

**The social cognition of medical knowledge:
with special reference to childhood epilepsy**

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Abstract

This paper arose out of an engagement in medical communication courses at a Gulf university. It deploys a theoretical framework derived from a (critical) sociocognitive approach to discourse analysis in order to investigate three aspects of medical discourse relating to childhood epilepsy: the cognitive processes that are entailed in relating different types of medical knowledge to their communicative context; the types of medical knowledge that are constituted in the three different text types analysed; and the relationship between these different types of medical knowledge and the discursive features of each text type. The paper argues that there is a cognitive dimension to the human experience of understanding and talking about one specialized form of medical knowledge. It recommends that texts be studied in medical communication courses not just in terms of their discrete formal features but also critically, in terms of the knowledge which they produce, transmit and reproduce.

Keywords

medical discourse, medical communication, medical knowledge, social cognition, Teun A. Van Dijk, research article, textbook, interview, epilepsy.

Introduction

This paper arose out of the first author's engagement in teaching undergraduates, postgraduates and medical professionals enrolled in medical communication courses delivered in English at a university in the Gulf region. The undergraduates were required to develop their skills in reading medical textbooks and to reproduce that knowledge in examinations; the postgraduates were required to develop their skills in reading medical research articles and to synthesize that knowledge into their Masters dissertations; the medical professionals were specialist consultants who were required to report their work in internationally refereed English language journals. One of these consultants was a paediatrician specializing in epilepsy. Each communication course focused upon formal features of medical texts rather than upon their content, and each type of medical text was considered in isolation. Little consideration was given either to the ways in which medical research informs medical textbooks, or to the ways in which knowledge transmitted by the medical textbook is reproduced in the clinical interview.

This paper will adopt a (critical) sociocognitive approach to discourse analysis in order to examine the way in which one specialised form of medical knowledge – that of childhood epilepsy - is constituted not just in discrete medical texts, but across different text types such as the medical research article, the medical textbook and the doctor-patient interview. The research questions below will guide the analysis which follows:

- which cognitive processes are entailed in relating different types of medical knowledge to different communicative contexts?
- which types of medical knowledge are constituted in different types of medical text?
- what is the relationship between different types of medical knowledge and the discursive features of each type of medical text?

It is intended that this study will contribute towards a holistic and more critical engagement with medical texts in communications courses.

Literature review

While studies of medical communication have often adopted a ‘sociolinguistic’ approach (Skelton, 1997), there have been few studies that have employed a sociocognitive approach to examine critically the discourse of medicine.

Sociolinguistic approach

A central concern of a sociolinguistic approach to medical communication and medical discourse has been the analysis of oral accounts of patients in order to understand the phenomenological experience of illness, ageing and communication (De Bot & Makoni, 2005; Hamilton, 1991, 1994a, 1994b, 1996, 1999, 2001a, 2001b, 2003; Makoni, 1997a, 2002; Ramanathan, 1995, 1997; Ramanathan-Abbott, 1993, 1994, 1995), mostly with a view to improving clinical practice (e.g. Roberts and Sarangi, 2003). Studies have often investigated the effects of ageing on communicative capability, and in particular those of degenerative conditions such as Alzheimer’s Disease (AD). Three features of the sociolinguistic approach will be discussed here: its focus, its methodology and the nature of social interaction.

Hamilton (1991, 1994a, 1994b, 1996) reported findings from a longitudinal case study of naturally occurring conversations between the investigator and a single patient with AD. From this she was not only able to describe the progressive breakdown in formal features of conversation, but also to provide a narrative account of the subjective experience of a progressive degeneration of intellectual and communicative functioning.

Similarly, Ramanathan (1995, 1997; Ramanathan-Abbott, 1993, 1994, 1995) reported longitudinal data from two subjects on the relationship between cognitive degeneration and the social context of interaction. The increasingly restricted talk of two patients with AD varied in the extent of its restriction depending on whether they were talking in their own homes or in an institutional day centre. De Bot and Makoni (2005) used Dynamic Systems Theory to carry out a meta-analysis of three studies which used both quantitative and qualitative methodologies to investigate the effect of ageing on language competence in three multilingual US populations. They again charted the effects of physical decline on language use in related cognitive areas, but found that it could be compensated by drawing on resources developed in earlier periods of formal education. In a significant, though rather different study, Roberts and Sarangi (1999) reported on the discursive constitution of bias in the oral examination for membership of the UK-based Royal College of General Practitioners (RCGP).

For these studies, communication is defined by the social context of the interaction:

...almost everything we say or do depends, to a large extent, on who or what we are interacting with, that social factors influence not only what we say, but the fluency and ease with which we say it as well (Ramanathan, 1997, p. ix).

Ramanathan's (1997) study demonstrates that the communicative challenges facing two particular AD patients are "...partially tied to audience turns and to the patient's social world" (116). In this respect, sociolinguistic approaches to medical discourse position themselves against more reductive psycholinguistic analyses of the communication of AD subjects through decontextualised assessments of discrete linguistic items.

Instead of viewing "incoherence" in AD speech strictly in cognitive terms, (i.e., due to some malfunction in the brain) this study has attempted to show that the patient's inability to talk extensively and meaningfully is partially tied to audience turns and to the patient's social world (Ramanathan, 1997, p. 116).

