Practitioner Review: The assessment of language pragmatics

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Background: The assessment of pragmatics expressed in spoken language is a central issue in the evaluation of children with communication impairments and related disorders. A developmental approach to assessment has remained problematic due to the complex interaction of social, linguistic, cognitive and cultural influences on pragmatics. **Method:** A selective review and critique of current formal and informal testing methods and pragmatic analytic procedures. **Results:** Formal testing of pragmatics has limited potential to reveal the typical pragmatic abnormalities in interaction but has a significant role to play in the assessment of comprehension of pragmatic intent. Clinical assessment of pragmatics with the pre-school child should focus on elicitation of communicative intent via naturalistic methods as part of an overall assessment of social communication skills. Assessments for older children should include a comprehensive investigation of speech acts, conversational and narrative abilities, the understanding of implicature and intent as well as the child's ability to employ contextual cues to understanding. Practical recommendations are made regarding the choice of a core set of pragmatic assessments and elicitation techniques. The practitioner's attention is drawn to the lack of the usual safeguards of reliability and validity that have persisted in some language pragmatics assessments. **Conclusions:** A core set of pragmatic assessment tools can be identified from the proliferation of instruments in current use. Further research is required to establish clearer norms and ranges in the development of pragmatic ability, particularly with respect to the understanding of inference, topic management and coherence. **Keywords:** Pragmatics, assessment, communication disorder, conversation, narrative.

Consider this sample of conversation between a speech/language practitioner (PR) and an 8-year-old child (CH). They are looking at a picture of a sick boy being examined in bed by his doctor and a picture of a car broken down at the side of the road (context and data from Bishop and Adams, 1989):

1 PR: How does that boy feel?
2 CH: I think he's – he doesn't feel alright, not at all
3 PR: Why not?
4 CH: um because he looks rather sick
5 PR: uhuh
6 CH: and I think he might have fallen in the water!
7 PR: might fall in the water?
8 CH: he FALLEN (loud voice) in the water on January sixth, winter!
9 PR: yes I see
10 CH: 19 – 1952 it were!
11 CH: what about England?
12 PR: well we're not talking about that just now are we?
13 PR: let's have a look at this picture. Tell me what's happening
14 CH: the man is fixing his car because the engine isn't working
15 PR: oh I see, right, so would you say it was a good place to break down?
16 CH: no
17 PR: *why not?

18 CH: *certainly not, because it has bends!
19 PR: and why would that be a bad thing?
20 CH: because its – when you drive round the Snake Pass 80 miles an hour you you the police will take your licence off you
21 PR: oh
22 CH: the slowest speed on a motorway is 30 miles
23 CH: 30 miles on a motorway
24 CH: yes in Australia
25 PR: in Australia?
26 CH: (no response)
27 PR: what will these people have to do? (points to picture)
28 CH: I know! Get a breakdown truck!
29 PR: uhuh and how will they get that?
30 CH: they'll get it to a scrapyard
(* = overlapping turns)

This is a fairly typical exchange involving a child with a communication disorder principally in the domain of language pragmatics. The term 'language pragmatics' refers to a group of behaviours that are concerned with how language is used to convey meanings. A comprehensive assessment of language pragmatics should be able to identify the strengths and weaknesses of this child's pragmatic abilities. It might also be required to pinpoint the interlocutor behaviours that facilitate communication and should provide information about comprehension of pragmatic information.

The assessment procedure should be able to establish that CH is able to respond to questions (4, 14, 16, 28), but does not always acknowledge requests for clarification (7/8, 25/26). He is able to initiate interaction (6, 22) and to wait his turn to speak, although there are some clashes of turns with the other speaker (17/18). He is able to use cohesive devices such as pronouns effectively (4, 8, 30) but occasionally the exact referent of his talk is unclear (8, 20). Although he can attend to the conversation, he is prone to switching topics to one of his choosing (11) or taking the topic off at a tangent (20, 22, 24). Some of his responses contain information that one could consider to be over-specific in the context they occur (8, 10, 20, 22). In addition, he has (despite his relative expressive fluency) problems with verbal comprehension that lead to odd quality of response (30). He is able to apply world knowledge to the conversation (28) and to make inferences about causality (4), but also to propose unlikely inferences (8).

Consideration will be given in this paper to the way in which the aspects of language pragmatics exemplified above have been assessed. An evaluation of published tests, profiles and checklists will be provided and issues of reliability, validity and sampling methodologies will be discussed. The scope of this paper will not include paralinguistic or non-linguistic pragmatic behaviours. (See Argyle's seminal work on non-verbal communication for more on this topic (Argyle, 1990).) Sampling methodologies will be reviewed and practical suggestions for eliciting pragmatic samples outlined.

Disorders of pragmatic development

Pragmatic disorder is a descriptive term that refers to difficulty with using language to convey and understanding intended meanings: 'a mismatch between language and context' (Volden & Lord, 1991). Thus, developmental pragmatic disorder is not mutually exclusive with specific diagnoses such as high-level autism, Asperger syndrome or attention deficit hyperactivity disorder. There is, however, some evidence that pragmatic disorder impairment may exist without an additional social impairment or learning disability. Bishop (2000) terms this Pragmatic Language Impairment. Moreover, pragmatic difficulties can arise as a secondary feature of any developmental language impairment due to limited communication ability (Prutting & Kirchner, 1987).

Assessment of language pragmatics is therefore likely to be of use with a variety of developmental disorders for two principal reasons. Firstly, it can provide a complementary window into aspects of social and cognitive functioning (e.g., Adams, Green, Cox, & Gilchrist, 2002) which observation of non-verbal behaviours alone cannot. Secondly, it can make a sound contribution to communication and

social intervention strategies for a range of conditions such as: high functioning autism (Ramberg, Ehlers, Nyden, Johanssen, & Gillberg, 1996); children with specific speech and language disorders (Prutting & Kirchner, 1987; Rollins, Conti-Ramsden & Snow, 1994); children with semantic-pragmatic language disorders (later Pragmatic Language Impairment or PLI) (Bishop & Adams, 1989; Bishop, Chan, Adams, Hartley, & Weir, 2000; Leinonen & Letts, 1997; Willcox & Mogford-Bevan, 1995); children with attention deficit hyperactivity disorder (Camarata & Gibson, 1999; Westby & Cutler, 1984); children with Asperger syndrome (Adams et al., 2002).

