

The New Age of Communication Research: Discourse, Cognition and Behaviour

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Research into communication disorders has been undergoing a slow revolution over the past few decades with some fascinating advances and some exciting new directions ahead. The major change in emphasis that has emerged is an interest in assessing communication as this relates to real-life everyday type situations. In particular, three major thrusts can be identified. The first is the application of socially relevant linguistic theory to communication disorders. Thus, theorists such as Halliday have provided useful frameworks for identifying patterns in discourse. In turn, these have revealed the strengths and weakness of speakers with aphasia or other communication disorders (e.g., traumatic brain injuries) and also what their conversational partners do to help or hinder this process. The second is an examination of how cognitive processes, including memory, inferential reasoning and social cognition, contribute to communicative competence in people who have communication disorders but not aphasia, such as those with Alzheimer's disease, with traumatic brain injuries and with right hemisphere lesions. The third is the adoption of a more integrated approach, whereby verbal and nonverbal behaviours are examined in detail for their communicative meaning, for both the purposes of characterising communication breakdown and for developing an integrated treatment approach.

Discourse

In order to characterise naturally occurring discourse, researchers have turned to linguistic models of language function. Linguists and philosophers who addressed the social nature of language are particularly relevant. Thus, for example, M.A.K. Halliday's model of systemic functional linguistics addresses issues such as how the social function of discourse is embodied in its structure. Halliday's work has been particularly useful because he has provided clear direction as to how particular meanings in discourse can be analysed and quantified. For example, in different kinds of communicative exchanges — such as telling a story, or buying some oranges — there are typical elements that occur in a particular sequence. A story-teller starts by setting the

scene and introducing the characters. S/he typically proceeds to elaborate a plot and end with some kind of resolution. Likewise, buying oranges entails some obligatory elements that occur in a fixed order. A buyer usually greets the seller and then proceeds to make their request. The seller responds by giving a price for the goods and the buyer completes the transaction by paying it.

Such analyses address communication as a cooperative exercise whereby the structure and form of any discourse is influenced by cultural expectations and the communicative behaviour of all participants. This shifts the emphasis of communication difficulties (and strengths) away from the behaviour of speakers with communication disorders and more towards the way in which they and their communicative partners interact. In this

shift, it becomes apparent that the person who interacts with the (clinically identified) speaker has a very direct effect on how the dialogue proceeds and what opportunities the clinical speaker has to engage in normal or effective communication. This notion of communication as a cooperative exercise opens up many fascinating directions that are relevant to assessment, treatment and management of communication disorders such as aphasia. In this issue, Armstrong and Mortenson describe the use of one application of Halliday's theoretical approach, that of speech function analysis, to examine how conversations unfold between three couples in which one partner has sustained a stroke leading to aphasic symptoms. This analysis focuses upon categorising utterances as 'moves' with different functional roles: to open or sustain the conversation, to respond and react, to confront or, alternatively, provide support as the conversation proceeds. Armstrong and Mortensen argue that this fine-tuned analysis provides information regarding the strengths and weaknesses that the speaker with aphasia brings to the task of communication and also provides information as to how their partner(s) either facilitate or obstruct effective discourse, information that can be used in therapeutic work with the couple to maximise the effectiveness of their interactions. Where a prevalent view has been that speakers with aphasia have intact pragmatic skills despite poor lexicogrammatical abilities, Armstrong and Mortensen's analyses demonstrates that, with sufficiently detailed examination, problems at the pragmatic level may also be revealed. Thus, while one of their speakers 'Bill' is capable of initiating and responding in conversation, more extended analyses (reported elsewhere), shows that he fails at a more delicate level of responding in that he does not track the conversation in order to clarify, confirm, resolve or repair misunderstandings that occur further downstream.