From a more social interactionist perspective, the repetitive sequences that characterise

Alzheimer's are construed "not as segments that contribute to meaninglessness in the patient's discourse, but as segments that capture, albeit in frozen ways, the teller's attempt at making sense of his or her life" (1997, p. 115).

In order to capture the subtleties of interaction in social contexts, sociolinguistic accounts employ eclectic methodologies drawn from ethnomethodology, grounded theory and symbolic interactionism (Hamilton, 1994a; 1999, pp. 11-12; Roberts & Sarangi, 1999). But it is the use of discourse analysis and conversational analysis which is relevant here. For example, Ramanathan evaluates (1997) wellformedness in narrative accounts and interaction with his first patient according to the extent to which the talk is 'continuous'; and by the extent to which the subject is actively engaged in the interaction, i.e. whether the patient is engaged in 'recall', 'reminding' or 'recognition' (1997, pp. 15-16).

However once again, wellformedness is subject, in the last instance, to social context:

... interactions vary across context and, that narrative wellformedness partially results from the way that each participant gauges the different social phenomena. Often communication breakdowns occur because of cue mis-gauging between speaker and hearer, which in turn leads to participants stepping into interactions ... at nonfacilitative moments. AD patients, like those of us who are normal, are sensitive to audience, setting, topic, time, and so forth (Ramanathan: 1997).

With a second patient, changes in the formal features of interaction are described through analysing 'bound segments' of talk, identified by adjacency pairs and repetition. Sarangi and Roberts (1999, p. 19-24, after Goffman) also advocate a consideration of 'backstage' rather than exclusively 'frontstage' talk in workplace communication.

Ramanathan used a life-history approach to elicit naturally occurring narrative accounts in order to maintain a symmetry of relationship between the researcher and the researched, (1997, p.7), going so far as to share his own life history with his subjects.

The maintenance of symmetry in the relationship between investigator and patient was also key to Hamilton's methodology (1991, 1994, 1994b, 1996): analysis was carried out not only of the patient's responses to the investigator's questions, but also of the questions which the patient herself asked; not only of the appropriacy of the responses given by the patient, but also of the appropriacy of the responses given by the investigator to the patient's questions. From this it appeared that changes in the interactions over time appeared to be attributable as much to a process of 'accommodation' (Hamilton, 1991) of the patient by the investigator, as to the declining interactional capabilities of the patient herself.

Sociocognitive approach

Both AD and epilepsy are chronic conditions which differently affect cognitive and communicative capabilities; and both sociolinguistic and (critical) sociocognitive approaches problematize the essentialist categorization of subjects according to psycholinguistic or clinical criteria. However, while a sociolinguistic approach is principally concerned with the ways in which the specific experiences of participants such as life histories are constituted within local contexts, a (critical) sociocognitive approach is concerned with the way in which generic types of knowledge are produced and transmitted within, often institutional, global contexts in order to constitute the medicalised subject.

Drawing on critical theory as well as psychological modeling of mental processes, a sociocognitive approach reinstates the role of mind and mental processing into discourse analysis in order to posit a theory of social cognition. Social cognition is understood as being:

...the system of mental structures and operations that are acquired, used or changed in social contexts by social actors and shared by the members of social groups, organizations and cultures (Van Dijk, 2003a, p.88).

There are three dimensions to a sociocognitive approach to discourse analysis: a description of text, a description of knowledge and a description of cognition (Van Dijk, 1980, 1995a, 1995b, 1997, 1999, 2000, 2001, 2002, 2003a, 2003b, 2004a, 2004b).

A description of text

Two superordinate categories are distinguished in a sociocognitive analysis of text (Van Dijk, 1980): *macrostructures*, which are global semantic units and *superstructures*, which are global structural units. Formally, macrostructures are realised intrinsic to the text by *macropropositions*, *introductions* and *conclusions* (Van Dijk 1980, p. 27). Semantic features of text and talk include topics or themes, the meaning of words, the conditions for implication and presupposition, as well as ‘local semantic moves’ (Van Dijk 1995a; 2001). Institutionally conventionalized superstructures are also realised in the three text types investigated in this paper, with which members of the speech community of medical professionals are required to engage in order to maintain their professional competencies.

A superstructure is the schematic form that organizes the global meaning of the text; ...[they] ... involve functional categories for the macro propositions of a text and rules for ordering and cognition... (Van Dijk, 1980, p. 109).

Functional categories of the superstructure establish formal relationships between propositions in a text (Van Dijk, 1980, p. 122). Specific properties which constitute the superstructure of written texts include propositional structures, syntactic structures and rhetorical figures; those of spontaneous talk include turn taking, intonation, repairs, pauses and hesitation (Van Dijk 2001, p. 106).

Knowledge

Within a sociocognitive framework, a typology of knowledge (Van Dijk, 2002, 2003a, 2003b; Calsamiglia & Van Dijk, 2004a) has been set out under five properties: social scope, ontology, reference, strength and kind (adapted from Van Dijk, 2002, p. 6).

