

Intervention for developmental pragmatic language impairments

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Resumen

Este artículo revisa las corrientes actuales de la intervención en el lenguaje en niños que presentan problemas de desarrollo pragmático del lenguaje. Se discuten los fundamentos de la intervención y se presentan resultados de estudios de casos de niños con trastornos pragmáticos del lenguaje. El tratamiento tenía por objeto el desarrollo de actos comunicativos y de habilidades conversacionales y narrativas. Se trataba también de facilitar la comprensión de las inferencias sociales y la adaptación social. Los niños muestran una mejora significativa en las habilidades pragmáticas y en la formulación del lenguaje. Los cambios en las habilidades comunicativas tienen un efecto positivo correlativo en las habilidades relacionadas con la lectoescritura en el aula. Además, se presenta el estudio de un caso ilustrativo de la intervención en un niño con trastornos pragmáticos del lenguaje.

Abstract

This paper reviews the current position on speech and language intervention for children who have problems of pragmatic language development. The theoretical rationale for intervention is discussed. Findings from a recent case study series of children with pragmatic language impairments are presented. Treatment targeted the development of communication acts, conversation and narrative skills in addition to facilitating understanding of social inference and social adaptation. Children showed significant improvement in pragmatic skills and language formulation. Changes in communication skills had a concurrent beneficial effect on literacy skills in the classroom. In addition, an illustrative case study of intervention for a child with pragmatic language impairments is presented.

Introduction

Children with pragmatic language impairments (PLI) present a profile of communication characteristics that differs from those of children with

specific language impairments. Although they can present in the early years with language delay and poor social development, often these difficulties seem, at least superficially, to be overcome by the school years and children may be fluent with seemingly normal use of syntax. Under the surface, however, remain substantial problems with understanding discourse, over-literal use of language, impaired understanding of social inference and the social use of language. Added to this, in some individuals, is a tendency to talk about personal preoccupations, inappropriate questioning style with repetitive speech and some stereotyped speech. These difficulties persist, creating a dissociation between social communication and formal linguistic abilities, compounding social limitations and affecting educational progress.

Children who have pragmatic language impairments (PLI) have been subject to a number of research endeavours. This group was previously referred to as "semantic-pragmatic language disorder". The term PLI came into use after Bishop (2000) reported no evidence of disproportionate semantic problems for this group compared to other children with development language disorders. Research studies have concentrated largely on the nature of the underlying (Bishop 2000; Shields, Varley, Broks & Simpson 1996) and on the characterisation of PLI in order that diagnostic criteria might be established (Adams & Bishop, 1989; Bishop & Adams 1989). Much effort has been directed towards the differentiation of PLI from autism (Rapin & Allen 1998; Botting 1998; Boucher 1998) and autistic-like conditions, such as Asperger Syndrome (Bishop 1989). Relatively little research has focused on appropriate intervention strategies or on the efficacy of current management for these children.

Law, Garrett and Nye (2003) in a systematic review of language intervention were unable to locate any randomised control trials which addressed pragmatic language intervention. There are few quantitative group intervention studies of effectiveness of intervention for children with PLI. A recent quasi-experimental study (Richardson and Klecan-Aker 2000) investigated pragmatic intervention with learning disabled children, rather than specifically PLI children, and found that all children improved in targeted skills of conversation, responding and object description. The PLI intervention research base contains group studies which attempt to evaluate specific service provision models as opposed to intervention efficacy (Bedrosian & Willis, 1987, Camarata and Nelson 1992). Some single case studies have provided valuable information regarding progress with individualised therapy (Conti Ramsden and Gunn 1986; Letts & Reid 1994; Willcox and Mogford Bevan,

1995; Leinonen & Letts 1997; Adams 2001). All these papers point towards the fact that the communication skills of children with PLI and associated conditions benefit from speech and language therapy. There is, however, a need for systematic approaches to carefully controlled therapy for clearly identified groups of children with PLI in order to establish an intervention policy which will promote effective practice.

