

# Pragmatic Disorders

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## Introduction

For most people, the ability to use language to communicate with others is a skill which is taken for granted. We can tell when someone is making a suggestion, offering an opinion on a topic or passing a comment. We also know how utterances can be used to extend and decline invitations, to dissuade those around us from an ill-advised course of action, and to forge friendships and other interrelationships. These activities are not a challenge to the majority of us because we have intact pragmatic language skills. However, for a significant number of children and adults, these everyday uses of language are very far from being effortless accomplishments. For these individuals, breakdown in the pragmatics of language compromises a range of daily communicative activities and also has implications for functioning in other domains.<sup>1</sup> This article examines some of these children and adults and considers the types of pragmatic disorders they exhibit. The discussion begins with an account of pragmatics for readers who do not have a background in linguistics.

## What is pragmatics?

Pragmatics is typically defined as the study of language meaning in context. Other definitions of this linguistic discipline include notions such as ‘speaker meaning’, ‘implied or inferred meaning’ and ‘non-literal meaning’. As with any branch of linguistics, pragmatics is best explained by studying a number of examples in which pragmatic language skills come into play. Consider the following exchange between John and Mary:

John: Did you empty the bin and wash the dishes?

Mary: I emptied the bin.

Competent language users like John can readily establish an *implicature* of Mary’s utterance, namely, that she did not wash the dishes. The question arises of how they are able to arrive at this implicature when the only utterance of Mary’s that is available to them doesn’t even mention the dishes. The answer lies in an inferential mechanism which was first described by the philosopher of language H.P. Grice, and which has been extensively examined in pragmatics over the last 40 years (see chapter 1 in Cummings (2005) for discussion). In simple terms, this mechanism posits a rational principle which guides the contributions of participants to any verbal or non-verbal exchange. This principle, called the cooperative principle, stipulates the rational expectations which participants may have of each other. Specifically, John may reasonably expect Mary to contribute only relevant, truthful utterances in response to his direct question. For her part, Mary will also know that John expects her to contribute only relevant, truthful utterances within her reply. This mutually binding set of expectations puts in place a chain of inferences for John, which lead from Mary’s under-informative utterance (she has not mentioned the dishes) to the communicative intention that motivated that utterance (namely, that Mary has not washed the dishes). This type of implicit communication allows Mary to convey meaning beyond that which is explicitly communicated by her utterance. But it is only a form of communication that is even possible if John is capable of taking the inferential steps which lead from Mary’s explicit utterance to the communicative intention that motivated her utterance. The child or adult with

a pragmatic disorder is often incapable of doing this inferential work. A second example is in order. Consider the following exchange between Nancy and Billy:

Nancy: Would you like to come over for dinner this weekend?

Billy: Sally's mother is with us until Sunday evening.

As a competent language user, Billy has little difficulty in establishing the *speech act* that is performed by Nancy's utterance – Nancy is issuing Billy with an invitation to dinner by way of asking him a question. Billy's pragmatic knowledge guides how he responds to this invitation. He knows, for example, that Nancy will want him to accept her invitation rather than reject it. He also knows that declining Nancy's invitation may place their pre-existing social relationship at risk, particularly if certain politeness constraints are not adequately addressed in the exchange. These constraints require Billy to provide Nancy with an account of why he is declining her invitation rather than simply respond to it by saying 'no'. This account is forthcoming when Billy reports that Sally's mother is visiting. For her part, Nancy understands that Billy is describing a condition which precludes his acceptance of her invitation and that her invitation is, accordingly, declined. The successful negotiation of this exchange is only possible because Nancy and Billy are in possession of a complex set of pragmatic and cognitive skills which they use to generate utterances and interpret the utterances of each other. The child or adult with pragmatic disorder, who has impairment of these skills, is unlikely to manage the type of exchange which has been so effortlessly negotiated by Nancy and Billy. A third and final example is presented. Consider the exchange below between Sue and Bob:

Sue: The house on the hill is up for sale again.

Bob: I hope they get a better price for it this time.

Sue's utterance is significant in its use of two *presuppositions*. These presuppositions are, firstly, that there *is* a house on the hill and, secondly, that the house on the hill has been on sale *before*. These presuppositions, pragmatists argue, are triggered by certain linguistic features of Sue's utterance, namely, the definite noun phrase 'the house on the hill' and the iterative expression 'again'. But even these features are only able to trigger presuppositions to the extent that Sue and Bob share background knowledge to the effect that there is a house on the hill and that the said house has been on sale before. Presupposition, then, is an efficient mechanism for dealing with background knowledge, as speakers and hearers can leave shared information implicit in an exchange, thus reducing the amount of explicit language which must be used. Aside from presupposition, there is another pragmatic device at work in this exchange between Sue and Bob. Bob has used the personal pronoun 'they' rather than a formulation such as 'the Smiths' or 'the Browns'. He does this on the assumption that Sue will know the intended referent of 'they' and that he does not need to make this referent explicit within his own utterance. To the extent that Sue is a competent language user, she will effortlessly identify this referent in her interpretation of Bob's utterance. *Reference assignment* is an integral part of the pragmatic understanding of any linguistic exchange. Along with presupposition, it is another example of how speakers and hearers must be able to identify the knowledge states of others and construct their linguistic utterances with those states in mind. The type of information management exemplified by this exchange is part of the pragmatic competence of intact language users such as Sue and Bob. It is altogether less likely to be seen in children and adults in whom this competence is impaired.