- a) At a superordinate level, the *social scope* of knowledge is initially distinguished as to whether it is social or personal (Van Dijk 2002, p. 6). Social knowledge derives from experience shared by members of social groups which can lead to certain concepts being presupposed by participants, and being either elided or implied in discourse. By contrast, personal knowledge is usually kept private and is not discursively presupposed. However, personal knowledge is asserted when it is assumed to be relevant (Van Dijk, 2002, p. 6; 2003a, p. 91). Social knowledge can be further subdivided into *interpersonal*, *group* or '*common ground*' knowledge (Van Dijk, 2003a, 2003b; Calsamiglia & Van Dijk, 2004a). Interpersonal knowledge is 'local common ground knowledge' which is maintained amongst friends and family (Van Dijk, 2003a, p. 92) or, in the clinic, between the doctor and the patient. Interpersonal knowledge may therefore 'be presupposed in conversation, but not in public discourse' (Van Dijk 2002, p. 6). Group knowledge is knowledge that is shared by competent members of a group and 'provides the presuppositions for discourse among group members' (Van Dijk 2002, p. 6). Cultural knowledge or '*common ground*' knowledge is the basis for social representations shared by all members of a society or culture. This knowledge may include evaluative shared beliefs, or social opinions and attitudes (Van Dijk, 2003b, pp. 24-5). Common ground knowledge is presupposed in most forms of public discourse circulating in a particular society or culture (Van Dijk 2002, p. 2).

We suggest that a consideration of the ontology, reference level and strength in relation to knowledge constitutes a matrix of epistemological *orientation*.

- b) *Ontologically*, knowledge can be abstract or concrete depending on its relationship to its physical context. The relevance of concrete knowledge is restricted to a particular time and space, whereas the relevance of abstract knowledge is unrestricted.
- c) Knowledge can be general or specific in terms of its *reference*. This depends on the relationship between knowledge and the range of participants: the more general the knowledge, the more extensive the number of social groups in which it can be operationalised; the more specific the knowledge, the more restricted the number of groups in which it can operationalised. General knowledge therefore tends to be abstract, social knowledge; specific knowledge tends to be concrete, personal knowledge.
- d) The *strength* of knowledge for Van Dijk (2002, p. 6) relates to the distinction between knowledge and beliefs. However, since this property will be used here to describe specialised knowledge, this paper will consider the degree of certainty with which a particular aspect of knowledge, a theme or a topic, is asserted.

Although not consistently upheld (e.g. Van Dijk, 2003a, p. 90), this paper maintains a distinction between declarative and procedural knowledge.

- e) *Kind*. Declarative knowledge is classically described as ‘knowing that’, and procedural knowledge as ‘knowing how to’ (Ryle in Van Dijk, 2003a, p. 90). The distinction between declarative and procedural knowledge also follows on from its orientation, described above. Knowledge which is general, abstract and

decontextualised would appear to be coterminous with declarative knowledge; while knowledge which is specific, concrete and contextualised would appear to be coterminous with procedural knowledge.

Knowledge, context and cognition

Of the two superordinate epistemic categories above, social knowledge is stored in long term memory as a set of social representations; personal knowledge is stored in episodic memory as part of personal history (Van Dijk 2002, p. 6; 2003a, p. 93). Knowledge is therefore ‘a property of participants of communicative events’; it ‘...controls part of the properties of text and talk as part of the process of contextualisation’ (Van Dijk 2003a, p.93). In order to account for the variability in the relationship between the material conditions of context and discursive features, it is posited that ‘mental models’ (Johnson-Laird, 1983) act as an ‘interface’ between text and social situation; and between personal histories, attitudes and beliefs and social representations (Van Dijk, 2003a). Mental models which represent social knowledge have a generalized structure, such as those of scripts for events and actions (Schank & Abelson, 1977) and frames for people and objects (Minsky, 1975; Van Dijk, 2003a, p. 92); those which represent personal experiences have a schematic structure (Rumelhart, 1980; Van Dijk, 2003a, p. 92). Mental models fall into two types: event models and context models (Van Dijk 1995a; 1995b; 2003a). An event model is a representation of the events (or situations) which feature in text and talk; it is the way in which participants understand the relations between the ‘facts’ referred to in discourse. Event models therefore control the ‘semantic’ part of discourse. A context model is a representation of the properties of the communicative situation itself which, crucially, enable participants to decide on the relevance of information in particular instances of text and talk. Thus, context models

control ‘many of the properties of discourse production and understanding’, the ‘pragmatic’ part of discourse (Van Dijk 2001, pp. 109-112).

Text selection and analysis

Four samples of each text type - the medical research article, the medical textbook, and the medical interview - were selected for qualitative analysis, using the sociocognitive theoretical framework reviewed through section 2.2 above.

Four articles which report research (RAs) into childhood epilepsy were extracted from journals of different levels of specialisation. Two were from specialised journals, the *Journal of Neurology, Neurosurgery and Psychiatry (JNNP)* and the *Journal of Epilepsy (JE)*: Stroink, Arts, Geerts, Peters, & Van Donselaar (1998) assesses the accuracy of the diagnosis of a first unprovoked epileptic seizure in childhood; Lancman, Asconape, Brotherton, & Penry (1995) determines delays and errors in the diagnosis of one particular epileptic syndrome, juvenile myoclonic epilepsy (JME), in the UK. Two were from the non-specialised *British Medical Journal (BMJ)*: Kurtz, Tookey, & Ross (1998) estimated the incidence and prevalence of epilepsy during childhood and early adult life in the UK; Smith, Bartolo, Pickles, & Tedman (2001) determined the number of inappropriate requests for electroencephalography (EEG) in the diagnosis of epilepsy in the UK. Also of note were two other RAs which proposed a seminal classificatory schema for epilepsy widely cited by the textbooks described below. These papers were first published in *Epilepsia* (1981; 1985) by the Commission on Classification and Terminology formed by the International League Against Epilepsy (ILAE), and then reprinted in Hopkins et al. (1995).

