18. Pragmatic Disorders: An Overview

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1. Introduction

For nearly forty years, researchers and clinicians have acknowledged that communication may be disrupted by impairments of the pragmatics of language. These impairments have been more or less successfully characterized across a wide range of clinical studies (see Cummings (2007a, 2007b, 2009) for a critical review). For some of these studies, a pragmatic disorder arises when a speaker produces utterances which fail to facilitate a conversational exchange. The failure may take the form of a lack of relevance to an exchange or the contribution of information which is incomplete, misleading or uninformative. For other studies, a pragmatic disorder occurs when a hearer is unable to glean a speaker's communicative intention in producing an utterance. A hearer may be unable to establish if a speaker is producing an utterance with a view to making a request, issuing a warning, or declining an invitation. For still other studies, a pragmatic disorder is what leads speakers to select inappropriate topics for conversation, misrepresent the order of events in a story or fail to relinquish turns to an interlocutor in conversation. Each of these so-called pragmatic disorders represents a significant respect in which an individual's competence as a communicator can be called into question. The chapters in this part of the volume examine clinical conditions in which communicative or pragmatic competence either does not develop along normal lines or is disrupted for the first time in adulthood. The result is a range of pragmatic impairments which have more or less serious implications for an individual's effectiveness as a communicator.

In providing an overview of pragmatic disorders, the aim of this chapter is threefold. First, it is to characterize these disorders in as transparent a manner as possible so that an accurate clinical identification of them may be made. This involves an examination of the points in the communication cycle where pragmatic breakdown may occur and where pragmatic disorders may arise. Second, it is to introduce some of the clinical disorders in which there are marked pragmatic language impairments. The introduction and illustration of those impairments must occur alongside an acknowledgement that aspects of pragmatic competence can be intact, even in individuals with marked pragmatic deficits. Third, it is to examine theoretical frameworks such as relevance theory (Sperber and Wilson 1995) and how these apply to a key cognitive component of pragmatic competence, namely, the ability to attribute mental

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states to the minds of others (i.e. theory of mind). One mental state in particular – communicative intentions – is integral to communication between speakers and hearers. The result will be a wide-ranging account of some of the pragmatic disorders which will be examined in detail in later chapters.

2. Pragmatic breakdown in the communication cycle

By any standard, human communication is a remarkable achievement. A complex array of sensorimotor, linguistic and cognitive skills must come together in seamless unison to make this achievement possible. For the most part, these skills work well and the result is an effortless exchange of linguistic utterances between speakers and hearers. However, when one or more of these skills is disrupted or does not develop along normal lines, the effect can be a quite devastating loss of one of our most important capacities. In this section, the different stages in the human communication cycle will be examined from a pragmatic perspective. The aim will be to identify specific points in this cycle where disruption of pragmatic language skills has an adverse effect on one's capacity to communicate. A further aim of this examination will be to introduce the many and varied ways in which pragmatics is disrupted in children and adults with clinical disorders in advance of a detailed examination of some of these disorders in subsequent chapters. We begin with a brief overview of the eight stages or phases that are integral to human communication and are depicted in Figure 1.

The communication of every linguistic utterance starts out from a *communicative intention*. Speakers must have in mind a thought or idea that they believe is of interest or relevance to a hearer. However, this idea must also satisfy expectations and norms about what it is appropriate to communicate in a particular context. The mere formulation of an intention to communicate is not sufficient in itself to constitute a successful act of communication if that intention transgresses societal norms and interpersonal expectations about what it is appropriate to communicate. On the assumption that a speaker can generate an appropriate communicative intention, it is then necessary to frame that intention within a linguistic code that will be recognized and understood by the hearer. This stage of the communication cycle is called *language encoding* and involves the selection of the phonological, syntactic and semantic structures that are the essence of the linguistic utterance. A successfully encoded utterance is still a rather abstract representation which must undergo two further stages in the cycle before it can be produced a speaker. The first of these stages – the third stage in the overall cycle – is *motor programming*. During motor programming, phonetic units which will guide the movement of the articulators are selected and arranged within a motor representation of the utterance. These units will specify everything, from the timing of

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articulatory movements to the sequencing, range and force of these movements. Finally, nervous impulses are sent to the articulatory musculature which causes a series of speech-related movements to be performed. This final stage in the production of an utterance is called *motor execution* and is essentially dependent on a range of fine-grained motor speech skills. These first four stages in the communication cycle are depicted in Figure 1 (see Cummings (2008, 2014a, 2018) for further discussion).