These examples of implicatures, speech acts, presuppositions and reference assignment are just some of the pragmatic language skills which language users possess. Although not exhaustive of the domain of pragmatics, these concepts illustrate the complex linguistic and cognitive processes which are the basis of how speakers and hearers use language in a range of communicative contexts. Language users must go beyond the encoding and decoding of utterances to establish the communicative intentions which motivate the use of utterances. The communicative intention which motivates Nancy's utterance 'Would you like to come over for dinner this weekend?' is a desire to extend an invitation to Billy. The hearer who can decode the words and phrases which constitute this utterance, and yet fail to establish the communicative intention which motivated Nancy to produce it, cannot be said to have understood what Nancy *means* in this case. Similarly, when Sue utters 'The house on the hill is up for sale again', she has an informative intention which she wishes to communicate to Bob. Her intention is not to inform Bob that there is a house on the hill – Sue knows that Bob is already aware that there is a house on the hill and so she couches this knowledge within a presupposition of her utterance. Rather, her informative intention is to tell Bob that the house is on sale again. The cognitive and linguistic skills which take the hearer from a decoded utterance to what the utterance means in a particular context are skills which are often found to be lacking in children and adults with pragmatic disorders. This article cannot examine the many, different ways in which these skills are compromised – cognitive deficits in theory of mind and executive functions, both of which are increasingly being linked to pragmatic disorders, are beyond the scope of the current discussion.<sup>2</sup> The discussion examines instead how pragmatic impairment is manifested in children and adults with these disorders.

## **Developmental pragmatic disorders**

A developmental pragmatic disorder is any pragmatic impairment which has its onset in the developmental period or before pragmatic language skills have been fully acquired. The inclusion of the last clause in this definition is particularly important. This is because pragmatic skills are late acquired among language skills, with many pragmatic skills still being mastered long after the point when structural language skills (i.e. phonology, syntax, semantics) have been established.<sup>3</sup> The time period which must be considered in a discussion of developmental pragmatic disorders is thus considerably longer than the much shorter period of infancy and early childhood which is typically understood to be the developmental period. Although the designation 'developmental pragmatic disorders' refers mostly to children, it also includes a large number of adults whose pragmatic disorders had their onset during childhood. The aetiologies of developmental pragmatic disorders are complex and wide-ranging in nature. They include genetic syndromes and other conditions in which there is intellectual disability, children with developmental language disorders, children with pragmatic impairments in the presence of psychiatric disturbance or emotional and behavioural disorders, and children with an autism spectrum disorder. They also include children of various ages who develop pragmatic disorders following a traumatic brain injury. The purpose of this section is to describe the children and adults who form these diverse clinical populations. The findings of studies which have examined pragmatic language skills in these populations will also be considered.

Intellectual disability (formerly, mental retardation) is associated with a large number of illnesses and events in the pre-, peri- and post-natal periods. A child may be born with a genetic or chromosomal disorder such as Down's syndrome, fragile X syndrome and Williams syndrome, each of which has adverse implications for an individual's intellectual functioning. During labour, birth anoxia may cause damage to brain cells, resulting in lesions which can compromise the intellectual abilities of an infant. During post-natal development, a

child may contract an infection such as meningitis or sustain a head injury. Each of these cerebral traumas can limit the intellectual abilities of the infant in question. These diverse events and illnesses all have the following in common – a child's intellectual development is compromised by an organic condition which has its onset during a crucial stage of neurodevelopment. An impairment of intellectual skills is a significant cause of language learning problems in children. All aspects of language development, from the acquisition of phonology through to pragmatics and discourse, may be delayed or deviant as a consequence of intellectual impairment. In severe cases, no oral language skills may be acquired at all and the child is essentially mute. Even in less severe cases where some language skills are acquired, language and pragmatic impairments may still be severe enough to compromise functioning across (social, academic, occupational) domains. There are also interesting cases, usually in genetic syndromes, in which pragmatic language skills may be impaired or preserved relative to structural language skills (see Cummings (2013a) for discussion).<sup>4</sup>

Clinical studies have shown that individuals of all ages with intellectual disability can have impairment of a wide range of pragmatic language skills. Children and adults with Williams syndrome have been found to have significant levels of pragmatic language impairment on the Children's Communication Checklist (Bishop 2003), a widely used measure of pragmatic language skills (Laws and Bishop 2004; Philofsky et al. 2007). John et al. (2009) reported pragmatic difficulties in referential communication in children with Williams syndrome during a task that required them to communicate to a speaker when messages were inadequate. Individuals with fragile X syndrome – the leading inherited cause of intellectual disability – have pragmatic language abilities which are similar to those of younger, typically developing peers at similar cognitive and language developmental levels (Finestack et al. 2009). Males with fragile X syndrome have been found to produce deviant, repetitive language (Sudhalter et al. 1991). Comblain and Elbouz (2002) reported that boys aged 6 to 12 years with fragile X syndrome were less efficient in a referential communication task than typically developing children when a message contained spatial terms or 'ordinal' attributes. They also managed less efficiently with an incomplete message, particularly when it was issued by an adult. Pragmatic language impairments have also been identified in a number of other genetic disorders in which there is intellectual disability, including Simpson-Golabi-Behmel syndrome (Van Borsel et al. 2008), Klinefelter syndrome (Van Rijn et al. 2007) and Kabuki syndrome (Defloor et al. 2005). The 8-year-old boy with Simpson-Golabi-Behmel syndrome studied by Van Borsel et al. (2008) had poor pragmatic skills but performed very well on formal language tests.

Children with developmental language disorders can present with significant pragmatic impairments. In fact, one group of these disorders in which there are marked pragmatic impairments, often in the presence of intact structural language skills, has presented researchers and clinicians with something of a diagnostic challenge over the years. Formerly described as having semantic-pragmatic disorder,<sup>5</sup> these children are now widely classified as exhibiting a subtype of specific language impairment (SLI) known as pragmatic language impairment (PLI). (The reader is referred to Bishop (2000) for an excellent discussion of the nosology of PLI.) In these children at least, pragmatic impairment appears to be a primary disorder and is not a consequence of impairments in structural language. However, for other children with developmental language disorders, pragmatic impairments are secondary to deficits in structural language. The child with SLI who has severe deficits in expressive syntax may struggle to undertake the inversion of subject pronoun and auxiliary verb which is needed to form questions such as 'Are you going to school today?'. Yet, this grammatical operation is also the conventional way of forming many indirect speech acts in English. For

example, the utterance ‘Can you open the window?’ is the standard way of making a request of a hearer to open the window. Aside from the contribution of structural language impairments to pragmatic disorder in SLI and PLI, these conditions are also interesting in that there is no identifiable organic condition within their aetiology (although a consensus is steadily forming around genetic factors in the aetiology for these disorders; see Bishop (2009) for discussion). Pragmatic disorders in SLI and PLI thus appear to lack a clear causal mechanism of the type that is present in other developmental pragmatic disorders.