Four textbook samples were selected which were indicative of a potential range of ‘sub-genres’ (Swales, 1990) featuring epilepsy: one monograph on childhood epilepsy (Appleton & Gibbs, 1998); one chapter from an edited collection on childhood epilepsy (Brett, 1995); and two chapters from neurology primers (Donaghy, 2005, pp. 127-133; Drury & Gelb, 2000). These four texts exhibited considerable generic variation. This emerged from two aspects of their epistemological focus: first, whether they were *specialised* texts whose principal purpose was to transmit medical knowledge between professional groups and group fractions (Appleton and Gibbs, 1998; Brett, 1995); or whether they were *didactic* texts whose principal purpose was to transmit medical knowledge to novitiates (Donaghy, 2005, pp. 127-133; Drury and Gelb, 2005); and second, the extent to which the texts related medical knowledge to a clinical context, i.e. whether they were principally *theoretical* texts (Brett, 1995; Drury and Gelb, 2005) or *applied* texts (Appleton and Gibbs, 1998; Donaghy, 2005, pp. 127-133).

Four interviews were selected for qualitative analysis from a larger corpus of 64 transcripts (Qualitative Data Service, n.d.). These took place in the outpatients’ department of an urban UK teaching hospital between a paediatric consultant, a carer and a child with suspected epilepsy. Two of the interviews were initial consultations (ICs) and two of the interviews were follow-up consultations (FCs). Different participants were involved in each interview.

Event model: the principle of classification

Since premodern times, medical knowledge has been underwritten by the principle of classification (Foucault, 1973, p. 59). The ILAE defines the concept of epileptic

syndrome as “...an epileptic disorder characterised by a cluster of signs and symptoms customarily occurring together...”. Here, an otherwise heterogenous set of signs and symptoms are constituted discursively as one entity, or *macro-phenomenon*. This macro-phenomenon is identified through an assemblage of properties conceived of as “type of seizure, aetiology, anatomy, precipitating factors, age of onset, severity, chronicity, diurnal and circadian cycling, and sometimes prognosis”. A classificatory schema is then set out for different types of epilepsy, which separates “...epilepsies of known aetiology (symptomatic or ‘secondary’ epilepsies) from those that are idiopathic (primary) and those that are cryptogenic” (ILAE, in Hopkins et al. 1995, pp. 637-638).

The two RAs published in specialised journals deploy the ILAE framework in their typologies of epileptic seizures. In Stroink et al. (1998) a regulatory protocol is set up unproblematically in keeping with the ILAE framework:

The committee classified seizures according to the revised classification of the International League Against Epilepsy ...According to the recent guidelines on epidemiological research of the ILAE, patients with a genetically determined type of epilepsy manifesting through a single seizure were called idiopathic. All other children were considered cryptogenic (Stroink et al., 1998, p. 596).

In Lancman et al. (1995), both the syndromic conceptualisation and schematic classification of JME also accord with the ILAE:

JME is an idiopathic generalised epilepsy (IGE) that typically has its onset in adolescence between the ages of 12 and 18 years... JME is characterised by myoclonic seizures (MS), predominantly involving the arms. Generalised tonic clonic seizures (GTCS) are found in ~90% of the cases and absence seizures (AS) in ~30% (p. 215).

By contrast, the very term ‘epilepsy’ itself is problematised in the single paper from the non-specialised *BMJ* which addresses the issue of seizure type (Kurtz et al., 1998):

...the term “epilepsy” is beginning to be replaced by increasingly well defined epileptic syndromes (p. 339).

This study views ‘seizure disorders’ as having a ‘heterogeneous nature’ which ‘causes ...complications’. It goes on to use a different schematic framework to that of the ILAE

to distinguish cohort sub-groups under ‘localisation related epilepsy’ and ‘generalised epilepsy’; moreover, for 19% of this cohort ‘the type of epilepsy was unclassifiable’ (p. 342). The paper is also guarded about the prognosis for epileptic children:

Despite a large amount of published literature from many countries on the incidence of epilepsy in childhood, comparatively little is known about the long term prospects for those who have epilepsy in childhood (p. 339).

Thus we can see that in the RAs there is variability in the level of consensus with the ILAE framework. While assent is discursively presupposed and therefore remains implicit in the two more specialised papers, dissent is asserted and therefore stated explicitly in one non-specialised paper. This is because the specialised journals appear to presuppose a level of epistemic specialisation shared by their particular professional group fraction. It is suggested that the presupposed specialised knowledge of concepts relating to epilepsy, along with the complex schematic framework posited by the ILAE, constitute the *event model* for epilepsy held by specialist clinicians working in this area.

This event model also appears to control the conceptualisation of epilepsy within our textbook samples. Initially, the conventional taxonomic framework is explicitly transmitted by both theoretical and applied textbooks, e.g.:

Seizures are classified into either generalised or partial seizures... Partial seizures are further classified as ‘simple’, in which consciousness is retained, or ‘complex’, in which consciousness is impaired or lost... Partial seizures may become secondarily generalised, resulting in a tonic-clonic convulsion. (Appleton and Gibbs, 1998, p. 10).