Two preliminary steps remain before this goal can be achieved. Assessments must be in place which can serve as outcome measures for language pragmatic therapy. So rather than just assessing children's general communication it would be desirable to assess (and re-assess) their pragmatic skills independently of other language abilities. Secondly the effect size expected which will represent change in pragmatic skills has not been estimated. In fact, there is no consensus that *pragmatic* language skills will change as a result of speech and language therapy. The next step therefore is to generate an estimation of change in pragmatic skills which can be anticipated in a large-scale therapy study. Series single case study approaches are recognised as an appropriate methodology of gathering preliminary evidence on effective treatments prior to large-scale studies (Adams 2001) and evidence from such a series is presented later in this paper.

Models of intervention

Current practice in the United Kingdom (UK) is limited by the lack of an underlying theoretical model on which to base methods of intervention. Potential models that might be applied are the social, cognitive and linguistic models. The following discussion will first outline these separate models of the underlying impairment in PLI and then consider a combined explanatory model on which to base interventions. This discussion assumes a view of pragmatics which is broad and encompasses inference and social interaction in addition to formal aspects of pragmatics. A summary of the combined model is presented in Table 1.

The *social* use of language model sees the child as developing language in the context of interpersonal interaction. Infants' ability to attribute intentionality to human communication (intersubjectivity) (Trevarthen 1978) and the emerging understanding of other people as intentional agents is thought to precede the development of communication and language (Tomasello, Kruger & Ratner 1993). A broad view of pragmatics encompasses the interpretation of social inference (intersubjectivity), the purpose of

the utterance (subjectivity), judgements of the appropriacy and the principles that guide the conduct of a conversation (discourse analysis). The growing child's ability to make use of social inference underpins the ability to understand the purpose of communication act and adaptation of responses to the listener. Thus children are able to match their responses socially to the ongoing dyadic conversational exchange. The implication of this explanatory social model is that the child with PLI has to some extent not participated in the process of social interaction in infancy, has failed to develop the normal capacity for intersubjectivity and subjectivity and consequently remains on the fringes of interactions. Intervention should therefore attempt to re-engage the child in the process of inter-subjectivity and social inference.

Table 1. *Synthesis model of language pragmatics as a rationale for intervention*

	Synthesis model of intervention		
	Social aspect	Cognitive aspect	Linguistic aspect
PLI as a limitation in	Development of social interaction, empathy & attachment	Development of shared and mutual knowledge; event representations	Development of pragmatic features of discourse, conversation. Syntax and semantic development may also be affected
Expected early features	Lack of affect and mother-child mutual exchanges Lack of participation in social routines	Limited script learning/ event knowledge representation	Language receptive/expressive delay Limited range of communicative intents Limited range of syntactic and semantic skills
Later development	Social aloofness; difficulty understanding social boundaries	Problems of non-literal comprehension and verbal inference	Limited formal pragmatic devices such as politeness and indirect speech acts. Problems with narrative and discourse . Some features of SLI*
Variation within the group	To varying degrees but may be very mild	Almost always but to varying degrees	Limitations across linguistic domains, including comprehension, but with some near normal functions
Implications for intervention	Social inference, empathy, emotional understanding; topics and preferences	Understanding of underlying meanings; building representations and managing information	Narrative structure and sequencing; conversation skills & speech acts in context; strengthen language skills to compensate for other aspect weaknesses

* Specific Language Impairment

The *cognitive* model assumes that the fundamental underlying problem for children with PLI is one of social *cognition* and the child's limitations in managing propositional information about the environment and people in it. This model is also concerned with the process of verbal comprehension as a constructive contextualised activity which is capable of going beyond the surface literal meanings of sentences to the underlying communicative purpose and the nuances of meaning the speaker intended to convey. The development of general event representations which support the prediction of appropriate forms of social conduct and language use are central to this model. New information is organised with reference to existing cognitive structures and past event knowledge (Harley 1995). This framework provides the base onto which language is mapped. Thus cognitive frameworks (sometimes referred to as schemata) encompassing world knowledge and event representations underpin the development of language comprehension. The implication for language intervention is that we should help the child to recognise gaps in comprehension, encourage the development of inferential skills and build up strategies to assist in decoding text and discourse.