Theoretical bases of language pragmatics assessments

If assessing pragmatics is simply motivated by description of features present it would indeed be a trivial pursuit. The motivation should be the exploration of the underlying reasons for communication failure in children's interactions. It is therefore necessary that assessments are based on strong theoretical positions that allow the assessor to relate communication failures to underlying factors such as cognitive deficits or an inability to employ world knowledge to the act of communication.

In this respect, two major influences on pragmatics assessment have emerged in the last two decades: the linguistic and the social/cognitive. Early theoretical accounts of pragmatics concentrated on the formal linguistic aspects of pragmatics. Seminal works on speech act theory (Coulthard, 1985) and conversation analysis (Sacks, Schleghoff, & Jefferson, 1974) were influential in prompting analysis of how speakers convey intended meanings (illocutionary force) by marrying sentences and contexts carefully. In addition to the analysis of spoken output, Grice (1975) proposed that all interlocutors are bound by a set of cooperative principles (maxims) that oblige one to be truthful, accurate, relevant and perspicuous in providing information through the act of verbal communication. Grice's work opened the way to a consideration of language pragmatics as an interface between cognitive, social and linguistic development (Levinson, 1983; Perkins, 1997).

Developmental factors in assessment

Language assessment is based on a detailed description of the child's communication skills using appropriate formal instruments and informal checklists or observations – the 'developmental–descriptive model' (Paul, 1995). This description is then compared to the sequence and profile of development of the typical child. However, assessment of language pragmatics is currently restrained by limitations in normative research methodologies.

Knowledge of developmental 'norms' is limited so that only very approximate age of emergence can be provided (see Table 1). More subtly, pragmatic performance is affected by the individual styles of communication which emerge in early childhood (Lieven, Pine, & Barnes, 1992; Hewitt, 2000) and there is no consensus on how to deal with this in assessment. Furthermore, it is well known that pragmatic functions vary according to context and audience (Perkins, Crisp, & Walshaw, 1999). The assessment of pragmatics is therefore quite distinct from typical language assessment methods, in which norms can be derived from standardised tests given on one occasion.

Studies of pragmatic development have centred on emergence of early communicative intents or primitive speech acts as easily identifiable communicative behaviours (Dore, 1979; Halliday, 1975). Early social exchanges revolve around objects which are the focus of joint attention followed by rapid development of communicative acts between 14 and 32 months (Snow, Pan, Imbens-Bailey, & Herman, 1996; Wetherby, Cain, Yonclas, & Walker, 1988). By the age of 3 to 4 years the range of speech acts is nearly complete, but more advanced speech acts such as promising, persuading and polite forms may not be mastered completely until nine years or later (McTear & Conti-Ramsden, 1992). Assessment needs to take into account that the order of acquisition of communicative intent in children with autism may differ from the 'typical' sequence because of the social and cognition underpinning of the communication (Wetherby & Prizant, 1992).

Recognition and employment of the rules of taking turns in a conversation are established by around three years of age and appear to emerge from early reciprocal communicative exchanges practised in the first year of life. Metapragmatic skills, that is, the ability to reflect on one's own communicativeness, seem to emerge in the seventh year of life (Andersen-Wood & Smith, 1997). Comprehension of inference and stories and the ability to generate narrative begin in the pre-school years. There is evidence for developmental trends in inferencing ability (Hudson & Slackman, 1990; Letts & Leinonen, 2001; Oakhill, 1984; Paris & Upton, 1976; Vieiro & Garcia-Madruga, 1997). Between four and six years of age there is a transition from literal to non-literal interpretations of speech (Eson & Shapiro, 1982). In the early school years children rapidly acquire knowledge of idiomatic language (Spector, 1996), with the ability to explain idioms still developing up to the age of seventeen years (Nippold & Rudzinski, 1993).

Children between four and seven years of age can vary their use of discourse markers according to the context (Kyratzis & Ervin-Tripp, 1999), demonstrating increasing control over the pragmatic dimensions of narrative. At the same time sequential ability and sentence connectivity in narrative (see Coherence below) also improve (Peterson & McCabe 1983). Ripich and Griffin (1988) found that use of cohesive devices increases and the number of reference errors decreases between the ages of nine and twelve.

Less is known about the development of informativeness. Bishop and Adams (1989) found that four-year-old typically developing children frequently offer more information or less information than is necessary compared to older children with language impairments. Lloyd, Camaioni, and Ercolani (1995) state that the capacity to be informative (as

Table 1 The development of language pragmatics in typical children: a summary of some research studies

Pragmatic behaviours	Approximate emergence*	Source
Pre-verbal turn taking	8–9 months	Ninio & Bruner, 1978
Pre-verbal communicative intentions/proto-words	12 months	Coggins & Carpenter, 1981
Rapid development of communicative acts	14–32 months	Snow et al., 1996
Turn taking	stabilises at 2;6–3;6	Klecan-Aker & Swank, 1988
Can maintain topic in interaction with adult	from 2 years	Ervin-Tripp, 1979
Making clarifications	from 2 years	Gallagher, 1977; Ferrier et al., 2000
Adaptation of speech style to listener	from 2 years	Dunn & Kendrick, 1982
Use of early polite forms	variable from 2 years	Bates et al., 1979
Response to non-specific requests for repetition	2 years	Yont et al., 2000
Range of communication acts achieved	3–4 years	Tough, 1979; McTear & Conti-Ramsden, 1992
Infers information from story	3–4 years	Paris & Upton, 1976
Infers indirect meanings	4–6 years	Eson & Shapiro, 1982
Turn-taking repairs	5 years	Ervin-Tripp, 1979
Gaps in interaction decline	5 years	Dewart & Summers, 1997
Reports thematic narrative with plot	5–7 years	Liles, 1993
Metapragmatic skills present	6–7 years	Andersen-Wood & Smith, 1997
Mastery of discourse markers	7 years	Kyratzis & Ervin-Tripp, 1999
Skilled use of anaphoric reference	6–7 years	Karmiloff-Smith, 1985
Information adequacy complete	9 years	Lloyd et al., 1995
Polite forms fully developed	from 9 years	McTear & Conti-Ramsden, 1992
Cohesion and reference errors decrease	9–12 years	Ripich & Griffin, 1988; Bamberg, 1987
Explanation of idioms	up to 17 years	Spector, 1996

*Ages given should be considered as approximations only and not as developmental norms.

measured on referential communication tasks) is fully developed by age seven years, but the ability to detect ambiguity in communication may not be fully developed until nine years of age. The use of referential cohesive devices in discourse is not mastered until seven years of age (Bamberg, 1987).