Such kinds of analyses have also been useful for examining the competence of people who, in the absence of aphasia, have impaired *communication* skills. One such population is the group who has experienced severe traumatic brain injuries (TBI). Many such individuals show little to no impairment on conventional language tests (confrontation naming, syntactical comprehension, fluency, and so on) but are clearly impaired when required to use language appropriately in social contexts. Sociolinguistic approaches are, therefore, clearly relevant and have shown that speakers with TBI are less capable of adhering to the generic structure of an everyday service

enquiry (e.g., Togher, Hand, & Code, 1997). Furthermore, this kind of analysis, focusing upon the interaction between speakers has been telling in terms of normal speakers' accommodations to those they perceive as disabled. Togher, for example, has used an analysis based upon Halliday's notion of informational exchange — that is, who is in the position of knowing information and asking questions, to examine how the exchange of information is negotiated by speakers including those with TBI. She demonstrated that people who interact with speakers they identified as disabled were disempowering them by asking them questions to which they already knew the answer and asking them less questions to which they did not (Togher, Hand, & Code, 1996). In a further demonstration of this, Togher and colleagues showed that speakers with TBI, when placed in a more empowering situation such as educating school children on the circumstances of their injury, conversed in a manner that was indistinguishable from control speakers (with spinal injuries; Togher, 2000). This kind of analysis points to some very clear and novel directions for remediation, by focusing upon the communication partners of people with TBI and educating them about normal discourse patterns. This kind of approach has proven useful in normalising interactions between speakers with TBI and members of the police force (Togher, McDonald, Code, & Grant, 2004). In the article in this issue, Togher and colleagues provide an examination of the interactions of a single individual with TBI in the postacute stages of rehabilitation, to explore the effects of peer with TBI versus clinician-based interactions and group versus one-to-one conversational opportunities.

Both sociolinguists such as Halliday and theoreticians from the related, pragmatic perspective (such as Searle, Grice and others) emphasise the importance of modality and indirectness as a facet of discourse that conveys meaning regarding the interpersonal relationship between speakers. Modality is a device that speakers use to transmit hesitancy and to distance themselves from their utterance. 'Would it be OK with you if I sat here?' is seen as much more hesitant than 'Can I sit here?' and consequently transmits an indication to the addressee regarding the speaker's desire not to impinge. Speakers are often indirect in other ways, for example, saying one thing 'That was a great idea!' to mean the reverse. The interesting issue regarding this level of indirectness is that it is not only a very common way of communicating but that it is opaque. The literal meaning bears no relation to what the speaker intends and must be

inferred, that is, the speaker relies upon pragmatic inference to convey meaning. Furthermore, it transpires that the ability to interpret such pragmatic inferences can be disordered in a variety of clinical conditions. Many individuals who lack aphasia but are, nonetheless, poor communicators, fail to get the message when confronted with such indirect language. Comprehension of indirect language such as sarcasm has been studied in those with traumatic brain injury (Channon & Watts, 2003; McDonald & Flanagan, 2004), autism (Happé, 1993), focal frontal lesions (Shamay-Tsoory, Tomer, Goldsher, Berger, & Aharon-Peretz, 2004) and right hemisphere lesions (Kaplan, Brownell, Jacobs, & Gardner, 1990). Further evidence of disorders in pragmatic understanding after right hemisphere damage is also presented in this special issue (Martin & McDonald).

Cognition

Although conversational partners clearly play a role in facilitating or exacerbating communication difficulties, studies of discourse and pragmatic inference leave no doubt that communication abilities can be disordered independent of aphasia. From this, the question arises as to how such disorders are to be assessed and characterised from a neuropsychological perspective. Since language *per se* is intact, it is clear that other cognitive processes are required for normal communication to occur. Indeed, the proliferation of terms such as ‘cognitive communication’ and ‘cognitive–linguistic’ disorders reflect the growing awareness in the research and clinical literature of the complex interplay between cognition and language. So, too, clinicians and researchers have been motivated to develop formal assessment tasks that are sensitive to such ‘higher order language’ disorders. Body and Perkins (this issue) provide a brief overview of assessments that are routinely used to evaluate cognitive–linguistic skills, and then suggest tests that may better evaluate these.