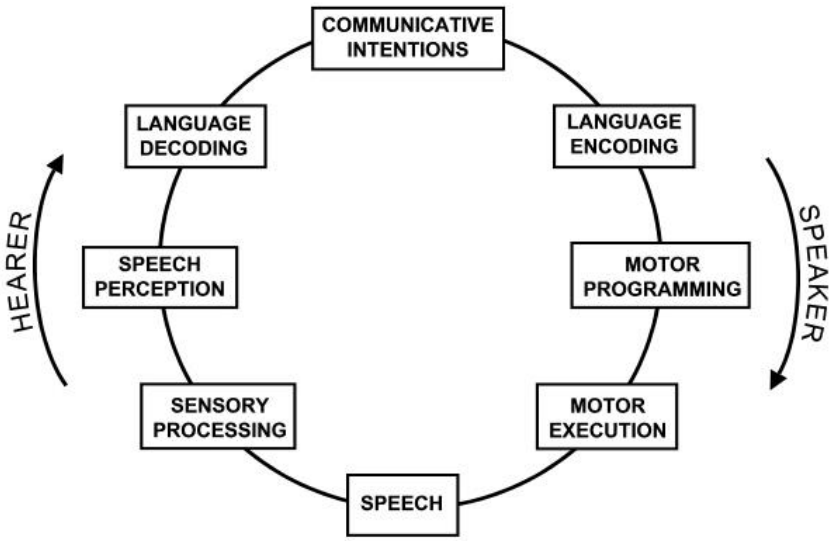

FIGURE 1: The human communication cycle

A spoken utterance will have no further relevance if a hearer is not capable of uncovering the communicative intention that motivated it. During *sensory processing* sound waves are converted by means of mechanical and physiological processes into nervous signals which are carried from the inner ear to the auditory cortices in the brain. Equally significant is the sensory processing of visual stimuli as visual information is often more important than auditory information in establishing a speaker's communicative intention in producing an utterance (Wharton 2009). On the assumption that there are no hearing or visual impairments, the brain receives auditory and visual information which it must then process further. During *speech perception* there is recognition of the auditory information that the brain receives. This information may be perceived to be the spoken form of words in a language. Alternatively, it may be recognized as a familiar environmental sound such as a barking dog. The recognition of speech sounds is an early stage in utterance interpretation. The latter process only properly gets underway during *language decoding* when a series of

rules begins to unlock the phonological, syntactic and semantic structures that constitute the linguistic utterance. The linguistic decoding of an utterance is sometimes sufficient in itself to establish the speaker's communicative intention in producing it. So, a declarative utterance like *'The painting is valuable'* may serve the descriptive purpose that its speaker intended it to fulfil. However, often a decoded utterance must undergo additional pragmatic processing in order for a hearer to establish the *communicative intention* that motivated a speaker to produce the utterance. In this way, the speaker who produces the above declarative utterance may have done so with a view to suggesting to a hearer that he or she should purchase the painting. The receptive stages in the communication cycle are also depicted in Figure 1.

Typically, when clinicians and researchers discuss pragmatic disorders, they do so on the understanding that these disorders only arise when there is breakdown in three stages of the communication cycle. These stages are communicative intentions, language encoding and language decoding. In this way, investigators readily acknowledge that adults with dementia or children with autism spectrum disorder (ASD) can generate inappropriate communicative intentions. These intentions may transgress certain expectations of their social role in a context or may simply be irrelevant to the conversational exchange in which the speaker is engaged. For example, the child or adult with ASD who asks of a stranger *'Can you give me your money?'* exhibits a communicative intention – a request to be given money – which transgresses his or her social role as a participant in the exchange who is unfamiliar to the hearer. Investigators also readily concede that incorrect selections at the stage of language encoding can result in pragmatic disorders. In this way, the adult with aphasia or child with specific language impairment may lack the linguistic structures which are needed to produce indirect speech acts. In the absence of these structures, a range of more direct speech acts may be used, with potentially adverse consequences for the social relationship between speaker and hearer. Finally, researchers and clinicians readily acknowledge that a range of child and adult clients with pragmatic disorders have problems with one or more aspects of language decoding. The adult with schizophrenia may be unable to disambiguate aspects of an utterance or assign referents to pronouns and other deictic expressions, with the result that a fully enriched logical form of the utterance is not obtained. Even if such a form is achieved, an adult with Alzheimer's dementia may be unable to use that form in conjunction with other aspects of context to derive an implicature of the speaker's utterance.

In all these cases and more, investigators readily concede the presence of a pragmatic disorder. However, impairments of language encoding, language decoding and communicative intentions are not the full story as far as pragmatic disorders are concerned. This is because breakdowns at other points in the communication cycle can also give rise to

these disorders. During motor programming, a speaker may consistently select the wrong syllable in a word or word in an utterance to receive primary stress. This can substantially alter the interpretation of an utterance by a hearer. For example, the primary stress (indicated in bold) in the utterance *'John did not build a new **boat** with wood'* sets up the interpretation that John built something other than a boat with wood. However, the same utterance with primary stress on a different word, e.g. *'John did not build a new boat with **wood**'*, sets up a quite different interpretation, one in which John built the boat with material other than wood. During motor execution, a speaker may struggle to control the loudness of an utterance or may be unable to use pitch falls and rises appropriately. These motoric disturbances can alter the interpretation of the type of speech act (statement, question or command) that a speaker intends to convey. The resulting pragmatic disturbances in each of these cases have a motoric basis but are no less pragmatic in nature on account of this fact. Moreover, these disturbances are not unlike some of the communicative problems that are experienced by clients with Parkinson's diseases, a clinical population which is now known to have significant pragmatic impairments (Monetta, Grindrod, and Pell 2009; Hall et al. 2011; Holtgraves and McNamara 2010).

By the same token, receptive stages of the communication cycle other than language decoding can also be the basis of pragmatic disorders. Sensory impairments of both hearing and vision can compromise the ability of a hearer to interpret a speaker's utterance. If a hearer receives degraded visual information from a speaker's face, for example, he or she may not detect important visual cues that a speaker intends an utterance to stand as a sarcastic remark in an exchange. Similarly, if a hearer cannot detect the intonation used in an utterance or subtle variations in the loudness of an utterance, he or she may fail to establish the illocutionary force of a speaker's utterance. The pragmatic difficulties of individuals with hearing loss and visual impairment appear to confirm that there are substantial challenges to utterance interpretation from both these sensory impairments (Goberis et al. 2012; Tadić, Pring, and Dale 2010). Even if sensory processing is intact, impaired perception or recognition of auditory and visual stimuli presents its own barrier to successful utterance interpretation. Impaired perception of a range of visual cues including eye gaze and facial expressions is a well-recognized phenomenon in individuals with autism spectrum disorder (Guillon et al. 2014; Lozier, Vanmeter, and Marsh 2014). To the extent that utterance interpretation can turn on the ability to recognize facial expressions or assess the significance of eye gaze, it is not surprising that the understanding of utterances is disrupted in clients for whom these social perceptual skills are impaired. Where pragmatic disorders were shown above to have their basis in motoric processes, in the cases just described they are related to impairments of sensory and perceptual processes. Although neither set of processes is linguistic in nature each is nevertheless instrumental to one's competence as a communicator.