Assessments of language pragmatics

The range of assessments available can be divided into four categories:

- published tests of language pragmatics;
- published checklists or profiles;
- coding systems of naturalistic assessment of interaction;
- assessment of the comprehension of language pragmatics.

Published tests of language pragmatics

Several published standardised tests which are in common use have pragmatic elements, e.g., the Assessment of Comprehension and Expression (6–11) (Adams, Cooke, Crutchley, Hesketh, & Reeves, 2001), the Clinical Evaluation of Language Fundamentals (Semel, Wiig, & Secord, 2000) and the Test of Language Competence (Wiig & Secord, 1989). These tests contain subtests devoted to inferential comprehension and interpretation of non-literal language, but they are not tests purely of pragmatics. The Test of Pragmatic Language (Phelps-Terasaki & Phelps-Gunn, 1992) is the only whole test devoted to the assessment of language pragmatics. This is a complex test which, in fact, goes well beyond the boundaries of pragmatics and is more akin to a test of high-level language competence, incorporating elements of complex vocabulary, semantics and verbal reasoning. It is of use with adolescent children with communication impairments, but if the practitioner wishes to focus on specific pragmatic skills, this test may be too lengthy and a simple elicitation procedure may suffice. In practice there are therefore no really satisfactory single tests of language pragmatics which cover all the aspects one would wish to assess with an individual child. Tests will always need to be supplemented by observations and elicitation procedures.

A list of tests in current use, the age ranges covered and the aspects of language pragmatics which they aim to assess is given in Table 2. Tests carry the benefit of providing an opportunity to compare the individual's performance to a wider population and are relatively efficient to carry out in terms of practitioner time and training. However, the nature of pragmatics as a set of context-dependent human behaviours casts doubt upon the capability of formal testing procedures to repro-

duce these behaviours reliably. As can be inferred from the breadth of testing presented in Table 2, large-scale standardisations are possible for well-defined areas of functioning such as speech acts but are more problematic when context-dependence or interpretation of context is involved (Smith & Leinonen, 1992). Testing language pragmatics formally is therefore unlikely to be sufficient to reveal an accurate or comprehensive clinical picture.

Published checklists and profiles

Checklists of pragmatic behaviours circumvent the problems of lack of normative data and are more comprehensive and popular with practitioners than tests. A brief description of the purposes of these checklists and related assessments is given in Table 3. Prutting's Pragmatic Protocol has been one of the most influential works in language pragmatics assessment (Prutting & Kirchner, 1987). The Protocol is a descriptive taxonomy of 30 pragmatic parameters (for example, variety of speech acts, topic selection, topic introduction, topic maintenance) rated according to whether they are used 'appropriately' or 'inappropriately' or 'not observed' and is of use with a wide range of paediatric clients. Other checklists are more specific in scope: Dewart and Summers' (1987) work uses parental questioning to gain information about a range of pre-school intention communication; Andersen-Wood and Smith's (1997) Interaction Record is notable in this crowded field since it provides a profile of partner communication.

An alternative approach to assessing the presence of problems of language pragmatics through observation is that of the Children's Communication Checklist (CCC) (Bishop, 1998). This is a qualitative scale derived from a series of teacher-rated behaviours with 70 items grouped into 9 scales. From these a composite score of pragmatic language behaviour is derived. Data from a normally developing comparison group (Bishop & Baird, 2001) are available for this well-validated profile which has rapidly become the instrument of choice for the identification of pragmatic language impairment. The CCC aims to differentiate children with PLI from other types of language impairment (e.g., research studies such as that of Botting and Conti-Ramsden (1999)). It is not intended to be used as a diagnostic instrument or a pragmatic profile but to indicate hypotheses for diagnosis and aspects of further assessment. The CCC has the advantage of being relatively easy and quick to administer compared to checklists or profiles and can tap behaviours which are difficult to access by sampling. For the purposes of description for diagnosis and intervention a more detailed coding system applied at the level of unit of exchange will be necessary.

Table 2 Formal tests with pragmatic content

Name of test	Authors/date	Age	Methodology	Aspects of pragmatics targeted
Assessment of Comprehension and Expression (ACE 6–11)	Adams et al., 2001	6–11	Picture-supported subtests Story plus pictures	Non-literal comprehension Inferential comprehension Narrative
The Listening Skills Test (LIST)	Lloyd et al., 2001	3;6–6;11	Pictorial and spoken tasks	Detecting ambiguity Message appraisal Comprehension of directions Verbal message evaluation
Test of Language Competence – Expanded (TLC)	Wiig & Secord, 1989	5–18	Interpretation of spoken utterances and inferences	Understanding ambiguity Making inferences Understanding metaphors
Test of Pragmatic Language (TOPL)	Phelps-Terasaki & Phelps-Gunn, 1992	5–13	Social context is established for each of 44 items, plus picture	Physical setting Audience Topic Speech acts
Understanding Ambiguity	Rinaldi, 1996	8–13	Identification of pictures and taped messages and facial expression picture	Multiple meanings in context Inconsistent messages of emotion

Table 3 Commonly used pragmatic checklists and related assessments

Name	Authors	Coverage	Purpose/Method
Assessment of Language Impaired Children's Conversations (ALICC)	Bishop & Adams, 1989 Bishop et al., 2000	Exchange structure, Repairs, Multipart turns, Meshing	Coding aspects of conversational behaviour into categories; can be quantitative
Children's Communication Checklist	Bishop, 1998	Pragmatic rating scale	Presence of pragmatics language impairment
Directing Discourse Checklist of Linguistic Processes	Blank & Marquis, 1992	Probing questions and instructions	Information about ability to formulate explanations etc.
Pragmatics Profile of Communication Skills in Children	Dewart & Summers, 1997	Communicative intent	Questionnaire delivered to parents/ carers by practitioner; requires interpretation
Pragmatic Protocol	Prutting & Kirchner, 1987	Verbal, non-verbal and paralinguistic aspects	Rating of 30 items on a 3-point scale
Social Interactive Coding System	Rice, Sell, & Hadley, 1990	Coding of responses, initiations and ignoring speech acts	Observation of videoed interaction
Social Use of Language Programme	Rinaldi, 2001	Rating chart of pragmatic features	Use of communication in social contexts