The classificatory framework is first realised here by a macroproposition in the form of *x has subunits y*. It is then followed by a series of more specific descriptions of lower order phenomena in the taxonomy: *x is y* (c.f. Van Dijk, 2003b). There also appears to be a consensus about which type of seizure a child is likely to present with, e.g.:

Generalised tonic-clonic seizures (grand mal seizures) are the commonest epileptic manifestation of childhood (Brett, 1995, p. 444).

However, the degree of certainty attributed to the ILAE framework decreases as it is

mapped onto specific contexts. Here an increasing amount of evaluative lexis emerges within the medical textbooks (see emphases below). In their contextualised, problem-solving approach, Drury and Gelb (2005) concedes:

Tonic-clonic seizures. This is probably the category about which there is the least consensus...(p. 143).

Appleton and Gibbs (1998) goes on to explicitly challenge the hegemony of the ILAE, the empirical basis of its taxonomic framework and the extent of its prognostic value:

International classifications of epilepsy are unlikely to ever be entirely satisfactory... (p. 11);

Thus, similar to the RAs, the four textbook extracts incorporate the ILAE framework to varying degrees. However in contrast, specialised knowledge is realised with a high degree of explicitness since readers are not yet familiar with even basic concepts relating to neurology and epilepsy. Variation also arises in relation to the degree of contextualisation of medical knowledge, i.e. the extent to which the purpose of the textbook is didactic or clinical. Knowledge asserted by the ILAE (Hopkins et al., 1995) is abstract with little or no reference to specific location and is realised discursively as a universalisable set of general principles; it appears to be declarative knowledge. As knowledge is relayed through texts with increasing didactic and clinical purposes, it becomes increasingly concrete, specific, and hence procedural; correspondingly, there is an increased critical evaluation of the ILAE framework.

Thus far, the ordering of the classificatory schema for epilepsy has been realised implicitly in the RAs article but explicitly in the medical textbook. Similar to the RAs, the ILAE framework for epilepsy is realised implicitly in the sample of medical interviews. This is particularly evidenced in the second initial consultation of our sample (IC#2). In the opening stage of the interview, the consultant asks the carer:

Was she twitching at all...

This question appears to reflect the distinction between tonic or clonic convulsions set out in the medical textbook above (Donaghy, 2005, p. 127), which we would argue is part of the event model of the medical professional. The consultant is attempting to identify the specific type of seizure experienced by the child. At the end of the second elicitation cycle, the consultant asks:

Were they regular movements...
And how long did they last...

Here the consultant is endeavouring to work out whether the child has experienced a 'clonic' convulsion. Finally, the carer replies:

...she just stared and then she started - kicking her legs...

The consultant picks up:

How - together or alternately...

At this point the consultant appears to be assessing whether the seizure is focal or generalised (see Donaghy, 2005, p. 127, above). In this context, there is also here an elision of specialised lexis. For example colloquial terms such as 'twitching;' and 'regular movements' were used in IC#2 rather than technical terminology such as 'convulsions' and 'repetitive shakings' (Donaghy, 2005, p. 127).

Context model: the order of the clinic

Having examined the ways in which an *event model* of epilepsy is created, transmitted and maintained across three different types of medical text, this section will consider how the clinical encounter itself is discursively constituted within three different text types. In particular, this section examines how a *context model* for the examination and 'diagnosis' of childhood epilepsy is discursively reproduced by the medical professional in the clinical interview.

The discursive procedures to be deployed in the clinic are described in only one of the four RAs sampled. Although this was a specialised paper (Stroink et al., 1998), it may be that this particular professional group fraction of readers needs to apply its specialist knowledge in their clinical practice. At the beginning of the Discussion section of this paper, the issue of clinical diagnosis is explicitly addressed.

When the clinician is confronted with the problem of a child who has experienced a single episode that seems to be of epileptic origin, some questions have to be considered. Was the event really epileptic? If so, what is the risk of more seizures occurring? Should anticonvulsant treatment be offered and with what goal? What is the long term outcome with or without treatment? As the diagnosis of a first epileptic seizure may have a great impact on the child and its parents, a correct diagnosis is of the utmost importance (p. 598).

The opening clause concretises the more abstract, declarative knowledge of the Methods and Results sections through its imaginary contextualisation within clinical procedure.

By contrast with the high level of presupposition and implication found within the RA, the discursive procedures to be deployed in the clinic are asserted repeatedly in the medical textbook. All four textbook extracts explicitly describe the discursive process of managing the clinical encounter, as well as the logical processes entailed in interpreting what the carer says. Two texts emphasise the importance of the ‘witness statement’. Since lack of recall is itself diagnostic of a seizure, a description is required from someone other than the patient:

Patients often have little or no recollection of the spell, so witnesses’ accounts are especially important. (Drury and Gelb, 2005, p. 137).

The accurate account of any eyewitness is essential ... (Appleton and Gibbs, 1998, p. 8).

This process is again presented in the medical textbook at a high level of explicitness, using evaluative lexis (see emphases below). The more applied, didactic text (Donaghy, 2005) sets out the deductive process to be pursued if no-one has observed a seizure.

If a blackout has not been witnessed, one or more of the following features point *strongly* to a diagnosis of epilepsy (Table 21.1) (p. 127).