Increasingly, investigators are characterizing pragmatic impairments in children with SLI and children with PLI. Laws and Bishop (2004) used the Children’s Communication Checklist (Bishop 1998) to examine pragmatic language skills in children with SLI and children with other clinical conditions. Children with SLI scored significantly less than typically developing children on the pragmatic composite of this checklist. Although the mean pragmatic composite score of the children with SLI (133.4) was slightly above the cut-off point of 132 for pragmatic impairment, seven children with SLI (41%) scored 132 or less on the pragmatic composite and thus had pragmatic difficulties. Katsos et al. (2011) found that Spanish-speaking children with SLI were impaired relative to age-matched, typically-developing peers in comprehending the pragmatic meaning of statements containing quantifiers such as ‘some’. Ryder and Leinonen (2013) reported that children with PLI produced irrelevant answers to pragmatically demanding questions which target implicatures. The pragmatic difficulties of these children were particularly pronounced when only verbal context was presented during experimental tasks. In an earlier study, Ryder et al. (2008) found that performance scores on implicature questions accurately identified children with PLI from children with SLI with sensitivity of 89%. Holck et al. (2010) found that children with PLI have problems with inferential comprehension which exceeded their difficulties with literal comprehension. The inferential comprehension deficits of children with PLI have also been shown to exceed those of children with SLI (Adams et al. 2009). Given the role of inferential comprehension in pragmatic interpretation, these children’s inferential comprehension problems can be expected to have significant, adverse implications for their pragmatic language skills.

Children with psychiatric disturbance can experience a range of language and pragmatic difficulties. Psychiatric problems can manifest themselves as emotional (affective) disorders and/or behavioural problems. Pragmatic problems may be found in children who have a suspected or confirmed diagnosis of psychiatric disorder. Mackie and Law (2010) examined 17 subjects aged 7 to 11 years who had been identified on the basis of educational psychology caseloads as having behavioural problems which were causing concern at school. Although these subjects did not differ from 16 age- and sex-matched controls on non-verbal cognitive ability, they were significantly more likely to have structural language, word decoding and pragmatic language difficulties. Of the 17 referred subjects, 15 (94%) had significant difficulties with at least one of these three factors, with structural language problems the only factor not found on its own to be associated with emotional and behavioural difficulties. Alternatively, children may develop psychiatric problems as a consequence of language and pragmatic disorder. These problems may display a variable course, with some persisting for many years while others resolve over time. St Clair et al. (2011) examined emotional and behavioural problems in a sample of children with a history of SLI at four time points between 7 and 16 years of age. Although emotional and behavioural problems decreased from childhood to adolescence, emotional problems were still evident in adolescence. The pragmatic abilities of these children were related to their

emotional and behavioural difficulties. Further research is required to understand the complex interplay between pragmatic disorder and psychiatric problems in children.

Autism spectrum disorders (ASDs), which include classic autism (or Kanner's syndrome) and Asperger's syndrome, are characterized by a 'triad of impairments' in the domains of socialization, communication and imagination.<sup>6</sup> Although a range of language problems have been documented in ASDs (see section 3.3 in Cummings (2008) for discussion), it is the pragmatic impairments of these children and adults which have been most extensively investigated. Philofsky et al. (2007) used the Children's Communication Checklist (Bishop, 2003) to examine the pragmatic language skills of 22 school-age children with ASD. The pragmatic performance of these children was not only impaired relative to typically developing children, but was also significantly worse than that of children with another neurodevelopmental disorder, Williams syndrome. The use of referential expressions is disrupted in ASD. Colle et al. (2008) reported that adults with Asperger's syndrome used fewer personal pronouns, temporal expressions and referential expressions than adults with high-functioning autism during a story-telling task. The use of referential expressions is dependent on theory of mind skills, which are impaired in ASD (see Cummings (2013b, 2014b) for discussion). The use of context is also compromised in ASD. Loukusa et al. (2007a) found that children with Asperger's syndrome and high-functioning autism performed less well than a normally functioning control group in a task that required them to use context to answer questions and to give explanations of their answers to questions. These same children were also found to engage in topic drifts when answering contextually demanding questions (Loukusa et al. 2007b). For a review of language and communication, including pragmatics, in ASD, the reader is referred to Tager-Flusberg and Caronna (2007).

Traumatic brain injury (TBI) is a significant cause of pragmatic and discourse problems in young children and adolescents. Pragmatic deficits can persist for many years after a brain injury has occurred, with serious implications for a child's social and academic functioning (see chapter 3 in Cummings (2014a) for discussion). Unlike other pragmatic disorders examined in this section, pragmatic impairments in childhood TBI are less easily classified as developmental in nature. This is because many pragmatic language skills may already have been acquired at the point at which a child sustains a brain injury. This is particularly true in the case of adolescents who are often the focus of clinical pragmatic studies. McDonald et al. (2013) found that adolescents with TBI performed more poorly than typically developing adolescents on a test that required them to interpret sarcastic and sincere conversational exchanges with few cues other than the speakers' demeanour. Dennis and Barnes (2001) reported that children with mild or severe closed head injury were impaired on tasks that assessed inferential language (e.g. pragmatic inferences) and the language of mental states and intentions (e.g. producing speech acts, appreciating irony). Turkstra et al. (1996) found that two of three adolescents with TBI in their study obtained lower scores than uninjured peers on tasks that examined the ability to negotiate, hint, describe a simple procedure and understand sarcasm. Discourse deficits are also commonly found in children and adolescents with TBI. Walz et al. (2012) reported that children with TBI, who were approximately 18 months post-injury, performed worse than orthopaedic controls on most discourse indices during narrative production. Children with moderate TBI were more proficient than those with severe TBI at identifying unimportant story information. The discourse performance of these children was predicted by their pragmatic skills.