Coding systems for naturalistic assessment of interaction

Communicative intent and speech acts. Communicative intent refers to the purpose or the expected effect of the communicative act. A speech act refers to the act which is done or performed by speaking. Assessment of communicative intent in the early years is based on detailed observational longitudinal research studies representing a synthesis of developmental work by Bates, Begnini, Bretherton, Camaioni, and Volterra (1979), Coggins and Carpenter (1981), Dore (1979) and Halliday (1975). As such it is one of the few aspects of language pragmatics which has a sound observational and developmental foundation.

Taxonomies of communicative intent have been used in research studies (Klecan-Aker & Lopez, 1984; Roth & Spekman, 1984a) and are undoubtedly one of the most frequently used types of coding system for use with pre-school children. Klecan-Aker and Swank (1988) present a system of communicative acts of exemplary clarity and a sound mode of elicitation for the busy practitioner. Where communication is very limited, interpretation of the child's communication by others is the most meaningful method of examining intent (Wetherby & Prizant, 1992).

Speech act analysis has been employed in the assessment of language pragmatics with older children in order to profile the child's use of communicative functions in terms of variety and to indicate how the acts are used in specific contexts. Speech acts which are typically targeted in assessment are: request, command, question (or requesting information), challenge, denial, negation, statements, and greetings. Assessment through naturalistic observation is popular amongst researchers because it reflects typical contextual functioning (Ninio, Snow, Pan, & Rollins, 1994), but again may be time consuming. Simple elicitation procedures (Creaghead, 1984) are therefore attractive but their validity and reliability are under-evaluated.

Fey (1986) describes a system of coding in which speech acts are subdivided into requestives (request for information, request for action, request for clarification), assertive acts (comments, statements, disagreements) and performatives (teasing, exclamations). This system has the advantage of being able to characterise the child as, for instance, an assertive, or a non-responsive communicator. Speech act coding may be an appropriate tool to reveal abnormalities of interaction such as persistent questioning (Adams et al., 2002; Bishop et al., 2000). These systems are based on relatively concrete behaviours and high levels of inter-coder reliabilities can be attained.

Responsiveness and initiation: exchange structure. Research studies have used counts of initiations (a new start which sets up expectations of a response (Coulthard, 1985)) and responses as proportions of total number of speech acts in conversation samples to assess the talkativeness and responsiveness of children with communication impairments (Bishop & Adams, 1989). Measures of proportions of utterances which are initiations can also provide an index of conversational dominance, that is, the degree to which one partner dominates the conversation by repeatedly requesting information or by providing excessive unsolicited information (Adams et al., 2002; Bishop et al., 2000). Inclusion of further fine distinctions in assessment enables the practitioner not only to investigate problematic strategies or behaviours such as non-responding but also to identify problems of responsiveness across verbal and non-verbal domains (Bishop et al., 2000).

Repairs and turn-taking. Conversational repairs refer to a set of behaviours which attempt to mend exchanges where information has been inadequate, the message poorly planned or misunderstood because of external factors such as noise. Observation and coding of repairs provides an important measure of how problematic the interaction is on both sides. Fujiki, Brinton, and Sonnenberg (1990) found that children with specific language impairments tended to leave problematic utterances unrepaired as compared to language- and age-matched peers. These behaviours should be assessed in naturalistic contexts (McTear & Conti-Ramsden, 1992).

A system for coding breakdowns in conversations (Breakdown Coding System) with young children, described by Yont, Howard, and Miccio (2000) holds considerable potential for a focused practical assessment of repair strategies. Adult clarification requests are divided into a) further information required, b) more sophisticated information required, c) lack of comprehension, d) unintelligibility, e) to fill in a turn. It is doubtful whether this degree of detail may be necessary for routine assessment, but the system is able to provide direction for intervention for individual children.

Taking turns in conversation is a skilled behaviour dependent on the recognition and synthesis by participants of a series of cues (prosodic, linguistic, non-verbal and visual) which indicate a speaker's intention to finish talking. Children with receptive language problems appear to be at more risk for turn-taking clashes than children with pure expressive language problems (Craig & Evans, 1993) suggesting that these problems may be dependent on monitoring comprehension in the interaction too. Interpreting turn-taking behaviour is no easy matter, however. There are huge variations in normal turn-taking skills which make it impossible to categorically state what is problematic except in the most extreme cases. The assessment of turn-taking is therefore likely to be redundant except in planning and monitoring intervention for individuals with significant problems in this area.

Cohesion. Cohesion refers to a number of linguistic devices which set up links between different utterances in an interchange (Halliday & Hasan, 1976). This is achieved by the use of pronouns and demonstratives to refer to some person, object or act which has already been established in the interaction. The use of cohesive devices sets up a series of inferences to be made by the interlocutor and reduces redundancy in communication. In order to interpret or use cohesive devices shared and mutual knowledge must exist between the interlocutors, implying a strong cognitive dimension to cohesion.

There are no published assessments of cohesion. Studies have established simple assessment systems such as a) referent recoverable from linguistic context (anaphora = referring back or cataphora = referring ahead); b) referent recoverable from the situation (exophoric reference); and c) ambiguous or unrecoverable referent (Adams & Bishop, 1989). A total count of cohesive examples used was then converted by the authors into an index of reference as a function of the length of conversation. But there are definite drawbacks to any analysis of cohesion. Although it is a fact that the linguistic markers of cohesion are observable phenomena, inter-observer reliability tends to be poor and the variability of the use of cohesive devices in the normal child population is large, indicating poor discriminatory potential for pragmatic assessment (Adams & Bishop, 1989).