Here, the opening negative conditional clause of the proposition underwrites the importance of third party observation. The main clause performs three semantic functions. First, the entire clause functions as a macroproposition which governs the signs of epilepsy listed in the table immediately following it (Donaghy, 2005, p. 127). Second, the phrasal verb 'point...to...' explicitly states the deductive process entailed in the diagnostic process. Third, the postmodifier 'strongly' in the verb phrase expresses an evaluation of the importance of the phenomena which follow. Governed by the opening macroproposition, the text goes on to list the signs whereby the clinician can categorise a (non-specific) 'blackout', or 'convulsion' as being (specifically) epileptic: 'witnessed convulsion', 'postictal confusion', 'incontinence', 'tongue biting', 'inability to remember onset', 'absence attacks', and 'stereotypical aura'.

Evaluative statements about the need for the clinician to take a detailed history also occur within the four textbook extracts, using strikingly similar lexis.

The recognition and diagnosis of epileptic seizures is almost entirely dependent on the history...the results of any investigations can only be interpreted with reference to the history (Appleton and Gibbs, 1998, p. 8).

...accurate diagnosis depends on obtaining as detailed a history as possible (Drury & Gelb, 2005, p. 137).

Further evaluative propositions follow (see our emphases below): three sets of discursive strategies are recommended which should be deployed in the framing of this history: historic features, chronological periodicity and elicitation strategies:

...it is helpful to know the exact sequence of events and how long each stage lasted.. It *is best* to have patients and witnesses describe in an open-ended fashion everything they observed before, during, and after the spell in question (as well as any other episodes of unusual behavior they may have witnessed)...if adequate detail cannot be obtained by asking several open-ended questions... directed questions *may be* necessary...all patients with seizures *should* be asked if there was anything unusual about their mother's pregnancy or method of delivery and if they required prolonged neonatal hospitalization. Patients' developmental milestones *should* be reviewed... (Drury & Gelb, 2005, pp. 137-138).

Different types of knowledge therefore appear to be realised in different types of medical text. The procedures for taking a medical history and detailing signs and symptoms constitute procedural knowledge which is realised only in one RA, but in each of the textbook extracts. It is also suggested that the grounds for the evaluative propositions analysed above are derived implicitly from the empirical basis of epileptology constituted in the RA genre.

From the start of the paediatric ICs, the consultant tries to discover the signs of the suspected condition and the medical history of the patient. In the majority of these transactions, the consultant elicits details of episodes which the carer has witnessed. This accords with the importance ascribed to the witness statement in the medical textbook (Donaghy, 2005, p. 127). Both ICs begin by adopting a strategy of open-ended questioning (Drury and Gelb, 2005, p. 137). IC#1 starts with the consultant deploying the colloquial term 'fits':

Now, X has had some fits has he – tell me about them...

IC#2 opens with the more technical term 'convulsions', even though no apparent context has been supplied from any preceding interaction:

Now, when did she have problems with convulsions...

In IC#1, the consultant goes on to ask a series of questions to elicit details of suspected epileptic episodes. This sequence of 'eliciting moves' (Coulthard and Ashby, 1976) displays a certain coherence. It starts by deploying a second open-ended question to get a general impression of the seizures:

What do you notice...

It then moves to one specific incident in which the consultant switches to a series of direct questions. These systematically, but implicitly, explore the chronology of events in relation to their time of occurrence, duration and frequency.

... And this was 2 months ago was it...
What was the interval between them...
And he was actually asleep...
And how long did it actually last...
And afterwards, how was he...
Did he wet the bed...
And how many times has it happened since...
And all occurred at the same time did they...

In the history taking stage of this medical interview, the consultant attempts to elicit details of a single epileptic episode. It appears to consist of one thematically and formally coherent sequence of four to five 2-move exchanges (Coulthard and Ashby, 1976). This constitutes the *superstructure* of the text, and will subsequently be referred to as an *elicitation cycle*. In IC#2, the child is suspected of having had three seizures. The consultant deploys three elicitation cycles in order to ascertain the circumstances of each seizure. Having initially enquired when the child had had problems with convulsions (above), the consultant focuses on the chronological sequencing of events at the beginning of the two subsequent elicitation cycles:

...and when was the one after that... (elicitation cycle # 2)
...and tell me about the last time... (elicitation cycle # 3)

From the start of both these interviews, and throughout, the consultant appears to be implicitly drawing on a conventional schematic framework of how to navigate the clinical encounter. This operationalises the *context model* which controls the pragmatic part of the discourse, especially the importance of noting the witness statement and the realisation of the elicitation strategies set out above in the medical textbook samples.

Specialised knowledge and the common ground

At the disposal stage of an IC, the consultant conventionally lays claim to a discursive space in which it is expected that s/he will 'diagnose' the condition; at the disposal stage of an FC, the consultant often checks whether the patient is complying with the prescribed treatment.

The issue of diagnosis in the initial consultation (IC)

The RAs sampled assert that the signs and symptoms of epilepsy are not entirely transparent to the ‘clinical gaze’ (Foucault, 1973), e.g.:

The combination of equivocal symptoms and non-specific abnormalities carries a risk of misdiagnosis of epilepsy (Smith et al., 2001, p. 956).

For Stroink et al. (1998), there is insufficient reflexivity within medical research regarding the uncertainty of a correct diagnosis:

A surprising factor is the absence of discussion about diagnostic uncertainty. In none of the studies mentioned above have diagnostic criteria been used to differentiate between epileptic and non-epileptic first fits. In particular in young children and infants the differential diagnosis of a seizure is extensive, and confirming or refuting the epileptic origin of such an event may be quite difficult (Stroink et al., 1998, p. 595).