## **Acquired pragmatic disorders**

Children may acquire pragmatic language skills normally, but traumatic events and illnesses in adulthood may then disrupt these skills. An adult can sustain a cerebrovascular accident ('stroke') or develop a brain tumour, resulting in lesions of various sizes and in different locations in the brain. If the language centres of the left cerebral hemisphere are compromised by a stroke, aphasia may arise with implications for both pragmatic and structural language skills. An adult may also sustain stroke-induced damage to the right cerebral hemisphere, which will have different implications for the pragmatics of language. Aside from damage associated with a stroke or brain tumour, the brain may undergo neurodegenerative changes as a result of dementias or conditions such as multiple sclerosis, Huntington's disease and Parkinson's disease. These progressive disorders often lead to a loss of pragmatic language skills as the neurological status of the patient deteriorates over time. Clients with psychiatric conditions such as schizophrenia, personality disorders and mood disorders can experience a range of pragmatic and discourse deficits. These deficits are known to compromise the social functioning of individuals with mental illnesses (Cummings 2014c). Finally, like children, adults can develop pragmatic language impairments as a result of a traumatic brain injury. However, unlike children, these impairments occur in a context where the reduced neural plasticity of the mature, adult brain places limitations on the recovery of pragmatic language skills. The pragmatic disorders of each of these clinical populations will be examined in this section.

Pragmatic deficits in aphasia are not simply related to structural language impairments in this disorder. This is suggested by three lines of evidence. Firstly, while structural language impairments in aphasia have been shown to improve over time, pragmatic deficits in this disorder can persist (see Coelho and Flewellyn (2003), for example). Secondly, pragmatic impairments have been found in the extralinguistic communication of subjects with left-hemisphere damage (see Cutica et al. (2006) for discussion). Thirdly, clients with aphasia have been found to display pragmatic competence in the absence of verbal language (Dronkers et al., 1998). Regardless of the origin of pragmatic deficits in aphasia, it is clear from the research literature that there are significant impairments in this aspect of language. Kasher et al. (1999) found that 31 left-brain-damaged stroke patients with focal lesions were significantly impaired in implicature processing relative to age-matched normal controls. Mancopes and Schultz (2008) reported problems with the comprehension of metaphor in a 54-year-old man with transcortical motor aphasia who had sustained a left-hemisphere stroke three years earlier. Adults with fluent aphasia have been found to have difficulty interpreting familiar and unfamiliar proverbs (Chapman et al. 1997). The proverb interpretation performance of these subjects was influenced by the response format of the task, with a multiple-choice format producing superior performance to that observed in a spontaneous condition. These findings, and other reports, suggest that clients with aphasia can experience significant pragmatic deficits which are not always (or ever) a consequence of structural language impairments.

Once thought to have an insignificant role in language function, the right cerebral hemisphere is increasingly being linked to a range of language and pragmatic skills. It was Penelope Myers in 1979 who first described inadequate communication skills in a clinical sample of stroke patients with right-hemisphere damage (RHD) who were receiving treatment for dysarthria (see Cummings (2009: 97) for discussion). Since that time, the poor pragmatic and discourse skills of this population have been the focus of many investigations. The comprehension of non-literal language such as sarcasm, idiom and metaphor is compromised in clients with RHD (Giora et al. 2000; Rinaldi et al. 2004; Papagno et al. 2006). Cheang and

Pell (2006) examined the appreciation of humour in ten subjects with RHD. Although these subjects were able to interpret humour from jokes, impairments in their use of pragmatic knowledge led to abnormalities in their understanding of communicative intentions. Expressive pragmatic abilities are also impaired in clients with RHD. Brownell and Stringfellow (1999) examined the ability of patients with RHD to produce requests and to vary them in accordance with interpersonal and situational factors. These investigators found that patients with RHD produced less explanatory supportive material in their requests than controls and also tended not to vary the amount of explanatory material as a function of the request scenario. These patients also overused 'please' in their requests. These findings, Brownell and Stringfellow argued, may explain the apparent rudeness and inappropriateness of patients with RHD in discourse. Other pragmatic problems in clients with RHD are related to deficits in the processing of prosody. Pell (2006) found that listeners with RHD were abnormally sensitive to speaker attitudes, namely, expressed confidence and politeness, on the basis of the prosodic features of utterances.

Neurodegenerative diseases are a significant cause of acquired pragmatic disorders in adults. These diseases include not only the dementias but also conditions such as Parkinson's disease and Huntington's disease. Alzheimer's disease is the most common cause of dementia, accounting for 53.7% of 2,346 dementia cases identified in 11 European cohorts (Lobo et al. 2000). It is also the form of dementia which has been most extensively examined in relation to pragmatic disorders.<sup>7</sup> The list of pragmatic impairments in Alzheimer's dementia is extensive and includes impaired comprehension of non-literal language such as metaphor, sarcasm and idioms (Rassiga et al. 2009; Maki et al. 2013).<sup>8</sup> Discourse deficits are also a feature of Alzheimer's dementia. Carlomagno et al. (2005) found that patients with dementia of Alzheimer's type (DAT) were less efficient than fluent aphasics in establishing reference during a referential communication task. The language of patients with DAT also contained confounding and irrelevant information. Mentis et al. (1995) examined the topic management skills of 12 subjects with senile DAT. These subjects displayed a reduced ability to change topics while maintaining the flow of discourse. They also had difficulty contributing to the propositional development of a topic, and maintaining a topic in a clear and coherent manner. Pragmatic impairments have also been identified in clients with non-Alzheimer's dementias. Kertesz et al. (2010) identified some pragmatic disturbance in 75.7% of a clinical sample of 37 patients with probable semantic dementia. McCabe et al. (2008) examined communication skills over a period of 13 months in a man with AIDS dementia complex. Skills of topic management and informational redundancy were particularly impaired in this client.