Topic. Topic as an aspect of language pragmatics has been defined as 'a clause or noun phrase that identifies the question of immediate concern and that provides a global description of the content of a sequence or utterance' (Mentis & Prutting, 1991). The best reference for the practitioner is the work of Brinton and Fujiki (1989) which provides a checklist of topic management and a consideration of the development and variability of topic. The emphasis in

clinical assessment has been to look for formal markers of topic change or reintroduction or closure or their marked absence in obligatory contexts (Bishop & Adams 1989; Brinton & Fujiki 1989; Damico 1985; Edmonds & Haynes 1988). The usual manner of assessment is via a series of categories included in a checklist, such as topic introduction, topic continuation, topic shift, topic chain (where topics are linked together), topic recycling (where previous topics are reused) and topic reintroduction. Mentis and Prutting went on to develop the notion of topic coherence as dependent at least in part on the successful introduction and maintenance of sub-topics. Their analysis considers whether each utterance (i) contains information; (ii) is pertinent to the overall topic; (iii) maintains or introduces a new subtopic; (iv) contains no new information; (v) is a side sequence (not contributing to topic maintenance but not a different topic); (vi) is problematic (ambiguous, incomplete or unrelated information).

Brinton, Fujiki, and Powell (1997) concluded that *formal* testing of topic is not possible because the number of variables (contextual and personal) which impinge upon topic development and maintenance are impossible to control in a naturalistic setting. Estimates of 'normality' in topic management are impossible because of large variations in personal style (Brinton & Fujiki, 1985). Moreover, management of topic by an individual is usually much subtler than the categories suggested above would imply. Even expert coders struggle to reach agreement on what they consider a topic to be (Adams & Bishop, 1989) especially when subtopics are typically embedded within major topics. The way in which topics are related to each other in discourse, either hierarchically or horizontally, for the purposes of returning to 'safe' or preferred topics is also little understood. The difficulties of assessment have been largely swept aside in the pursuit of the characterisation of the oddities of topic use in atypical populations. But as Brinton and Fujiki point out : 'topic is easy to understand intuitively but difficult to describe objectively' (p. 62).

Coherence. Coherence is a superordinate aspect of language pragmatics which refers to the way in which a theme is built into discourse or interaction. The assessment of pragmatic behaviours such as topic, cohesion, inference and the ability to sequence ideas in talk will contribute to the building of coherence. Coherence is therefore one of the more ephemeral aspects of language pragmatics and consequently it is unsurprising that few attempts have been made to assess it in anything other than a subjective, descriptive manner. Judgements of whether events are retold logically with adequate reference for the interlocutor to follow the 'thread' are usually made. Irrelevance, topic drifting, lack of elaboration and omission of events in sequences are noted (Bishop & Adams, 1989; Coggins, Friet, &

Morgan, 1998; Smith & Leinonen, 1992). The assessment of coherence has the potential to address pragmatic problems in the older verbal child and is ripe for further research. Coherence problems in narratives still persist in typically developing children after the coherence problem in conversation is solved, and in fact may persist into adulthood (Ninio & Snow, 1996).

The comprehension of pragmatics

As practitioners we are interested in how the child accomplishes the task of understanding language in context, especially when there are limitations of language comprehension (Leinonen & Letts, 1987; Weismer, 1985) or limitations of social cognition such that the child has difficulty in establishing what is shared knowledge (Happé, 1993) or applying world knowledge (Milosky, 1992).

Reference as an aspect of language pragmatics refers to the ability to provide sufficient information for the listener to be able to establish what is being talked about. The related term, presupposition, refers to the knowledge which is common between the speaker and listener (either due to what has been established previously in talk or context or due to world knowledge). Using the speaker's indication of referred persons, objects or events and presupposed common knowledge the listener may then *infer* what the intended meaning or *implicature* is. Thus to infer is to marshal a number of different sources of information simultaneously and compare this to what has already been established.

Assessment of the adequacy of referential communication has typically been carried out using traditional referential communication barrier tasks, in which the child is asked to communicate instructions or descriptions to a person who cannot see the referent. A recent welcome addition to the formal assessment repertoire, the Listening Skills Test (Lloyd, Peers, & Foster, 2001), incorporates message appraisal and detection of ambiguity, in an attractive child-friendly format, and provides (UK) norms. The Test of Language Competence (Wiig & Secord, 1989) taps understanding of ambiguous sentences also. Testing of this nature can provide important baseline measures of how well the child can cope with exchange of information. However, as with many matters pragmatic, the artificiality of this task limits its usefulness as a method of assessment. For instance, Bishop and Adams (1991) found referential communication tasks did not necessarily tap into the reported conversational pragmatic difficulties of children with language impairments.

The function of inferences is to 'fill in' information that is not explicitly provided in order to enable comprehension of the overarching organisation of the text or discourse. Children who show adequate sentence comprehension may still fail to draw inferences at this level (Bishop & Adams, 1991;

Conti-Ramsden & Gunn, 1986; Leinonen & Letts, 1997; Letts & Leinonen, 2001). Verbal inferences have been assessed using story or picture contexts followed by questioning to tap what has been inferred (Bishop & Adams, 1992; Leinonen & Letts, 1997). Published tests, which include such formats, are the Test of Language Competence (Wiig & Secord, 1989), the Inferential Comprehension subtest of the ACE 6–11 test (Adams et al., 2001) and the Test of Problem Solving (Bowers, Huisingh, Barret, Orman, & LoGuidice, 1994). This is one aspect of pragmatics where formal testing has significant advantages. Control over variables such as context and linguistic input enables the practitioner to compare inferential comprehension to normative data. Clinical experience, however, suggests that we cannot be certain that these assessments tap the true nature of inferencing problems in more naturalistic contexts but they are the best we currently have. There is a need for more research at the level of inference *type* (Harley, 2001) before assessment will be able to indicate the *source* of inference failure.