Medical textbooks sampled appear to evaluate clinical procedures in the light of these aporias asserted in the RAs. There is consensus in both specialised textbooks that epilepsy should not be diagnosed after just one seizure:

The diagnosis of epilepsy is so important that it is better to err on the side of under diagnosis rather than over diagnosis. If, after a detailed history, there is still uncertainty, it is better to keep an open mind and review the situation (Brett, 1995, p. 437);

As well as non-specialised textbooks:

A more difficult question arises when a patient has had a single seizure for which no underlying cause can be found ... (Drury & Gelb, 2005, p. 140).

If the diagnosis is uncertain from the history then it is appropriate to await further episodes, since a delay in making a diagnosis of epilepsy is unlikely to be harmful (Appleton and Gibbs, 1998, p. 8).

The uncertainty asserted regarding diagnosis in the RA and textbook is possibly reflected by a clinical silence on the part of the medical professional. Explicit diagnosis of epilepsy occurs in only one interview and this is in an utterance by a carer:

Well on Monday she had none, a clear day, on Sunday she had one, and as I said, a proper epileptic fit today (FC#2)

There is only one utterance in the four interviews where the consultant even implies

what is specifically wrong with the child:

Well it certainly sounds as if she's had some convulsions (IC#2)

This is an *opinion statement* (Van Dijk, 1995a) which consists of two clauses, both of which are highly implicit. It is suggested that each clause draws simultaneously on both local and global epistemological and discursive contexts. The rhetorical figure in the first clause, *well it certainly sounds*, refers at a local level to the preceding transactions and also to the global contextualisation of this statement within medical knowledge created and transmitted, for instance, in the RA and textbook. In the second clause, the reference to *convulsions* appears paradoxical. Conventionally, one might expect that new information will be disclosed at this stage, but in fact the consultant has already used the term three times to open up different lines of enquiry in the interview:

Any illnesses before these convulsions... (elicitation cycle #1)

Now when did she have problems with convulsions... (elicitation cycle #2)

Has anyone in the family had convulsions or fits... (elicitation cycle #3)

We suggest that the consultant has presupposed from the start of the interview that these unclassified *fits* are indeed classified epileptic *convulsions*. This opinion statement is not so much an epiphany as the implicit confirmation of a belief which has been co-constructed by both sets of participants throughout the clinical encounter.

The issue of compliance in the follow-up interview (FC)

In the more applied textbook samples, failure to comply with the drug regimen is frequently asserted is the main cause of recalcitrance in younger epileptic patients:

Non-compliance with anti-epileptic medication is the most common cause of loss of, or poor, seizure-control...in the teenager with epilepsy (Apleton and Gibbs, 1998, p. 80).

Interestingly, the authors go on to base their truth claims explicitly upon their personal clinical experience rather than upon the RA evidence base:

In the authors' experience most children (and their parents) and teenagers do decide to try and discontinue medication at least once; not infrequently

this is undertaken without their parent's (or the doctor's) knowledge! (Appleton and Gibbs, 1998, p. 96).

Again, the topic of drug compliance receives no mention in the RAs, reflecting the fact that consideration of compliance is procedural rather than declarative knowledge.

However in both FCs, compliance does emerge as a particular issue. Here, both sets of interlocutors presuppose that the child is indeed displaying signs of epilepsy. In an FC, the clinician is expected to know what drug the patient has been taking through knowledge conveyed by the patient's case notes. After an exchange of greetings, both consultants open with a retrospective check on the drug regimen. This check is a primary purpose of the follow up consultation:

Consultant: Now, you're on epilim...
Child: Yes, they put me on it when I was in hospital (FC#1)

Consultant: Do you need any tablets or medication...
Carer: No, we've got enough until Monday
Consultant: Which drug – sorry
Carer: Epilim... (FC#2)

While FC#1 develops in a fairly routine fashion compared with the others in the larger corpus, FC#2 appeared to be dysfunctional for both parties. Here all three participants appear to be confused about the drug regimen.

Consultant: Now the phenytoin, the other one, is it one times a day or two...
Carer: Two. One in the morning and one at tea time.
Consultant: Three times a day
Child: No
Carer: That's right, one sugary tablet three times a day.
Consultant: Now the sugary tablet is one item a day or three times a day
Carer: One only one
Consultant: Ah that's right
Child: Oh yea, that's right, one tablet (FC#2)

In FC#2 the consultant goes on to imply that the drug regimen is not being adhered to:

Consultant: When X came in in February she'd had an overdose of phenytoin hadn't she...
Carer: March she came in...
Consultant: In the past she'd had phenobarbitone as well
Carer: I think so...

He then recycles the topic and explicitly checks compliance:

Consultant: And she's taking all her tablets regularly...

Despite the consultant setting up a conventional line of questioning, FC#2 terminates with the carer explicitly challenging the consultant:

Carer: Will they ever go...

The consultant attempts to reassert his authority:

Consultant: Yes they will. We'll get them under control. There are so many different types and drugs and it's a matter of finding the right one. We'll find the right one, don't worry.

Carer: The one she had this morning was, well, terrible, frightening really. She was out and thrashing about. She didn't know what was happening.

Consultant: OK. X, we will get them under control. We will – what is so important is to have confidence in us and yourself, O.K.