Recently, there has been growing recognition that there are significant pragmatic and discourse deficits in a range of other neurodegenerative disorders in the absence of dementia. These disorders include Parkinson's disease, multiple sclerosis, motor neurone disease (amyotrophic lateral sclerosis), and Huntington's disease. Monetta et al. (2009) reported impaired comprehension of irony in a group of 11 non-demented patients with Parkinson's disease. The pragmatic interpretation of irony in these patients was related to mental state attribution. Speech act comprehension is also impaired in patients with Parkinson's disease (Holtgraves and McNamara 2010). Pragmatic dysfunction in Parkinson's disease has been found to correlate with the mental state of patients and with the duration and severity of disease (Hall et al. 2011). The comprehension of complex discourse is compromised in clients with Huntington's disease. Saldert et al. (2010) found that a group of individuals with Huntington's disease had significantly more problems than participants in a control group on discourse tasks requiring the comprehension of ambiguous information and inferred meaning. A correlation existed between these patients' discourse comprehension problems and stage of

disease. A similar relationship has been found, this time between discourse production problems and stage of disease, in patients with amyotrophic lateral sclerosis (ALS). Roberts-South et al. (2012) analysed discourse produced during a picture description task in 16 individuals with ALS without dementia over a period of 24 months. Discourse productivity was less impaired than discourse content. There was a general trend for decline in discourse performance over the duration of the study. The pragmatic and discourse impairments of clients with these and other neurodegenerative diseases require further investigation.

Pragmatic language skills are compromised in mental illnesses such as schizophrenia, often in the presence of significant cognitive deficits. Mazza et al. (2008) reported pragmatic deficits in expressive language in 38 patients with schizophrenia. These deficits, which involved the use of Gricean conversational maxims, occurred alongside theory of mind (ToM) impairments in these subjects. The decoding of violations of the Gricean maxim of relation in order to establish conversational implicatures has been found to be impaired in paranoid schizophrenic patients during an experimental task based on question-and-answer vignettes (Tényi et al. 2002). The understanding of irony, metaphor and idiom is compromised in clients with schizophrenia (Langdon et al. 2002; Tavano et al. 2008). Moreover, impaired comprehension of irony is related to poor ToM or mind-reading in these patients (Langdon et al. 2002). Theory of mind is also related to proverb interpretation in schizophrenia, accounting in one study for 39% of the variance in proverb comprehension of patients (Brüne and Bodenstein 2005). As well as a specific cognitive deficit in ToM, generalized cognitive decline, measured in terms of verbal IQ, has been found to predict pragmatic language impairment in clients with schizophrenia (Linscott 2005). Discourse deficits have been reported during narrative production in schizophrenia. The erratic discourse of schizophrenic clients has been linked to cognitive deficits in executive functions (Marini et al. 2008). Currently, there has been little investigation of pragmatic language impairments in psychiatric conditions other than schizophrenia. However, the presence of pragmatic disorders in childhood mental illnesses such as paediatric bipolar disorder (McClure et al. 2005) suggests that this may be a profitable line of enquiry in future research.

Finally, adults may exhibit significant pragmatic and discourse impairments following a traumatic brain injury. Often, these impairments may persist for many years post-injury and can compromise social integration and quality of life (Galski et al. 1998). Among the pragmatic impairments documented in the TBI population are deficits in the areas of topic maintenance and metapragmatic knowledge (Dardier et al. 2011) and the quantity, relation and manner domains of Grice's cooperative principle (Douglas 2010). Conversational difficulties include the use of tangential language, and problems identifying communication breakdown, asking questions and engaging in conversational joking (Bogart et al. 2012). Discourse deficits in adults with TBI often occur in the absence of structural language impairments and are associated with cognitive deficits. Marini et al. (2011) examined the narrative language of 14 non-aphasic speakers who had sustained a severe TBI. Although the lexical and grammatical skills of these subjects were normal, their narratives contained increased errors of cohesion and coherence in comparison with the narratives of neurologically intact participants. These errors were related to frequent interruption of ongoing utterances, derailments and extraneous utterances that made discourse ambiguous and vague. Information was also poorly organized at micro- and macro-linguistic levels. The non-aphasic adults with TBI studied by Carlomagno et al. (2011) produced a significantly greater number of errors of cohesion and local and global coherence than healthy participants during narrative discourse. These errors corresponded to reduced levels of information efficiency in these adults. Matsuoka et al. (2012) reported that the narrative discourse of

adults with TBI displayed reduced time efficiency. Moreover, time efficiency was related to measurements of executive function and memory in these subjects.

## **Summary**

Pragmatics is variously defined as the study of the use of language or language meaning in context. When pragmatics fails to develop along normal lines or is disrupted by illness, injury or disease, the consequences for everyday communication can be very serious indeed. This article has examined the many, different ways in which pragmatics may be compromised in children and adults with a range of pragmatic disorders. Although there is now an extensive empirical literature on pragmatic disorders, some of these disorders and the clinical populations in which they are found have been more extensively examined than others. Our knowledge of pragmatic impairments in children with developmental language disorders and adults with schizophrenia, for example, far exceeds our knowledge of these impairments in children with psychiatric disorders and adults with non-Alzheimer's dementias. Along with the examination of a greater range of clinical populations, future research is also likely to enhance our existing knowledge of the cognitive substrates of pragmatic disorders. These developments in clinical pragmatic research promise to make a significant contribution to the assessment and treatment of clients with pragmatic disorders.

## **Notes**

1. These domains include social, academic and occupational functioning. For a detailed discussion of the impact of pragmatic disorders, the reader is referred to chapter 3 in Cummings (2014a).
2. The reader is referred to chapters 2 and 3 in Cummings (2009) and chapter 4 in Cummings (2014a) for detailed discussion of these deficits.
3. Many pragmatic aspects of language are even later to develop than complex grammatical constructions. Levorato and Cacciari (2002) examined the development of figurative language across four age groups: children aged 9;6 and 11;3 months, adolescents aged 18;5 months and adults. These investigators found that the ability to use figurative language required 'a long developmental time span'. In fact, the metalinguistic ability that was needed to make innovative figurative expressions communicatively appropriate and conceptually sensible was found to continue developing up to adulthood.
4. Whereas the pragmatic aspect of language is relatively preserved in comparison to structural language in Down's syndrome, it is one of the most impaired language components in fragile X syndrome (Comblain and Elbouz 2002).
5. It is clear from the characterization of semantic-pragmatic deficit disorder advanced by Rapin (1996) that this disorder has marked impairments in the pragmatics of language. Rapin lists the following among the communicative features of the disorder: verbosity; comprehension deficits for connected speech; word-finding deficits; atypical word choices; unimpaired phonology and syntax; inadequate conversational skills; speaking aloud to no-one in particular; poor maintenance of topic; and answering beside the point of a question.