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3. Defining pragmatic competence

The above discussion demonstrates how pragmatic disorders can arise at every stage of the communication cycle. To capture this range of impairment, we appealed to linguistic, cognitive and sensorimotor skills. Collectively, these skills are the basis of our pragmatic competence. More often than not, these skills are intact in speakers and hearers and the result is a process of effortless communication. When these skills fail to develop along normal lines or are disrupted through injury, illness or disease, our pragmatic competence is compromised with adverse consequences for communication. In this section, the notion of pragmatic competence will be examined further. This examination will address the range of skills that lie at the heart of this competence and how impairment of those skills can cause pragmatic disorders. It will also consider how aspects of pragmatics may be retained or preserved in individuals in whom there are significant pragmatic deficits. An illustration of both facets of pragmatic competence will be achieved by examining data from clients with pragmatic disorders. Several of these clients have clinical disorders which will be examined in subsequent chapters. We begin with a working definition of pragmatic competence:

> Pragmatic competence is a uniquely human capacity that guides the exchange of meaningful utterances between speakers and hearers. It draws on diverse linguistic, cognitive and sensorimotor skills which act in concert to achieve effective communication. Individually, these skills may be intact or impaired, with variable consequences for our ability to communicate. Pragmatic competence is broader than linguistic competence on which it depends in part.

Two features of this definition require expansion. Firstly, in describing pragmatic competence as a 'uniquely human capacity', pragmatic competence is part of the rational structures that characterize us as human. Pragmatic competence is a type of communicative rationality that regulates the exchanges in which speakers and hearers participate. This rationality ordains what communicative goals are permissible in an exchange and how those goals may best be achieved. It emerges that pragmatic competence is not simply a set of skills, albeit skills which display a high level of complexity and integration. Rather, it is a rational capacity that has a regulative, normative character for the speakers and hearers who are guided by it. Secondly, pragmatic competence is a much broader concept than a notion of linguistic competence à la Chomsky. Clearly, no utterance can give rise to an implicature or presuppose certain propositions in the absence of linguistic structures. Knowledge of these structures is the essence of linguistic competence. But pragmatic competence has a far greater reach which encompasses knowledge and skills beyond strictly linguistic knowledge. For example, a

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capacity to attribute mental states to the minds of others (theory of mind) is at least as important to pragmatic competence as the ability to use certain linguistic constructions to represent the presuppositions of an utterance. Theory of mind will be examined in section 4.

Having acknowledged the rational, normative character of pragmatic competence, we can now begin to make progress towards a deeper understanding of this notion by examining clinical conditions in which pragmatics is impaired. Chief among these conditions is autism spectrum disorder (ASD). The pragmatic impairments of children and adults with ASD have been extensively investigated in a wide-ranging literature that spans several cognitive scientific disciplines (see Cummings (2005, 2012a, 2014b, 2016, 2017a) for discussion). Individuals who sustain a traumatic brain injury (TBI) can also exhibit marked pragmatic deficits. Often, these deficits occur in the context of executive dysfunction related to frontal lobe pathology, earning the language impairment in TBI the label of a 'cognitive-communication disorder'. On account of the physical forces exerted during a road traffic accident – the most common cause of TBI – the brain can sustain damage at multiple neuroanatomical sites. However, pragmatic impairments can also arise in adults as a result of localized brain damage in either the left or right cerebral hemisphere. This damage is most often caused by a cerebrovascular accident (CVA) or stroke. In left-hemisphere damage (LHD), pragmatic disorders typically occur in the context of aphasia, while in right-hemisphere damage (RHD) they are related to cognitive deficits. Pragmatic deficits in RHD will be examined below. Finally, pragmatic language skills can also deteriorate in the context of cognitive decline in a range of dementias. An examination of some examples of disordered pragmatics in the dementias will conclude the discussion of this section.

3.1. Autism spectrum disorder

Autism spectrum disorder (ASD) is a neurodevelopmental disorder in which children and adults exhibit persistent deficits in social communication and social interaction alongside restricted, repetitive patterns of behaviour, interests or activities (American Psychiatric Association 2013). Approximately 50% of individuals with autistic disorder do not develop functional speech (O'Brien and Pearson 2004). For those individuals who do become verbal communicators, receptive and expressive aspects of pragmatics are impaired. Children and adults with ASD have been found to have difficulty comprehending irony and metaphor (Gold, Faust, and Goldstein 2010; Martin and McDonald 2004), detecting violations of Grice's maxims (Surian, Baron-Cohen, and Van der Lely 1996) and using features of context in utterance interpretation (Loukusa et al. 2007a). ASD is an interesting clinical disorder for what it can reveal about the cognitive substrates of pragmatic competence. At least certain problems of utterance interpretation in ASD appear to be related to deficits in cognitive and

affective theory of mind (Cummings 2013, 2014c). This can be seen in the extracts below from Loukusa et al. (2007b), in which two boys with Asperger's syndrome (a form of ASD) are presented with a scenario followed by a question:

> The researcher shows a picture of a boy sitting on the branch of a tree, with a wolf underneath the boy at the bottom of the tree. The wolf is growling at the boy. A man with a gun is walking nearby. The researcher reads the following verbal scenario aloud and then asks a question: 'The boy sits up in the tree and a wolf is at the bottom of the tree. How does the boy feel?'
>
> *A 7-year-old boy with Asperger's syndrome responds*: Fun because he climbs up the tree. I always have fun when I climb up a tree.
>
> The researcher shows the child a picture with a mother and a girl. The girl has a dress on and she is running. There are muddy puddles on the road. The girl has just stepped in the puddle and the picture shows the mud splashing. The researcher reads the following verbal scenario aloud and then asks a question: 'The girl with her best clothes on is running on the dirty road. The mother shouts to the girl: ''Remember that you have your best clothes on!'' What does the mother mean?'
>
> *A 9-year-old boy with Asperger's syndrome responds*: You have your best clothes on.

Clearly, neither child's response is satisfactory. The failure in each case is related to an inability to attribute cognitive and affective mental states to the mind of an actor in the relevant scenario. In the first scenario, the child with Asperger's syndrome is unable to attribute the affective mental state of *fear* to the boy in the tree. Instead, his own perspective entirely dominates his response when he replies that the boy must be having fun because that is what he experiences when he climbs a tree. In the second scenario, the boy with Asperger's syndrome does not grasp the particular *communicative intention* (a cognitive mental state) that motivates the mother's verbal behaviour, namely, that she is *warning* her daughter to keep her best clothes clean. Instead, the boy merely repeats the mother's utterance with no evidence of any appreciation of its intended meaning. The theory of mind (ToM) deficits (see section 4) which underlie these aberrant responses have quite specific pragmatic consequences for these children. For even as these boys are unable to produce satisfactory responses to the examiner's questions, certain other aspects of pragmatic competence are

evidently intact. Both children display, for example, an appreciation of adjacency pair structure, namely, that a question in an exchange sets up an expectation of a response. Additionally, the 7-year-old child with Asperger's syndrome displays intact pragmatic knowledge of the referential use of pronouns when he uses 'he' to refer to the boy in the depicted scenario.

3.2. Traumatic brain injury

Traumatic brain injury (TBI) is a significant cause of death and disability in children and adults. Although anyone can sustain a TBI, young children and older adults are particularly vulnerable on account of their increased risk of trips and falls. Among the sequelae of TBI are physical disability, sensory impairments, speech and swallowing disorders (dysarthria and dysphagia), cognitive deficits, psychiatric disorders, and language impairment. Communication disorders in particular pose a considerable barrier to the social reintegration of adults with TBI (Cummings 2011, 2015). Language impairment in TBI can take the form of aphasia. However, structural language skills are often intact while higher-level pragmatic language skills are disrupted. Impairment of pragmatic aspects of language commonly occurs alongside cognitive deficits, most notably of executive functions. Anderson (2008: 4) defines the key elements of executive function as 'anticipation and deployment of attention; impulse control and self-regulation; initiation of activity; working memory; mental flexibility and utilization of feedback; planning ability and organization; and selection of efficient problem-solving strategies'. In the following extracts, two children with TBI and impaired working memory are tasked with producing summaries of a narrative (Chapman et al. 2006). The narrative is about a man called John Pierpont who pursues many different careers throughout his life but without success. His lack of success is attributed to the fact that he is not motivated by money but by human values which are not highly regarded in the workplace. The summaries unfold as follows:

> *Child with mild traumatic brain injury:*
>
> It's about, um, this guy who would try to do, he tried to, to succeed at work, but he couldn't. So he tried a lot of different stuff until he was seventy. And then this person, thing, something, found him and sent him to this place where he could find a job, and he, he did that for the last five years of his life, and then he passed away. That's so sad.
>
> *Child with severe traumatic brain injury:*

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> John was a failure at everything mostly that he did because he would always, like, in math, um, give, treat the students like easily and make their homework really easy and like make them get good grades when they really shouldn't have gotten that, and the stuff was too easy. And like when he was, um, selling things, he'd sell the things way too low. But the things that he could, he did get in, he quit. And he just quit because he didn't like the things that he got into. And when, when he was older, he um, wrote some poetry and some songs that we still use today.

Neither of these extracts is a successful summary of the narrative in question. The summary of the child with mild TBI is particularly uninformative. This is due to the large number of non-specific words which are used by the narrator, e.g. 'guy', 'person', 'stuff', 'thing', 'something', 'place'. This child's use of non-specific vocabulary may be accounted for by a word-finding difficulty. This is a *linguistic* explanation of the uninformative nature of the child's summary. An alternative, *cognitive* explanation is that the child produces an uninformative summary because he has a degraded representation of the original narrative in working memory. The child with severe TBI produces a more informative narrative summary than the child with mild TBI (notwithstanding his extensive use of 'things' and 'stuff'). However, his narrative summary is problematic in other pragmatic respects. The summary attends to the 'parts' of the story – John gave students good grades and he sold things at a low price – without establishing the significance of each of those parts, i.e. John was motivated by human values over monetary gain. The failure to integrate each of these parts into a whole, which represents the gist or moral of the story, is a type of cognitive processing deficit called weak central coherence (WCC). Martin and McDonald (2003) examine WCC as a theoretical contender for an explanation of pragmatic language impairments in TBI.