Acknowledgment of the interplay between cognition and language has been important in the progression of clinically sensitive measures. And yet, as advocated by Body and Perkins, such developments on their own do little to enable us to systematically examine the interaction between specific cognitive abilities and language. Indeed, examination of specific cognitive correlates of impaired communication skills is an area that has not received a great deal of attention to date. Fortunately, two articles in this issue directly pertain to this area. Chapman and colleagues examine

the ability of older adults versus those with Alzheimer’s disease (AD) to retain the gist of verbal information. This is an important area of study. Chapman and colleagues make the argument that memory for particular kinds of gist may be differentially affected by aging versus early dementia. Specifically, Alzheimer’s disease may differentially impair the recall of major themes emerging from discourse to which they have previously been exposed. This is not only of diagnostic interest, but has practical implications. Both memory recall and inferential reasoning are relevant to discourse. Much of our day-to-day interactions and chit-chat involve the sharing of experiences and retelling of recent events. Failure to recall news, stories, books, movies, previous conversations, and so on will seriously impede the capacity to contribute to such social interactions. Similarly, much of what we communicate is inferred rather than stated explicitly. We rely upon the capacity to *summarise* past events, to convey the *flavour* of the experience or the *main point* of a story. If AD impairs these skills communicative competence is reduced.

Although loss of semantic information is common in AD, reflected in empty talk and poor naming ability, communication difficulties in AD appear to extend beyond semantics, since individuals can have difficulty with discourse even when scaffolded for their poor word finding (Sabat & Cagigas, 1997). Problems of new learning and forgetfulness seen early in the course of the disease may feasibly, therefore, play a role by reducing the informational resources they can bring to the conversation. In addition, or possibly in combination, deficits in inferential processes may contribute. In previous work, Chapman and colleagues (Chapman, Highley, & Thompson, 1998) demonstrated that people with AD have problems linking textual knowledge and real-world knowledge, suggesting that deficits in inferential reasoning impair their ability to integrate their long-term memory with text. In this issue they extend this notion to suggest, further, that people with AD have difficulty inferring major themes from information within text. This research points to a very clear role for memory and inferential impairment in the communication difficulties of people with AD.

Furthermore, AD is not the only condition in which poor communication, poor inferential ability and poor memory go hand in hand. In TBI communication deficits are prevalent as are memory impairments. Over 50% experience impairments in new learning and recall to varying degrees (Tate, Felton, Manning, & Hunter, 1991). Like AD, the

extent to which memory impairment impacts upon discourse in this population is an area awaiting further research. Anecdotally, poor memory for past events has been signalled as a major handicap in social situations in this group. Efforts to alleviate forgetting of complex past events via reminders does appear to be of some benefit (Rendle, McDonald, & Salmon, 2005), but whether this facilitates social discourse is as yet unknown. Whether people with TBI, like those with AD, have differential difficulties retaining gist is unclear. Deficits in inferential reasoning more generally are prevalent, reflecting, quite probably, the impact of damage to the frontal systems of the brain resulting in rigid, concrete appraisal of information. In addition, deficits in understanding indirect speech acts such as sarcasm, are mediated, in part, by general problems in inferential reasoning as well as working memory and new learning (Martin & McDonald, 2005; McDonald et al., in press).

Patients with right hemisphere lesions also have difficulties with communication and, specifically, appear to have deficits understanding indirect language such as sarcasm (Kaplan et al., 1990; S.G. Shamay-Tsoory, Tomer, & Aharon-Peretz, 2005). But this group is not characterised by poor verbal learning. Nor are people with general right hemisphere pathology clearly candidates for inferential reasoning deficits arising from frontal lobe pathology. In this case, it is unclear why these difficulties arise although a number of mechanisms have been proposed. Deficits in attributing mental states (theory of mind) as seen in adults with Autism have been considered (Winner, Brownell, Happe, Blum, & Pincus, 1998). The possibility that the right hemisphere supports a particular global processing style that assists the processing of information in context has also been suggested (Beeman, 1993). Finally, the possibility that general problems with inferential reasoning akin to those seen in AD and TBI groups do arise because of the impact of (right) frontal pathology (McDonald, 2000) needs to be addressed. In the second article addressing cognition in this issue, Martin and McDonald provide a systematic examination of which mechanism might offer the most plausible explanation although in the end, as with much research into language processing in the right hemisphere, the results raise more questions than they answer. While there are very clearly problems in the communication patterns of people with lesions in the right hemisphere, their cognitive origins remain elusive.