6. The term 'Kanner's syndrome' derives from the name of the psychiatrist, Leo Kanner, who gave the first clinical characterization of the disorder (Kanner 1943). Wing and Gould (1979) coined the expression 'triad of impairments' to capture the behavioural deficits of children with autism.
7. A recent review by Rapp and Wild (2011) confirms the dominance of Alzheimer's dementia in clinical pragmatic studies. Of 25 studies identified in a comprehensive literature search, most investigated the comprehension of nonliteral language (i.e. proverb, metaphor, metonymy, idiom, sarcasm) in clients with Alzheimer's disease.
8. While Maki et al. (2013) found an early deterioration in the comprehension of sarcasm and metaphor in aged normal controls and subjects with amnesic mild cognitive impairment, Papagno (2001) reported that impaired comprehension of metaphor and idiom is not an early symptom of Alzheimer's disease. Amnesic mild cognitive impairment is widely believed to be a prodrome of Alzheimer's disease.

## **Bibliography**

- Adams C, Clarke E, Haynes R. 2009. Inference and sentence comprehension in children with specific or pragmatic language impairments. *International Journal of Language & Communication Disorders* 44(3):301-318.
- Bishop DVM. 1998. Development of the Childrens Communication Checklist (CCC): A method for assessing qualitative aspects of communicative impairment in children. *Journal of Child Psychology and Psychiatry* 39(6):879-891.
- Bishop DVM. 2000. Pragmatic language impairment: A correlate of SLI, a distinct subgroup, or part of the autistic continuum?. In: Bishop DVM, Leonard LB, editors. *Speech and Language Impairments in Children: Causes, Characteristics, Intervention and Outcome*. Hove, East Sussex: Psychology Press. p. 99-114.
- Bishop DVM. 2003. *Children's Communication Checklist - Revised, Second Edition*, London: Psychological Corporation.
- Bishop DVM. 2009. Genes, cognition, and communication: Insights from neurodevelopmental disorders. *Annals of the New York Academy of Science* 1156(1):1-18.
- Bogart E, Togher L, Power E, Docking K. 2012. Casual conversations between individuals with traumatic brain injury and their friends. *Brain Injury* 26(3):221-233.
- Brownell H, Stringfellow A. 1999. Making requests: Illustrations of how right-hemisphere brain damage can affect discourse production. *Brain and Language* 68(3):442-465.
- Brüne M, Bodenstein L. 2005. Proverb comprehension reconsidered - theory of mind and the pragmatic use of language in schizophrenia. *Schizophrenia Research* 75(2-3):233-239.
- Carlomagno S, Santoro A, Menditti A, Pandolfi M, Marini A. 2005. Referential communication in Alzheimers type dementia. *Cortex* 41(4):520-534.

- Carlomagno S, Giannotti S, Vorano L, Marini A. 2011. Discourse information content in non-aphasic adults with brain injury: A pilot study. *Brain Injury* 25(10):1010-1018.
- Chapman SB, Ulatowska HK, Franklin LR, Shobe AE, Thompson JL, McIntire DD. 1997. Proverb interpretation in fluent aphasia and Alzheimers disease: Implications beyond abstract thinking. *Aphasiology* 11(4-5):337-350.
- Cheang HS, Pell MD. 2006. A study of humour and communicative intention following right hemisphere stroke. *Clinical Linguistics & Phonetics* 20(6):447-462.
- Coelho CA, Flewellyn L. 2003. Longitudinal assessment of coherence in an adult with fluent aphasia. *Aphasiology* 17(2):173-182.
- Colle L, Baron S-Cohen, Wheelwright S, HK. van der Lely. 2008. Narrative discourse in adults with high-functioning autism or Asperger syndrome. *Journal of Autism and Developmental Disorders* 38(1):28-40.
- Comblain A, Elbouz M. 2002. The fragile-X syndrome: What about the deficit in the pragmatic component of language?. *Journal of Cognitive Education and Psychology* 2(3):244-265.
- Cummings L. 2005. *Pragmatics: A Multidisciplinary Perspective*. Edinburgh: Edinburgh University Press.
- Cummings L. 2008. *Clinical Linguistics*. Edinburgh: Edinburgh University Press.
- Cummings L. 2009. *Clinical Pragmatics*. Cambridge: Cambridge University Press.
- Cummings L. 2013a. Clinical linguistics: State of the art. *International Journal of Language Studies* 7(3):1-32.
- Cummings L. 2013b. Clinical pragmatics and theory of mind. In: Capone A, Lo Piparo F, Carapezza M, editors. *Perspectives on Pragmatics and Philosophy*. Dordrecht: Springer, to appear.
- Cummings L. 2014a. *Pragmatic Disorders*. Dordrecht: Springer.
- Cummings L. 2014b. Pragmatic disorders and theory of mind. In Cummings L, editor. *Handbook of Communication Disorders*. Cambridge: Cambridge University Press, to appear.
- Cummings L. 2014c. Pragmatic disorders and social functioning: A lifespan perspective. In: Mey J, Capone A, editors. *Societal Pragmatics*. Dordrecht: Springer, to appear.
- Cutica I, Bucciarelli M, Bara B. 2006. Neuropragmatics: Extralinguistic pragmatic ability is better preserved in left-hemisphere-damaged patients than in right-hemisphere-damaged patients. *Brain and Language* 98(1):12-25.
- Dardier V, Bernicot J, Delano Aë, Vanberten M, Favada C, Chevignard M, Delaye C, Laurent-Vannier A, Dubois B. 2011. Severe traumatic brain injury, frontal lesions,