Alongside the pragmatic weaknesses of these narrative summaries, there are also areas of considerable pragmatic strength. The child with mild TBI uses grammatical ellipsis appropriately when he states 'he tried to succeed at work, but he couldn't [succeed at work]'. He also makes effective use of different forms of cohesion including anaphoric reference (e.g. 'this guy who would try to do, he tried to…') and conjunctions (e.g. 'So he tried a lot of different stuff'). The child with severe TBI is equally adept at using certain pragmatic aspects of language. He too makes good use of cohesive devices including personal pronouns (e.g. 'treat the students like easily and make their homework really easy and like make them get good grades') and demonstrative pronouns (e.g. 'make them get good grades when they really shouldn't have gotten that'). Both narrators also succeed in representing events in a correct temporal order. So jobs that John undertook as a young man are related before events that occurred later in his life. Although neither child succeeds in producing a competent narrative summary, there is much to commend each of these summaries in pragmatic terms.

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Once again, pragmatic competence is seen to be a complex construct, with pragmatic deficits related to cognitive and linguistic factors sitting alongside intact pragmatic skills.

3.3. Right-hemisphere damage

Unlike multi-focal pathology in TBI, cerebrovascular accidents or strokes – the most common cause of acquired brain damage in adults – are more likely to result in localized brain damage. Depending on the location of such damage, a range of functional impairments can arise following a CVA. A stroke-induced lesion in the right cerebral hemisphere can cause communication and cognitive disorders (Cummings 2019a). The incidence of (non-aphasic) language and communication problems in RHD has been estimated to be 50%, with marked difficulties for 20% (Benton and Bryan 1996). More recently, Côté et al. (2007) estimated the incidence of these problems to be higher than 50% in a rehabilitation centre setting. The comprehension of non-literal language is particularly impaired in adults with RHD. This impairment affects the comprehension of implicatures, metaphors, idioms, humour, sarcasm and indirect speech acts (Cummings 2014b), with a tendency towards literal, concrete interpretation of these non-literal forms. Because language and communication problems in RHD occur in the presence of marked cognitive deficits in attention, spatial and executive functions (Pulsipher et al. 2013), right-hemisphere language disorder is described as a 'cognitive-communication disorder'.

The tendency in RHD towards literal, concrete interpretation of non-literal language is evident in the following extract from Abusamra et al. (2009: 77-78). It is an exchange between an examiner (E) and a male patient (P) with RHD. The patient has been asked to explain the meaning of one of the metaphors from the *Protocole Montréal d'evaluation de la communication* (MEC) protocol (Joanette, Ska, and Côté 2004):

E: What does this phrase mean: My friend's mother-in-law is a witch?
P: Let's change also one word: My son-in-law's mother-in-law is a witch?
E: And so what does it mean?
P: I know she is a person who hasn't had a pleasant life, throughout her marriage. That…that she's about to be separated from her husband; I'm referring to the mother-in-law of my son-in-law (ha, ha, ha)
E: OK it's not important – it's the same.
P: Certainly! The mother-in-law of my son-in-law. The mother-in-law of my son-in-law is a witch!
E: What does being a witch mean?

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P: Because the woman is separated, because all her life she has criticized her husband for the way he is; only seen in his defects, who has kept his daughter all her life under a glass bell and she's now a poor lady because she can't find the fiancé her mother would like.
E: So what does witch mean, then?
P: What does it specifically mean? It means being tied down to religious sects, to religions, to umbanda…who knows, there are so many.
E: So therefore, "The mother-in-law of my son-in-law is a witch". Does it mean the mother-in-law of my friend practices black magic? And the mother-in-law of my friend has many brooms and she is also a bad person an rude?
P: It's absolutely clear. My friend's mother-in-law has many brooms…no! My friend's mother-in-law practices black magic.

Despite the examiner's best efforts to prompt P, he never moves beyond a literal, concrete interpretation of the metaphor in *X is a witch*. This interpretation rests on certain conventional attributes of witches, including the practice of black magic and being 'tied down to religious sects'. When P utters 'My friend's mother-in-law has many brooms…no!', it appears that he is about to reject the conventional meaning of 'witch'. However, P never expresses an alternative, metaphorical meaning of this word. Problems with the interpretation of non-literal language in RHD have been attributed to theory of mind deficits (Winner et al. 1998) and visuo-perceptual and visuo-spatial deficits (Papagno et al. 2006). Aside from P's evident difficulty with metaphor interpretation, he also exhibits another pragmatic problem in this exchange. On at least two occasions, P appears to relate information from his personal experience. The use of egocentric language is a feature of discourse in RHD (Lehman Blake 2006). The failure to move beyond one's own perspective in egocentric discourse may also have its roots in theory of mind impairments in clients with RHD.

There is more to say about pragmatic competence in RHD beyond the cognitively-based language and discourse impairments of this population. For as the above exchange between E and P demonstrates, there are also intact aspects of pragmatics in RHD. The entire exchange is a metalinguistic exercise in which E and P discuss the meaning of a metaphorical utterance. P appears to grasp the metalinguistic purpose that is served by the exchange even as he fails to establish the metaphorical meaning of the expression in question. P also contributes and relinquishes turns at appropriate points in the exchange. Alongside intact turn-taking, P is aware that questions raise a conversational expectation to produce answers, and duly fulfils this expectation on each occasion that a question is used. In his first turn, P introduces a female person for whom there is no referent. This lack of reference is subsequently addressed in the utterance 'I'm referring to the mother-in-law of my son-in-law'. Once again, there is

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evidence of preserved pragmatic knowledge in P even though his wider pragmatic competence is disrupted to a significant extent.