Initially the consultant appeals to the technical rationality of pharmacological diversity. However, closure is only brought about by the consultant asserting an appeal to the power of the therapeutic relationship (Foucault, 1973). This is conventionally left implicit in the medical interview and presupposed as part of the common ground knowledge shared by patients and the doctor in all part of the public sphere.

Discussion

This study has deployed a theoretical framework derived from a sociocognitive approach to discourse analysis in order to investigate three aspects of medical discourse relating to childhood epilepsy: the cognitive processes that are entailed in relating different types of medical knowledge to their communicative context; the types of medical knowledge that are constituted in the three different text types analysed; and the relationship between these different types of medical knowledge and the discursive features of each text type. This section will discuss and synthesise our findings in relation to these issues.

Within both the RAs and the textbook extracts examined, epilepsy was constituted discursively as an 'object of study' in terms of its categories and sub-categories. The

concepts of epileptic syndrome and seizure type were arranged as a taxonomic system, and then analyzed in terms of units and the relationship between them. These organising discursive features have been found in other areas of the biomedical sciences such as the human genome project (Van Dijk, 2003b; Calsamiglia & Van Dijk, 2004a). We suggest that these semantic structures of specialised discourse relate to the cognitive structures of specialised knowledge itself and organize an *event model* of the phenomena that constitute the classifiable syndrome of epilepsy (Van Dijk, 1995a; 1995b; 2003b).

The four RAs analyzed presupposed social group knowledge shared by members of professional group fractions engaged in epilepsy research. The knowledge which was produced was decontextualised, abstract and general; it was declarative knowledge. All four texts therefore exhibited high levels of implication. Relative to the RAs, the knowledge transmitted in the medical textbooks was contextualised, concrete and specific; it was procedural knowledge. Furthermore, little shared knowledge could be presupposed between the expert writers and novice readers of the textbook extracts. Here, medical knowledge was transmitted at a high level of explicitness. However, the textbook writers positioned this knowledge within an imagined clinical context in order to evaluate it in the light of their clinical experience; and an evaluative dimension emerged from the writers' articulation of beliefs and opinions about the importance and validity of different aspects of this knowledge, and how it should be deployed. Thus, the strength with which knowledge about epilepsy was held within the textbook extracts appears to be surprisingly weak.

The medical interview is the communicative context where two types of knowledge meet (after Van Dijk, 2003b): the shared group knowledge of a professional group

fraction and the common ground knowledge of the carer and the child/patient. It has been shown that one way in which this took place was through the mapping of a conventionalised epistemic framework for epilepsy onto the phenomenological experience of the child/patient, which would be understood otherwise in terms of a less well defined common ground knowledge. Despite this, the discursive process was negotiated at a highly implicit level. In the case of childhood epilepsy, this could be attributed to the levels of uncertainty expressed with regard to diagnosis in other text types. In the interviews analyzed, specific elicitation strategies were deployed by the consultant to transform the private, personal knowledge of the patient into interpersonal knowledge shared with the medical professional. In these texts, the patient/carer was encouraged to assert details of their personal experience, which would otherwise have been kept private.

These epistemic factors contributed towards the asymmetric relationship between the medical professional and the carer/patient. This arose from the consultant implicitly deploying a *context model* (Van Dijk 1995a; 1995b) of the clinical encounter acquired, at least in part, from medical textbooks and RAs. However, in one interview, systemic inefficiencies led to a breakdown in the mobilisation of this specialised procedural knowledge. Here a discursive ‘gap’ opened up leading to resistance on the part of the carer. Thus, in one interview the differentiation between specialised and common ground knowledge provided scope for individual agency on the part of both the medical professional as well as the lay participant in the clinical encounter.

7.1 Implications and recommendations

This study has deployed a theoretical framework derived from a sociocognitive approach

to discourse analysis. Tensions can emerge with regard to the ontological, epistemological and ethical aspects of sociolinguistic and sociocognitive approaches. Unfortunately, these approaches can be regarded as being incommensurable, and even antagonistic. In particular, sociolinguistic approaches can maintain that it is possible to understand human communication exclusively through considering the relationship between features of interaction and their local physical environment. This paper has argued that there is nevertheless a cognitive dimension to communication about specialised medical knowledge. We would argue that it is possible for both approaches to discourse analysis to co-exist within a unitary form of rationality: a sociolinguistic approach focusing upon the phenomenology of communication constituted by the social context of human experience; a sociocognitive approach extrapolating the mental processes which are part of the communicative context. What is required is a 'multidisciplinary approach' to discourse analysis (Van Dijk, 2001).

Given the pedagogical situation which gave rise to this study, we would recommend that in medical communication courses at every level, specialist texts are studied not just in terms of their formal features, but also in terms of the knowledge which they produce, transmit and reproduce. In the increasing number of pedagogical contexts where the participants' first language is not English, this might involve team teaching between language instructors and members of the medical faculty. Whether training is taking place in clinical communication, basic medical concepts or medical research writing, it is important for participants not just to consider medical communication as a skill realised in discrete modalities of discourse operating in separate communicative contexts, but also to consider critically the impact that one mode of communication has upon another and the interface that takes place between different types of medical knowledge. The

implications of our analysis, we suggest, would lead to nothing less than a 'critical pedagogy' (Freire, 1972; Giroux, 1983; Ramathan, 2002) of medical communication.

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