Another means of investigating the child's ability to infer is to examine the interpretation of opaque meanings or idiomatic language which must be disambiguated by context and/or shared knowledge. Assessment of non-literal comprehension of this kind has often focused on interpretation of 'classic' idioms such as 'It's raining cats and dogs' and 'He broke the ice' (Vance & Wells, 1994). Assessment should enable the practitioner to gauge whether the child can interpret the meaning of the idioms (Abkarian, Jones, & West, 1992; Jones, Smedley, & Jennings, 1986) and also whether he is able to attend to the context which gives a clue to the non-literalness of the meaning. Three formal assessments address idiomatic comprehension explicitly: Understanding Ambiguity (Rinaldi, 1996), the Understanding Metaphoric Expressions subtest of the Test of Language Competence (Wiig & Secord, 1989), and the Non-literal Comprehension subtest of ACE (6–11) (Adams et al., 2001) in which the child is required to choose an interpretation of a sentence containing a figurative use of a phrasal verb, such as 'went off' (as in 'The phone went off in her bag'). These assessments will identify gross problems with contextual comprehension which may be isolated or may be part of a more general comprehension problem and are currently the most appropriate formal instruments available for the task. But again they appear to be blunt instruments when compared to the dynamic and subtle context of naturalistic interactions.

Choosing an assessment method

The principles of selecting an appropriate method for assessment have changed little over the years. Roth and Spekman laid down guidelines for the organisation of assessment and the types of samples to be drawn in a pair of classic papers in 1984 (Roth & Spekman, 1984a, b). They made proposals about sample types, the degree of formality to be used, the type of interaction or tasks and the importance of analysis. For pre-school children, the sampling method of choice will be observation of play with family, siblings and peers, preferably using a checklist of communicative intents and noting any other pragmatic functions. There is less written about sampling for older children. The tasks of choice will be those which allow the practitioner to contrast formal and informal contexts. Aside from more formal test procedures the most commonly used sampling techniques for verbal children are conversation and narrative sampling. These will now be evaluated and practical implications for elicitation will be considered in the following section.

Conversation sampling and analysis

Two approaches to the assessment of language pragmatics via conversation are in current use: quantitative approaches (e.g., ALICC; Bishop & Adams 1989 – see Table 3) and qualitative, descriptive approaches based on Conversation Analysis (Atkinson & Heritage 1984). Bishop and her colleagues created a conversational coding system (ALICC) based on the work of Coulthard (1985) and McTear (1985) in which the frequency and/or proportions of individual pragmatic behaviours, such as speech acts, turn clashes and cohesive devices, could be counted within a controlled sample (Adams et al., 2002; Adams & Bishop 1989; Bishop et al., 2000; Bishop & Adams, 1989; Bishop, Hartley, & Weir 1994). In addition, a method of considering the goodness of fit between first and second parts of interactions or exchanges, termed meshing, was described by Bishop and colleagues. This remains one of the best characterisations of the bizarre quality of interactions with children who have pragmatic language disorders. The practitioner should refer to it for descriptive categories of pragmatic oddness which clearly relate to underlying limitations of linguistic and/or social cognition. ALICC has made a major contribution to the quantification of pragmatic data and allowed the characterisation of children with pragmatic language impairments to move forward. It has the benefits of providing a concrete method of measurement within controlled samples and a potential tool for evaluation of change. ALICC is the instrument of choice for quantitative analysis of conversational data provided reliability of coding for observers can be attained and there is sufficient time for training and analysis. Further consideration of normative data from young children is needed to pursue the quantitative route to conversation analysis if meaningful assessment criteria are to be established.

Quantitative approaches have been criticised for paying relatively little attention to the interaction and concentrating on the performance of the child in isolation. In contrast, Conversation Analysis is a specific discipline that has emerged from a background of ethnomethodological studies, which treat conversations as collaborative phenomena between the participants (Atkinson & Heritage, 1984). Formal Conversation Analysis therefore is an ethnographic device which uses a series of conventional terms to describe in detail underlying patterns in the interaction without attempting to count any behaviours. Qualitative frameworks have enabled researchers to assess aspects of language pragmatics such as topic movement, topic maintenance, repairs, overlaps and pauses in case studies of children with pragmatic language impairments (Radford & Tarplee, 2000; Willcox & Mogford-Bevan, 1995) and autism (Dobbinson, Perkins, & Boucher, 1998). This approach finds favour with practitioners because of its individualistic approach and potential for intervention planning, but demands a high level of specialist linguistic skill and the investment of time may not necessarily be rewarded if the analysis is superficial.

Narrative sampling and analysis

A spoken narrative is defined as a verbal account of a past, current or future event or may be a description, a story or a series of goal-oriented instructions. Narratives provide a rich source of language pragmatics sampling since they require the organisation and formulation of above sentence level features such as informativeness and coherence (Wagner, Nettelbladt, Sahlen, & Nilholm, 2000). Narrative deficits are common in children with language impairments and can manifest themselves as an impoverished amount of information recalled and the inability to structure a sequence of ideas into connected discourse in the absence of overt grammatical errors (Merritt & Liles, 1989).

Narrative ability has tended to be assessed using story retelling tasks (e.g., The Bus Story (Renfrew, 1995)), ACE 6–11 (Adams et al., 2001) or through the construction of novel stories (Liles, 1993; Westby, 1992). Other sampling methods include description of creative tasks or routine events (Naremore, Densmore, & Harman, 1995); creating stories for wordless picture books (Tager-Flusberg & Sullivan, 1995) and re-creation of personal experiences (Peterson & McCabe, 1983). Story retelling as a task has advantages over spontaneous story generation in that it is easier to administer and analyse (Merritt & Liles, 1987, 1989). Ely, McCabe, Wolf, and Melzi (2000) describe a variety of techniques of eliciting and analysing narrative from the most naturalistic observations to semi-naturalistic observations in which a series of prompts is given by the assessor. Stories may be followed by questions designed to elicit comprehension of motives and causation (Tough, 1979; Happé, 1993).

Aspects of language pragmatics which can be gleaned from narrative analysis include coherence, cohesion, reference and informativeness, presupposition and use of figurative language. Specific discourse features such as reported speech, direct speech, specific speech acts or genre-specific discourse markers and stylistic forms such as emphatic order or topicalisation can also be sampled. A standardised subtest of narrative is included in the ACE 6–11 (Adams et al., 2001) in which analysis of syntax and discourse features is compared to that of a large standardisation sample. Biddle, McCabe, and Bliss (1996) take the notion of deriving summary information from narrative assessment further. They propose a dependency analysis of narrative (a calculation of implicit propositions divided by explicit propositions) which provides a measure of how much must be inferred by the listener. Other analyses have included counts of mental state verbs incorporated into children's narratives as measures of maturity and understanding of character motivation.