3.4. Dementias

A range of neurodegenerative diseases cause language impairments in the context of a progressive decline in cognitive skills (Cummings 2019b, 2019c). The so-called dementias include Alzheimer's dementia but also less common dementias such as Parkinson's disease dementia, vascular dementia, dementia with Lewy bodies and frontotemporal dementia. Pragmatic impairments in Alzheimer's dementia have been extensively investigated (Cummings 2014b), and include impaired comprehension of metaphors, idioms and proverbs early in the course of disease (Papagno 2001; Rassiga et al. 2009; Leyhe et al. 2011). In recent years, investigators have begun to characterize pragmatic deficits in a number of non-Alzheimer dementias including AIDS dementia complex, frontotemporal dementia, Parkinson's disease dementia and dementia with Lewy bodies (see section 6.4 in Cummings (2014b) for extended discussion). In illustration of some of these deficits, consider the following exchange between an examiner (E) and a 36-year-old man called Warren (W) who was studied by McCabe, Sheard, and Code (2008). Warren was diagnosed with AIDS dementia complex by an AIDS specializing neurologist. The exchange between Warren and the examiner unfolds as follows:

E: What would be the longest job you had?
W: Oh, when I had the business, cleaning the building
E: mm and that was for how many years?
W: 8 years, like I said I was spoiled
E: And that was when you were in your twenties?
W: Twenty two. (Name) was the only person who had total faith in me. There was an intelligent person in there that, um, he said I've got more common sense. I like that idea 'cause there's nothing common about this little black duck and if I am on my way to prove that I'm not. My great grandmother was born into a family that was indentured to a castle near Salisbury, Newcastle. Well she was supposed to be a house servant. She sort of looked at then at the age of 17 and said "Do I look like a peasant girl to you? I don't think so, I'm jumping on a boat and going to Australia…" (continued in same vein for six more utterances).

Warren's first two turns in this exchange are relevant, informative responses to the examiner's questions. During Warren's third turn, he begins his response in a relevant manner. However, he then quickly digresses into an extended account that involves a substantial amount of irrelevant information. Clearly, Warren has significant difficulty in

adhering to Gricean maxims of relation and quantity in his spoken output. He also appears to be distracted by the multiple meanings of words during the course of his response. This can be seen in his use of the expression 'common sense' where *common* has the meaning of plain or ordinary good judgement. An alternative meaning of *common*, something that is low-class, vulgar or coarse, then launches Warren into account about his great grandmother. Warren's marked difficulties with topic relevance must be considered alongside some areas of preserved pragmatic function. He is able to use anaphoric reference to achieve cohesion across utterances, e.g. 'My great grandmother was born into a family […] she was supposed to be a house servant'. There is an appreciation of deixis when Warren uses '*that* idea' to refer to an earlier part of his spoken discourse. He also couches the words of his great grandmother in direct reported speech towards the end of the above extract. Warren's pragmatic competence involves a complex interplay between a marked impairment of topic relevance and pockets of preserved capabilities.

Quite different pragmatic impairments and skills are evident in the following narrative of a 76-year-old man with dementia with Lewy bodies (DLB) who was studied by Ash et al. (2011). The narrative is based on a wordless children's picture book by Mayer (1969) entitled *Frog, Where are You?*. The book tells the story of a young boy and his dog who are searching for their lost frog.

Page 1: (a) There's a boy, his little dog and his frog sitting up by the boy's bed.
Page 1/2: (b) And it's nighttime.
Page 2: (c) Boy's fallen asleep.
Page 2: (d) The frog is getting out of his … container.
Page 2: (e) and the dog is with the boy, I believe.
Page 3: (f) Yep, then uh there's a boy, in the bed with the dog on top of him.
Page 3: (g) and he's about ready to fall asleep I believe.
Page 4: (h) Boy's playing with his boots.
Page 4: (i) The dog's crawling into the … container.
Page 4: (j) The boy's looking in the boots. (Ash et al., 2011: 33)

The client with DLB exhibits marked difficulties with information management during the development of this narrative. In (a) to (c), he succeeds in setting the scene by introducing the three main characters in the story, providing temporal context (it is night time), and describing an action of one of the characters which has relevance to subsequent events (the boy is sleeping). In (d), there is a clear statement of the problem, the resolution of which becomes the whole point of the story – the boy and his dog launch a search for their frog which has escaped from its container. To this point in the narrative, the client displays

reasonably intact knowledge of the type of information that a narrator should provide to a listener. However, (e) and (f) merely repeat aspects of what has already been said and so neither utterance contributes new information to the narrative. The information in (g) is inaccurate, as it is in fact morning in the scene on page 3 and the boy is surprised to discover that his frog has disappeared. In (h) and (i), the client provides information which somehow misses the purpose of the activities that he describes. The boy is not playing with his boots so much as looking into them to see if he can find the frog. Similarly, the dog is crawling into the container with a view to searching for the frog. At this point, the client appears to have lost all appreciation of the search theme that motivates the narrative. Ash et al. (2011) found that this client's difficulty in maintaining the search theme of the narrative correlated with impaired executive functioning in mental search and inhibitory control.

Each of the clinical disorders examined in this section demonstrates that pragmatic competence is a complex construct, with skills and deficits that are mediated by cognitive, linguistic and other factors (see Cummings (2017b) for further discussion of these disorders). Although a complete theory of pragmatic competence is beyond the scope of this chapter, and may not be an intelligible form of enquiry in any event (Cummings 2012b, 2012c, 2014d), some remarks about theory construction are warranted. To make our task a manageable one, only theories of one of the cognitive components of pragmatic competence will be addressed in the remainder of the chapter. That component is theory of mind.