- and social aspects of language use: A study of French-speaking adults. *Journal of Communication Disorders* 44(3):359-378.
- Defloor T, Van Borsel J, Schrander-Stumpel CT, Curfs LM. 2005. Expressive language in children with Kabuki syndrome. *American Journal of Medical Genetics. Part A*, 132A (3):256-259.
- Dennis M, Barnes MA. 2001. Comparison of literal, inferential, and intentional text comprehension in children with mild or severe closed head injury. *Journal of Head Trauma Rehabilitation* 16(5):456-468.
- Douglas JM. 2010. Relation of executive functioning to pragmatic outcome following severe traumatic brain injury. *Journal of Speech, Language, and Hearing Research* 53(2):365-382.
- Dronkers NF, Ludy CA, Redfern BB. 1998. Pragmatics in the absence of verbal language: Descriptions of a severe aphasic and a language-deprived adult. *Journal of Neurolinguistics* 11(1-2):179-190.
- Finestack LH, Richmond EK, Abbeduto L. 2009. Language development in individuals with fragile X syndrome. *Topics in Language Disorders* 29(2):133-148.
- Galski T, Tompkins C, Johnston MV. 1998. Competence in discourse as a measure of social integration and quality of life in persons with traumatic brain injury. *Brain Injury* 12(9):769-782.
- Giora R, Zaidel E, Soroker N, Batori G, Kasher A. 2000. Differential effects of right- and left-hemisphere damage on understanding sarcasm and metaphor. *Metaphor and Symbol* 15(1 & 2):63-83.
- Hall D, Ouyang B, Lonnquist E, Newcombe J. 2011. Pragmatic communication is impaired in Parkinson disease. *International Journal of Neuroscience* 121(5):254-261.
- Holck P, Sandberg AD, Nettelbladt U. 2010. Inferential ability in children with cerebral palsy, spina bifida and pragmatic language impairment. *Research in Developmental Disabilities* 31(1):140-150.
- Holtgraves T, McNamara P. 2010. Pragmatic comprehension deficit in Parkinsons disease. *Journal of Clinical and Experimental Neuropsychology* 32(4):388-397.
- John AE, Rowe ML, Mervis CB. 2009. Referential communication skills of children with Williams syndrome: Understanding when messages are not adequate. *American Journal on Intellectual and Developmental Disabilities* 114(2):85-99.
- Kanner L. 1943. Autistic disturbances of affective contact. *Nervous Child* 2:217-250.
- Kasher A, Batori G, Soroker N, Graves D, Zaidel E. 1999. Effects of right- and left-hemisphere damage on understanding conversational implicatures. *Brain and Language* 68(3):566-590.

- Katsos N, Roqueta CA, Estevan RA, Cummins C. 2011. Are children with specific language impairment competent with the pragmatics and logic of quantification?. *Cognition* 119(1):43-57.
- Kertesz A, Jesso S, Harciarek M, Blair M, McMonagle P. 2010. What is semantic dementia?: A cohort study of diagnostic features and clinical boundaries. *Archives of Neurology* 67(4):483-489.
- Langdon R, Colheart M, Ward PB, Catts SV. 2002. Disturbed communication in schizophrenia: The role of poor pragmatics and poor mind-reading. *Psychological Medicine* 32(7):1273-1284.
- Laws G, Bishop DVM. 2004. Pragmatic language impairment and social deficits in Williams syndrome: A comparison with Downs syndrome and specific language impairment. *International Journal of Language & Communication Disorders* 39(1):45-64.
- Levorato MC, Cacciari C. 2002. The creation of new figurative expressions: Psycholinguistic evidence in Italian children, adolescents and adults. *Journal of Child Language* 29(1):127-150.
- Linscott RJ. 2005. Thought disorder, pragmatic language impairment, and generalized cognitive decline in schizophrenia. *Schizophrenia Research* 75(2-3):225-232.
- Lobo A, Launer LJ, Fratiglioni L, Andersen K, Di Carlo A, Breteler MM, Copeland JR, Dartigues JF, Jagger C, Martinez-Lage J, Soininen H, Hofman A. 2000. Prevalence of dementia and major subtypes in Europe: A collaborative study of population-based cohorts. Neurologic Diseases in the Elderly research group. *Neurology* 54(11 Suppl 5): S4-S9.
- Loukusa S, Leinonen E, Kuusikko S, Jussila K, Mattila ML, Ryder N, Ebeling H, Moilanen I. 2007a. Use of context in pragmatic language comprehension by children with Asperger syndrome or high-functioning autism. *Journal of Autism and Developmental Disorders* 37(6):1049-1059.
- Loukusa S, Leinonen E, Jussila K, Mattila ML, Ryder N, Ebeling H, Moilanen I. 2007b. Answering contextually demanding questions: Pragmatic errors produced by children with Asperger syndrome or high-functioning autism. *Journal of Communication Disorders* 40(5):357-381.
- Mackie L, Law J. 2010. Pragmatic language and the child with emotional/behavioural difficulties (EBD): A pilot study exploring the interaction between behaviour and communication disability. *International Journal of Language & Communication Disorders* 45(4):397-410.
- Maki Y, Yamaguchi T, Koeda T, Yamaguchi H. 2013. Communicative competence in Alzheimers disease. *American Journal of Alzheimers Disease and Other Dementias* 28(1):69-74.
- Mancopes R, Schultz F. 2008. Processing of metaphors in transcortical motor aphasia. *Dementia & Neuropsychologia* 2(4):339-348.