Naturalistic observation or planned elicitation?

There is an assumption that language pragmatics should be sampled in naturalistic situations and that contrived communication contexts will have significant impact on the resulting interaction to the extent that what is sampled may not be an accurate reflection of abilities. However, data which emerge from naturalistic assessments are time consuming for practitioners to process and low structured observation techniques generally provide too few opportunities for observing certain speech acts (Brinton & Fujiki, 1989; Coggins, Olswang, & Guthrie, 1987; Iacano, Waring, & Chan, 1996). Furthermore, it is clear that one cannot assume that if a behaviour does not occur in such a context the child is not capable of producing it (Prutting & Kirchner, 1987). Assessment of comprehension of implicature and other aspects of pragmatic understanding is limited in naturalistic contexts and forces an opportunistic approach to assessment. The challenge for the practitioner (and for researchers) is to find a sampling method which allows for a degree of spontaneity but which remains realistically measurable (or at least may be analysed quickly), is repeatable and which allows enough opportunity for observations of specific behaviours. There is no single current method which meets these criteria.

There is, however, an increasing body of evidence which suggests that planned elicitation techniques can be effective as measures of language pragmatic ability and should be included in the assessment repertoire. Interactions between peers or between assessor and child may be elicited which may reflect natural interaction using appropriate toy and/or picture material as prompts. Bishop and Adams

(1989) used a semi-structured conversational task based around a series of pictures of three situations. Pragmatic elicitation tasks which solicit communicative intents or speech acts are the basis for many published assessments (Creaghead, 1984; Ripich, Carpenter, & Ziol, 2000). Coherence may be sampled in children's stories and accounts of events (Ninio & Snow, 1996). In practice, it can be useful to contrast pragmatic assessment methods for an individual child. For instance, naturalistic observation of communicative intent may be contrasted or supplemented with a elicitation procedure such as the Peanut Butter Protocol (Creaghead, 1984). The elicitation of narrative using a re-told story and spontaneous event descriptions can be contrasted and observations made about coherence across conditions. Naturally, stories which are re-told are more likely to be coherent than those which are spontaneous but may be less revealing about the ability of the child to make pragmatic judgements of quality and quantity of information.

Research studies have tended to show that the context cannot automatically be assumed to be a confounding factor in pragmatic assessment provided that it is kept constant and is reproducible (Evans & Craig, 1992). Furthermore, it is not always the case that the materials and type of talking task affect the profile of conversational behaviour (Bishop, Hartley, & Weir, 1994). However, elicitation procedures cannot necessarily tap pragmatic behaviours which are founded in genuine exchanges of information for communicative purposes. It may be that these more cognitive aspects of pragmatics will be best left to observation in the child's typical communication environments. As with most language assessments, a combination of naturalistic observation and structured sampling to check missing or hard-to-sample forms will be the optimal procedure.

Practical considerations of sampling and elicitation

Unlike other aspects of assessment of communication, the main influence on informal language pragmatics sampling is context. Ervin-Tripp (2000) lists the following as such contextual influences: the familiarity of the interlocutor; social expectations of the child set up by an adult assessor; the eliciting style of the adult; the model of language from the examiner. In practice, it is difficult to control these sufficiently for experimental purposes, but for clinical purposes they should be considered carefully. So, an 'interviewing' style adopted by the assessor is likely to elicit responses. But if the balance of power is perceived by the child to be with the adult (Smith & Leinonen, 1992), there will be few initiations. One can either de-formalise the proceedings by being laid-back and fun (which young children find amusing but older children despise) or by introducing

elements of interest to the child and encouraging an enquiring and more equitable relationship in the interaction, inviting him to relate similar experiences or interests. No matter how informal the assessment, if time permits it is always of value to carry out some discreet or covert observation in a peer group or similar situation in order to confirm that clinic-based observations are valid.

Specific elicitation tasks are described repeatedly in the literature. For instance, Brinton et al. (1997) developed a 'topic task' in which an examiner introduces a number of specific topics and encourages the child to develop that topic. The examiner takes a camera out of a bag and says to the subject 'I got this for my birthday. I don't know how it works', places the camera with no film or batteries on the table and waits for some talk about photography. Other assessment methods employed to tap reference and presupposition in children include teaching a game to other children or adults (Loveland, Tunali, & McEvoy, 1989) and role-playing tasks of simple activities such as shopping (Abbeduto, Short-Meyerson, Benson, Dolish, & Weissman, 1998).

The length of sampling is dictated by its representativeness of pragmatic skill. A play-based observation will be lengthy in order to allow opportunities for communicative acts to be demonstrated. Conversation samples with older children are generally quicker to gather and may be recorded for transcription. The practitioner should note, though, that ten minutes of conversation entail three hours of transcription even for a trained worker.

Reliability, validity and measurement of quality

Measurement of reliability in the assessment of pragmatics has varied across formal tests and has generally been confined to aspects of pragmatics which are the most discretely quantifiable. Tests of comprehension of language pragmatics have shown satisfactory inter-rater and test-retest reliabilities when applied to structured and repeatable tasks. For instance, the Assessment of Comprehension and Expression (ACE 6–11) (Adams et al., 2001) reports test-retest correlations of .83, indicating good test-retest reliability. The Test of Pragmatic Language (Phelps-Terasaki & Phelps-Gunn, 1992) claims an inter-scorer reliability of .99 and an average test-retest correlation of .82 across age ranges.

The more contextually dependent the behaviour, the lower seem to be the correlations that emerge, not surprisingly. Bishop and Baird (2001) found a correlation of .48 between parents' and professionals' ratings of pragmatic behaviours on the Children's Communication Checklist and better internal consistency of ratings for both groups (.7 or higher). Although the inter-rater coefficient is low compared to tests, this is thought to be typical of parent–teacher agreement in general (Bishop &

Baird, 2001). The CCC appears to be the only pragmatics checklist which has provided satisfactory estimates of internal consistency and inter-rater reliability.