The *linguistic* theory or theories underlying the rationale of intervention reflect the narrow, formal view of pragmatics which has been more thoroughly documented than the previous two approaches. This model assumes that there is a level of linguistic competence at which the rules of pragmatics are represented. The child learns the rules of pragmatics by observation, imitation and trial and error, eventually becoming skilled at, for example, the performance of speech acts, the structure of conversational exchanges and rules for pronominal cohesion. The implications for speech and language practitioners are more akin to language interventions for children with SLI: that there is a set of linguistic rules to be exemplified and practised in instructional context. At this level the practitioner can also consider the limitations on the use of language which arise as secondary features from limited syntactic, semantic and receptive language skills.

In practice, one cannot adopt a single model in intervention for children with PLI, since their communication difficulties are, to varying degrees, in social, cognitive *and* linguistic domains. In the process of development all three models are closely interlinked. The development of these event representations in infancy requires social orientation to interactions. The development of efficient prepositional schemata relies on the efficiency of goal or motivational schemata which is in turn affected by understanding of social roles. The development of prepositional frameworks which underpin the comprehension of text depends at some stage on skilled decoding of sentence structure.

Instead a *synthesis model* is presented which taps into all three basic models. In this model (see Table 1) the three dimensions of social, cognitive and linguistic are considered in synthesis to underpin the rationale for intervention. Strong emphasis is placed on the role of the social and cognitive aspects of development as underpinning skills. The linguistic aspect of the model is concerned largely with the *expression* of underlying competencies in the social and cognitive domains. The strong implication is that the practitioner must tap into all three theoretical positions in order to find a rationale for therapy. In practice this is easier than it seems as many communicative tasks are syntheses of the three domains. For instance, spoken and written narratives have a central role in a child's functioning socially and academically and as such constitute an important skill. It is a relatively complex task involving social, cognitive and linguistic modalities. Features of narrative such as world knowledge application, inference and an awareness of the communicative needs of the listener cross these three theoretical domains.

Therapy methods and management issues

Despite the lack of intervention studies, the range of therapeutic techniques used within this client group is well documented within the literature, reflecting what clinicians are doing in their working practice (Leinonen, Letts & Smith 2000) Published resources are available in English and are listed in the Appendix. It should be noted that many published resources centre on formal aspects of pragmatic instruction such as use of register and speech acts, which, while valuable, have restricted application for some of the more able children with PLI.

Pragmatic language intervention may focus on the following aspects of pragmatics:

Inference, exchange structure, turn-taking, topic management, providing information, conversational skills, building sequences in narrative, understanding hidden messages, referencing in discourse, cohesion, coherence.

In addition, social aspects of development such as social inference, adaptation of language to social situations, attribution of emotions, perspective taking will be part of the intervention programme for some children with PLI even though these are not explicitly language focused.

The therapeutic techniques used will vary according to the nature of the goals stated for an individual but these may involve:

Modelling and individual practice in a safe clinical setting; group work; role-play; practising specific pragmatic skills in conversations; meta-pragmatic therapy; promoting self-monitoring and coping strategies; rule flouting exercises. These are all familiar devices for the speech and language practitioner. Meta-pragmatic therapy can be used with older children (from 7/8 years old) and involves reflection on the quality of content of one's own talk: "Was it clear what was talked about?", "Did I take the listener's needs into account?". For many children this forms a central part of interventions.