4. Pragmatic competence and theory of mind

In addressing pragmatic disorders in section 3, mention was made of the role of theory of mind (ToM) in some of these clients' pragmatic deficits. In this way, the difficulties of children with Asperger syndrome (a form of ASD) were explained in terms of deficits in cognitive and affective ToM, while problems with the understanding of non-literal language in adults with RHD were attributed to ToM impairments. So integral is the contribution of ToM to utterance interpretation that it is inconceivable that a theory of pragmatic competence could be envisaged, let alone actually constructed, in the absence of a central role for ToM (a point that has also been acknowledged by Ifantidou (2014) in the context of development of pragmatic competence in L2). In this section, we explore three theoretical approaches to the study of ToM. The first of these approaches – relevance theory (Sperber and Wilson 1995) – has been and continues to be a highly influential theory in linguistic pragmatics. In relevance theory, ToM is conceived of in terms of a metacommunicative module which is a specialization of a more general mind-reading module. The nature of this module and its capacity to represent the type of ToM processes that are at work in utterance interpretation will be examined below. The other two theories which will be addressed in this section are

theories of our psychological competence in predicting and explaining the behaviour of other people. So-called 'theory' theories and simulation theories of our psychological competence have their origins in developmental psychology and philosophy of mind in the late 1980s. Unlike relevance theory, simulation and 'theory' theories were not specifically developed with a view to explaining ToM processes in utterance interpretation. It will be argued below that this somewhat limits the pragmatic adequacy of these theories as an account of ToM processes during utterance interpretation.

Like all inferential approaches to pragmatics, relevance theory contends that we can only really be said to have understood an utterance when we identify the particular communicative intention that motivated a speaker to produce it. On this relevance-theoretic view, understanding an utterance is simply a special case of understanding intentional behaviour in general. To the extent that utterance interpretation is a special type of mind-reading, the question then becomes one of how we should conceive of this mind-reading process. Is this process to be characterized along the lines of a Fodorian central process (Fodor 1983), in which hearers apply general reasoning abilities to premises about a speaker's communicative behaviour in order to derive the mental state (communicative intention) that motivated this behaviour? On this approach, mind-reading during utterance interpretation is an exercise in standard belief-desire psychology. Or is this mind-reading process to be characterized in terms of a dedicated inferential mechanism in the form of a module? According to Wilson (2005: 1136), empirical findings lend strong support to the latter characterization: 'the developmental and neuropsychological evidence seems to favour a view of mind-reading as a domain-specific modular system rather than a central, reflective one'. Such a modular system contains special-purpose inferential procedures which are attuned to regularities in the data of a particular domain. These procedures confer certain efficiencies on agents who can derive the same mental states that are arrived at by general-purpose reasoning abilities but in a manner that involves reduced cognitive effort. However, relevance theorists go a step further in claiming that there cannot be a single mind-reading module that can address all routinized tasks of the type envisaged:

> '[G]iven the complexity of mind-reading, the variety of tasks it has to perform and the particular sub-regularities they exhibit, it is reasonable to assume that mind-reading is not a single, relatively homogeneous system but a collection of autonomous mechanisms or sub-modules articulated together in some way' (Wilson 2005: 1136).

Specifically, speaker's meanings, it is contended, cannot be inferred from utterances using the same general mind-reading mechanisms that attribute intentions to agents in non-

communicative domains. While the grounds in support of this latter contention are convincing on their own terms, we will not address them in the present context. Of much greater interest in this context is the nature of a special-purpose mechanism or sub-module as it applies to the communicative domain. Such a mechanism is constrained by a principle of relevance in both the cognitive and communicative domains. In terms of cognition, relevance theorists argue that our minds have evolved to achieve the maximization of relevance. We process information for its relevance and attend only to relevant stimuli. In terms of communication, there is a presumption of optimal relevance in the utterances that speakers produce. In effect, speakers issue hearers with an implicit guarantee that it will be worth their while to attend to and process the utterances they produce. It is then for hearers to make good on this guarantee by establishing the relevance of utterances in the most cost-effective manner possible. A point is reached when the cost of processing an utterance for its contextual implications exceeds the implications that can be derived from it and further relevance processing ceases. For relevance theorists 'the regularities described in the Cognitive and Communicative Principles of Relevance should provide an adequate basis for a dedicated comprehension mechanism, a sub-module of the mind-reading module' (Wilson 2005: 1141).

It is not possible in the present context to evaluate the extent to which a sub-module of the mind-reading module that is construed along relevance-theoretic lines succeeds in capturing the type of ToM processes that are integral to utterance interpretation. In earlier publications, I have argued that there are reasons to doubt that a relevance-theoretic mind-reading module can represent the rational, holistic, intentional character of either utterance interpretation or the ToM processes that make this interpretation possible (Cummings 2005, 2014b, 2017c). Having said this, it is clear that relevance theory has made and continues to make an important contribution to clinical studies of pragmatic disorders. In this way, relevance-theoretic concepts have been used to explain problems with referent specification in children with specific language impairment (Schelletter and Leinonen 2003), bridging inference deficits in adults with RHD (Dipper, Bryan, and Tyson 1997), impairments of figurative language in children and adults with autism (Happé 1993), and the deviant responses of children with Asperger's syndrome or high-functioning autism to contextually demanding questions (Loukusa et al. 2007b). In these investigations and other studies, relevance theory has proven clinical value to researchers regardless of any conceptual challenge.