Correlations of inter-observer reliability in pragmatics may not, however, be all that they seem. Hux, Sanger, Reid, and Maschka (1997) compared statistical techniques of inter-observer measures on analyses derived from Damico's Clinical Discourse Analysis (Damico, 1985). The measures subject to comparison were Pearson's product–moment correlations; inter-observer agreement measures; Cohen's Kappa; and Generalisability Coefficients (Cronbach's Alpha). High correlations amongst overall proportions of behaviours can be found in samples with relatively low levels of agreement on an item-by-item basis, depending on the measure chosen for comparisons, and are therefore problematic in pragmatic analysis.

A language pragmatic assessment which is based on frequency counts of conversational behaviours necessitates estimation of the permissible variation in sampling as a result of non-constrained sampling measures. Thus, as an outcome indicator, a measurement of pragmatic behaviours would need to change significantly above and beyond that expected of the range of typical variation in an individual. Estimations of variation have been attempted in studies of conversational interventions with adults who have aphasia (Perkins et al., 1999) but there are no such studies with children who have communication disorders. Bishop et al. (1994) showed that different interlocutors typically elicit similar pragmatic profiles from children given a similar informal elicitation task. The problem remains, however, that pragmatic assessment, in its naturalistic form, should not and cannot be repeated without loss of real interaction. There will therefore always be limited confidence in reliability. The best advice must be to control as many extraneous variables from one assessment occasion to the next and to avoid topics which are a) unfamiliar and b) form part of an obsessional trait.

Studies of the validity of pragmatic assessments have hardly begun. Bloom et al. (1999) sampled narrative speech of individuals with left-hemisphere brain damage. Transcripts were then rated by naïve listeners on six pragmatic features: conciseness, lexical selection, quantity, relevancy, specificity and topic maintenance. A factor analysis of pragmatic categories revealed three factors which Bloom et al. related back to Gricean principles: discourse content, conciseness, and relevance. The Test of Pragmatic Language provides a concurrent validity coefficient of .82 by comparing teacher ratings with test results. Other tests, e.g., ACE (6–11), which contain aspects of language other than pragmatics, have demonstrated good concurrent validity in comparison with other standardised tests of language such as the Test for Reception of Grammar (Bishop, 1982) and the British Picture Vocabulary Scale (Dunn, Dunn, & Whetton, 1997). More research

and robustness in investigating validity is required for all aspects of language pragmatics.

Decisions about the quality or appropriateness of pragmatic behaviours have been a prominent and controversial feature of assessment procedures. Whether a pragmatic behaviour is appropriate or not revolves around how much work a listener must do to work out the intended meaning (Bishop & Adams, 1989; Smith & Leinonen, 1992). A definition of quality as a 'mismatch' (Volden & Lord, 1991) or a 'meshing' problem (Bishop et al., 2000) might be more widely accepted than the term inappropriacy. The remaining problem with appropriacy judgements is that they are subjective and therefore influenced by the way in which the assessor construes the world. Even with extensive training there is evidence that professional backgrounds produce very differing verdicts about the meaningfulness of individual pragmatic acts (Leinonen & Smith, 1994). However, Bishop and Adams (1989) used measures of appropriacy to differentiate a subgroup of communication impaired children from children with other language impairments and obtained satisfactory inter-observer reliability ratings in doing so.

The notion of appropriateness is central to the discussion of the interaction of language and cognition and therefore worth incorporating in an assessment of language pragmatics. Early notions of inappropriacy may have been unrefined but they captured the characteristic bizarreness of interactions which are common with the socially impaired individual and more research is required to develop and compare efficient and reliable means of assessing these important behaviours and their linguistic and physical contexts.

Conclusions

There is now a substantial number of clinical language pragmatics assessments available. The practitioner now has access to what might be considered a core tool-kit in language pragmatics assessment, such as:

- a developmentally arranged list of the emergence and types of communicative intent (see Table 1);
- a comprehensive checklist of pragmatic behaviours (Prutting & Kirchner, 1987);
- the Children's Communication Checklist;
- assessment of pragmatic language understanding (Test of Language Competence and ACE 6–11);
- access to specific detailed observation-based analyses (e.g., ALICC for conversation; Topic Checklist of Brinton and Fujiki, 1989; ACE 6–11 for narrative).

Some of these instruments and methods are well validated and have adequate reliability. Others do not and they may never have. The persistent paradox of assessing language pragmatics is that some

aspects simply have as much variation as individual personalities and styles of interaction. The future of language pragmatics assessment, therefore, may be not to proliferate more coding schemes, but to make what already has been researched more accessible for the practitioner and to ensure validity and reliability using correct statistical techniques. This can be achieved by packaging the observational schemes more transparently, by ensuring validity through research, by developing more efficient and flexible schemes for elicitation and by eliminating redundancy in assessments, thereby reducing analysis time.

The assessment of language pragmatics is complex because it requires sampling and analysis of behaviours some of which are overt, some of which must be inferred and some which represent a synthesis of different levels of processing. Pragmatics textbooks typically list 'aspects' of pragmatics which have been differentiated in order to make the study of pragmatics feasible and orderly. In practice the assessment of pragmatics is far from being so neat and in reality we have only just begun to understand what can and cannot be achieved. Lack of precision about comparative developmental norms remains an overriding problem which remains to be factored into assessments in addition to the cultural, cognitive and social influences on the use of language. More empirical research into the development of inferential comprehension, topic management and coherence in particular is required to support the development of better instruments. Greater emphasis on the interlocutor and the facilitatory nature of the talk, already well explored with other patient groups, is likely in assessing the language pragmatics of children who have communication impairments.

A compromise between artificiality of assessment context and naturalism could be achieved through a systematic study of elicitation procedures across a range of communication disorder types. Assessments which have the flexibility to focus on typically problematic areas rather than assessing every aspect of pragmatics are needed (Snow et al., 1996). Indices, such as the notion of 'pragmatic flexibility' (variety of acts and variety of situations in which these are used) or 'conversational dominance' (Bishop et al., 2000), will be efficient ways of expressing quantitative measures of pragmatics. These also have the potential to show change with maturation (Rollins, Conti-Ramsden, & Snow, 1994) or to function as outcome measures (Adams, 2001).

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