Let the other boy talk.</td>
</tr>
<tr>
<td></td>
<td>He could have listened to the other boy talking about his cat.</td>
<td>Waited for the other boy to speak.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not interrupted that boy.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Non awareness</th>
<th>Redescription of pragmatic behaviour</th>
<th>Psychological / social description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A person who talks quickly and wouldn’t let anyone get a word in.</td>
<td>Rude.</td>
</tr>
<tr>
<td></td>
<td>Someone who talks a lot.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A boy that wants to get on with his things.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Loud.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>He has to say what’s on his mind.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Person who loves dogs.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Very chatter box.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Always thinking about things to talk about.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>He just likes to say stuff about himself.</td>
<td></td>
</tr>
</tbody>
</table>