- Marini A, Spoletini I, Rubino IA, Ciuffa M, Bria P, Martinotti G, Banfi G, Boccascino R, Strom P, Siracusano A, Caltagirone C, Spalletta G. 2008. The language of schizophrenia: An analysis of micro and macrolinguistic abilities and their neuropsychological correlates. *Schizophrenia Research* 105(1-3):144-155.
- Marini A, Galetto V, Zampieri E, Vorano L, Zettin M, Carlomagno S. 2011. Narrative language in traumatic brain injury. *Neuropsychologia* 49(10):2904-2910.
- Matsuoka K, Kotani I, Yamasato M. 2012. Correct information unit analysis for determining the characteristics of narrative discourse in individuals with chronic traumatic brain injury. *Brain Injury* 26(13-14):1723-1730.
- Mazza M, Di Michele V, Pollice R, Casacchia M, Roncone R. 2008. Pragmatic language and theory of mind deficits in people with schizophrenia and their relatives. *Psychopathology* 41(4):254-263.
- McCabe PJ, Sheard C, Code C. 2008. Communication impairment in the AIDS dementia complex (ADC): A case report. *Journal of Communication Disorders* 41(3):203-222.
- McClure EB, Treland JE, Snow J, Schmajuk M, Dickstein DP, Towbin KE, Charney DS, Pine DS, Leibenluft E. 2005. Deficits in social cognition and response flexibility in pediatric bipolar disorder. *American Journal of Psychiatry* 162(9):1644-1651.
- McDonald S, English T, Randall R, Longman T, Togher L, Tate RL. 2013. Assessing social cognition and pragmatic language in adolescents with traumatic brain injuries. *Journal of the International Neuropsychological Society*, to appear.
- Mentis M, Briggs-Whittaker J, Gramigna GD. 1995. Discourse topic management in senile dementia of the Alzheimers type. *Journal of Speech and Hearing Research* 38(5):1054-1066.
- Monetta L, Grindrod CM, Pell MD. 2009. Irony comprehension and theory of mind deficits in patients with Parkinsons disease. *Cortex* 45(8):972-981.
- Myers PS. 1979. Profiles of communication deficits in patients with right cerebral hemisphere damage: Implications for diagnosis and treatment. *Clinical Aphasiology Conference*. Phoenix: BRK Publishers. p. 38-46.
- Papagno C. 2001. Comprehension of metaphors and idioms in patients with Alzheimers disease: A longitudinal study. *Brain* 124(7):1450-1460.
- Papagno C, Curti R, Rizzo S, Crippa F, Colombo MR. 2006. Is the right hemisphere involved in idiom comprehension? A neuropsychological study. *Neuropsychology* 20(5):598-606.
- Pell MD. 2006. Judging emotion and attitudes from prosody following brain damage. *Progress in Brain Research* 156:303-317.

- Philofsky A, Fidler DJ, Hepburn S. 2007. Pragmatic language profiles of school-age children with autism spectrum disorders and Williams syndrome. *American Journal of Speech-Language Pathology* 16(4):368-380.
- Rapin I. 1996. Practitioner review: Developmental language disorders: A clinical update. *Journal of Child Psychology and Psychiatry* 37(6):643-655.
- Rapp AM, Wild B. 2011. Nonliteral language in Alzheimer dementia: A review. *Journal of the International Neuropsychological Society* 17(2):207-218.
- Rassiga C, Lucchelli F, Crippa F, Papagno C. 2009. Ambiguous idiom comprehension in Alzheimers disease. *Journal of Clinical and Experimental Neuropsychology* 31(4):402-411.
- Rinaldi MC, Marangolo P, Baldassarri F. 2004. Metaphor comprehension in right brain-damaged patients with visuo-verbal and verbal material: A dissociation (re)considered. *Cortex* 40(3):479-490.
- Roberts-South A, Findlater K, Strong MJ, Orange JB. 2012. Longitudinal changes in discourse production in amyotrophic lateral sclerosis. *Seminars in Speech and Language* 33(1):79-94.
- Ryder N, Leinonen E. 2013. Pragmatic language development in language impaired and typically developing children: Incorrect answers in context. *Journal of Psycholinguistic Research*, to appear.
- Ryder N, Leinonen E, Schulz J. 2008. Cognitive approach to assessing pragmatic language comprehension in children with specific language impairment. *International Journal of Language & Communication Disorders* 43(4):427-447.
- Saldert C, Fors A, Str Söberg and Hartelius L. 2010. Comprehension of complex discourse in different stages of Huntingtons disease. *International Journal of Language & Communication Disorders* 45(6):656-669.
- St Clair MC, Pickles A, Durkin K, Conti G-Ramsden. 2011. A longitudinal study of behavioural, emotional and social difficulties in individuals with a history of specific language impairment (SLI). *Journal of Communication Disorders* 44(2):186-199.
- Sudhalter V, Scarborough HS, Cohen IL. 1991. Syntactic delay and pragmatic deviance in the language of fragile X males. *American Journal of Medical Genetics* 38(2-3):493-497.
- Tager-Flusberg H, Caronna E. 2007. Language disorders: Autism and other pervasive developmental disorders. *Pediatric Clinics of North America* 54(3):46-81.
- Tavano A, Sponda S, Fabbro F, Perlini C, Rambaldelli G, Ferro A, Cerruti S, Tansella M, Brambilla P. 2008. Specific linguistic and pragmatic deficits in Italian patients with schizophrenia. *Schizophrenia Research* 102(1-3):53-62.

- Tényi T, Herold R, Szili IM, Trixler M. 2002. Schizophrenics show a failure in the decoding of violations of conversational implicatures. *Psychopathology* 35(1):25-27.
- Turkstra LS, McDonald S, Kaufmann PM. 1996. Assessment of pragmatic communication skills in adolescents after traumatic brain injury. *Brain Injury* 10(5):329-345.
- Van Borsel J, Baudonck N, Verhaaren H, Van Lierde K. 2008. Speech and language in Simpson-Golabi-Behmel syndrome: A case report. *Genetic Counseling* 19(2):241-249.
- Van Rijn S, Aleman A, Swaab H, Krijn T, Vingerhoets G, Kahn R. 2007. What is said versus how it is said: Comprehension of affective prosody in men with Klinefelter (47, XXY) syndrome. *Journal of the International Neuropsychological Society* 13(6):1065-1070.
- Walz NC, Yeates KO, Taylor HG, Stancin T, Wade SL. 2012. Emerging narrative discourse skills 18 months after traumatic brain injury in early childhood. *Journal of Neuropsychology* 6(2):143-160.
- Wing L, Gould J. 1979. Severe impairments of social interaction and associated abnormalities in children: Epidemiology and classification. *Journal of Autism and Developmental Disorders* 9(1):11-29.