Behaviour

The notion that communication is essentially behaviour has also led to some interesting formulations in terms of both assessment and treatment. The role of paralinguistic behaviours has been acknowledged in the assessment of communication competence for many years. For example, the Pragmatic Protocol developed by Prutting (Prutting & Kirchner, 1987) encompasses a checklist for the appropriate use of gesture, eye contact, and so on. Nevertheless we have been limited in the extent to which we have been able to examine precisely how verbal and nonverbal behaviours interact in normal communication. Social skills frameworks, wherein verbal behaviour is seen as part of a broader framework including eye contact, facial expression, gesture and body movement, provide one potentially useful approach. Indeed, the relevance of social skills training to those with severe traumatic brain injuries has been raised, given promising results in other clinical populations such as those with schizophrenia and autism (see McDonald, 2003, for review). But, in general, behavioural analyses of communicative behaviour have, to date, lacked the careful and detailed examination that characterises discourse analytic approaches such as advocated by both Armstrong and Mortenson and Togher and colleagues. However, in the article by Turkstra and Montgomery (this issue) a fascinating new method is described for quantifying how linguistic and paralinguistic (gaze, gesture) phenomena synchronise to signal the onset of a change in turns between speakers in a conversation. As Turkstra and Montgomery argue, different demands (e.g., impaired cognitive processing) may drive less coordinated synchrony of such behaviours in speakers with TBI compared to their non-injured peers. If this is the case, there will not be the normal concentration of such behaviours signalling the turn change prior to it occurring. Using concepts arising from models of chaotic (self-organising) systems Turkstra and Montgomery quantify the frequency of eye gaze and gesture in relation to turn-changes and demonstrate how this method can be used to reveal synchrony (or not) in the conversations of people with TBI.

Finally, conceptualising communication within the broader context of behaviour has led to some innovative new approaches to remediation. Nowhere is this more apparent than in the work by Ylvisaker and Feeney, who have written extensively on this topic (e.g., Ylvisaker & Feeney, 1998). Ylvisaker and Feeney advocate a contextualised approach to remediation where social

behaviour is not compartmentalised but rather viewed as a holistic target for rehabilitation and where the emphasis for remediation is that it is situationally meaningful. In this special issue, Ylvisaker outlines his rationale for 'self-coaching' to promote better social behaviour and communication skills in people with severe traumatic brain injuries. Ylvisaker argues for the importance of relevance and motivation in any remediation approach. Thus, remediation goals must be negotiated to be personally meaningful and contextually appropriate. In his 'self-coaching' approach he advocates 'self-talk' and the use of personal metaphors (e.g., thinking of a personal idol — such as a sportsperson or movie star as a role model) as a means to regulate behaviour and promote positive self-regard. Such an approach, Ylvisaker argues, has many benefits. Self-talk is a way of structuring internal thoughts in people with poor executive skills. The use of personal metaphors engages the affective system while at the same time provides participants with complex images and information that tax learning and attentional abilities less than standard instructions. Ylvisaker provides a critical overview of more conventional social skills approaches, highlighting their limited outcomes. Although empirical evidence for his particular approach is still forthcoming, Ylvisaker places the rationale for his approach firmly in the context of a broad range of literature, from early philosophers and current neuropsychological evidence through to evidence-based cognitive behavioural approaches.

Conclusion

In conclusion, approaches to communication disorders have come a long way in the past 30 years. No longer are clinicians limited to conventional tests of aphasia when assessing their patients. Nor are their interactions necessarily limited to the desk and office. By recognising the fact that communication occurs in a much broader context we are far better able to observe regularities and patterns, see where these break down and where they hold up. We can observe how context scaffolds and moulds meaning and how communication involves language, cognition and behaviour. With these observations in place we are in a far better position to develop a comprehensive theory of communication and, perhaps even more importantly, to start to put words into action, to develop an integrated and sensitive system of assessment and remediation for all with communication disorders. Hopefully, the articles in this special issue

of *Brain Impairment* will provide some interesting insights into the road ahead.

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