While relevance theorists pursue an account of mind-reading from within linguistic pragmatics, other accounts of this meta-representational capacity have emerged from developmental psychology and philosophy of mind. For so-called 'theory' theorists, the

psychological competence that we use to explain and predict the behaviour of others takes the form of a folk psychological theory (philosophy) or a theory of mind (psychology). This theory may be inherited as an innate module similar to Chomsky's language module. This is how one proponent of this modular view characterizes our psychological competence:

> 'The psychology faculty certainly appears to be an intentional module. The faculty has a definite and self-contained body of knowledge that is framed in terms of a specific network of interrelated (and indeed, highly sophisticated and logically intriguing) concepts. Further, it appears to exhibit a degree of informational encapsulation' (Segal 1996: 147)

For Segal at least, the psychology module does not just exhibit domain specificity and informational encapsulation but also certain other features of a Fodorian module:

> 'At present [the psychology module] seems to fit the criteria reasonably well, but not entirely. It does appear to be domain specific, informationally encapsulated, to fire obligatorily, to be reasonably fast and to have a characteristic ontogeny' (1996: 149).

An alternative to this modular view is that children develop a theory of psychological competence in much the same manner that scientists construct theories in science. The chief proponent of this alternative 'theory' theory is Alison Gopnik. This is how Gopnik (1996) characterizes what she calls 'theory-formation theory':

> 'My claim is that there are quite distinctive and special cognitive processes that are responsible both for scientific progress and for particular kinds of development in children […] It is my further claim that theories and theory changes, in particular, are responsible for the changes in children's understanding of the mind' (1996: 169).

Gopnik and others challenge modularity on the grounds that cognitive modules are not able to accommodate the developmental changes that take place in a child's theory of mind – modularity theories, Gopnik and Meltzoff (1997: 54) argue, are 'antidevelopmental'. This view of cognitive modules is refuted by modular theory theorists such as Scholl and Leslie (1999) who argue that developmental changes can occur in a module via parameterisation. The debate is an interesting one which cannot be pursued further in the present context.

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For simulation theorists, our psychological competence is not explained in terms of a theory. Rather, when we simulate we are imaginatively projecting from our own mental activity (what we would think/believe/desire in a situation) to what someone else is likely to think, believe and desire in a similar situation: 'According to this view, what lies at the root of our mature mind-reading abilities is not any sort of theory, but rather an ability to project ourselves imaginatively into another person's perspective, *simulating* their mental activity with our own' (Carruthers and Smith 1996: 3; italics in original). As with 'theory' theory, proponents of simulationism differ with respect to the details of how simulation comes about. According to Goldman (1989, 2006), simulation requires first-person awareness of one's own mental states, with the inference from these states to the mind of another taking the form of an argument from analogy. Alternatively, simulationists like Gordon (1986, 1995, 2004) argue that recognition of one's own mental states is not a requirement of simulation and that the type of imaginative identification that occurs in simulation can take place without introspective self-awareness. Gordon (1986) explains how simulation proceeds as follows:

> '[O]ur decision-making or practical reasoning system gets partially disengaged from its 'natural' inputs and fed instead with suppositions and images (or their 'subpersonal' or 'sub-doxastic' counterparts). Given these artificial pretend inputs the system then 'makes up its mind' what to do. Since the system is being run off-line, as it were, disengaged also from its natural output systems, its 'decision' isn't actually executed but rather ends up as an anticipation [...] of the other's behavior' (170).

It is interesting to consider to what extent, if any, 'theory' theories and simulation theories might contribute to an explanation of pragmatic competence in individuals with pragmatic disorders. While modular 'theory' theorists do not have utterance interpretation within their explanatory sights, their commitment to the modular project places them in the same camp as relevance theory and they will not be addressed further here. The idea that children actively construct theories in the same manner as scientists construct theories certainly has pragmatic plausibility. The work of Bruno Bara and colleagues has charted the developmental stages that children pass through on their mastery to complex speech acts (Bara, Bosco, and Bucciarelli 1999; Bucciarelli, Colle, and Bara 2003). Although these investigators explain the increasing difficulty of different types of speech acts in terms of the complexity of their underlying inferences and mental representations, their approach is consistent with the idea that children actively construct increasingly sophisticated theories of the minds of others. (Of course, modular 'theory' theorists would claim that these pragmatic findings are also consistent with the type of internal specialization that they claim occurs in modules.) The extent to which simulation theory may contribute to an explanation of pragmatic competence

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in individuals with pragmatic disorders is even more difficult to assess. It is difficult to envisage how clients with autism spectrum disorder, who exhibit marked deficits of imagination, could possibly attempt an 'imaginative projection' of the type proposed by simulation theory. Certainly, the ASD population could provide an interesting clinical test bed for the claims advanced by simulation theorists. Imaginative projection along with the proposals of 'theory' theorists require extensive further research and consideration before they can contribute to an explanation of pragmatic competence in children and adults with pragmatic disorders.

5. Summary

This chapter has introduced readers to the many and varied ways in which pragmatics can become disrupted in adults or fail to develop along normal lines in children. Pragmatic disorders were shown to emerge from breakdown at several locations in the communication cycle, and not simply at the stages of language encoding and decoding and the generation and recovery of communicative intentions, as most clinical researchers appear to assume. To develop a fully-fledged concept of pragmatic competence, pragmatic disorders were examined alongside pragmatic skills in several clinical conditions. These conditions were autism spectrum disorder, traumatic brain injury, right hemisphere damage and the dementias. A key feature of these disorders is that pragmatic impairments often occur in the presence of severe and persistent cognitive deficits. A central component of pragmatic competence in any context, but particularly in a clinical context where cognitive disorders are commonplace, is the notion of theory of mind. All utterance interpretation in pragmatics involves the attribution of communicative intentions to speakers (one dimension of ToM), and it is to ToM that we must turn to understand many types of pragmatic impairment. The chapter concluded with an examination of three theories of ToM from different disciplinary backgrounds – linguistic pragmatics, philosophy of mind and developmental psychology – along with some critical reflection around these theories.

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