Examples of specific activities which we have employed in this research are:

- a) Drawing comic strip cartoons of familiar situations with speech bubbles to fill in. Aim to discuss problem situations and role-play talk in that situation. Also useful for constructing narrative and sequencing ideas in narratives.
- b) Making a video with object prompts – aim to ask the child to create a sequence with appropriate information
- c) The child as a teacher: Teaches therapist how to perform certain daily activities. In this activity (which is modelled and rehearsed) the child is asked to narrate an everyday event including some of the behaviours which have been practised in other activities (such as cohesive devices) and to reflect on the quality of the information he is providing.

Intervention for children with PLI cannot be confined to work on pragmatics alone. Individual children require instruction and support in many formal aspects of language development such as syntactic formulation of complex sentences and word-finding/vocabulary interventions in addition to therapy for pragmatic difficulties. Thus pragmatic therapy should not be viewed as a separate entity in the speech and language practitioner's portfolio. In addition, a crucial aspect of management for children with PLI is to provide ample support in a classroom, appropriate support for parents and education staff. Children with PLI require a sensitive approach to their personal and social development which will supplement language pragmatics instruction and should be part of the management strategy.

The Intervention Study

Method

Subjects

Six boys, aged between 6;0 and 9;09, were recruited from speech and language therapy services in the North West of England with the assistance of NHS specialist practitioners. We aimed as far as possible to recruit children who:

- Scored below 132 on the Children's Communication Checklist (CCC; Bishop, 1998)
- Scored at or higher than the 16th percentile on Raven's Coloured Matrices (Raven, Court and Raven, 1986)
- Scored no lower than the 16th centile on the Test for Reception of Grammar (TROG) (Bishop 1983)
- Who were not receiving other concurrent speech and language therapy and had no therapy specifically directed at pragmatic ability within the previous three months.

Children received a pre-therapy assessment of two standardised language tests (Formulating Sentences and Sentence Recall subtests of the CELF R (Semel et al 1987) and the Narrative and Inferential Comprehension subtests of the Assessment of Comprehension and Expression (6-11) Adams et al, 2000), and a conversational sampling procedure (Bishop et al 2000; Adams, Green, Gilchrist & Cox, 2002). In all there were seven conversational data points across pre-and post-treatment phases. Children were next seen for the intervention phase by the speech and language therapist (SLT) only. Each child received eight weeks of pragmatic intervention, three times a week, from a specialist speech and language therapist. Intervention was planned on an individual basis and reflected current practice, i.e., building on strengths in communication through exercises and games in interpersonal communication and by developing strategies to promote more effective communication with others in the child's environment. In addition to child intervention the SLT actively engaged with the caregivers, classroom teacher and special needs coordinator for each child, providing assessment results, intervention principles and aims and eventually detailed progress reports. Subjects were reassessed at the end of therapy and two months post therapy on conversation, narrative and some standardised measures.

Rationale of intervention in this study

The rationale behind intervention was based on the synthesis model presented in Table 1. Assessment aimed to tease apart underlying causal elements from secondary learned behavioural styles for each participant. Intensive individual intervention targeted individual skills in social, cognitive and linguistic domains. Therefore, individual children within the study received intervention targeted to their specific needs within the three aspects in the model. Parent and teacher participation aimed to achieve a highly adapted communication environment aimed at supporting everyday interactions. Adapting the curriculum focused on the expectations, demand and load on each child, making these compatible with the child's developmental competencies. Classroom assistants were trained to implement the individual intervention strategies and support generalisation into the classroom. Two participants with additional behaviour difficulties received support before the project commenced; the other participants, who were receiving no support at the commencement of the project, were given additional in class support following discussion of assessment results by the research therapist.

Results

Formal tests

All individuals showed change, some substantial change, in some sub-test scores between initial and follow-up assessments which cannot be explained solely by spontaneous development (see Table 2). Some children, are, however, functioning at or near ceiling on some tests so cannot demonstrate improvement. No pattern emerged as to a single aspect of language performance change which is related to the therapy given. So, for instance, many of the children improved on Sentence Recall which was not a skill specifically targeted for any individual, suggesting that there may be generalised rather than specific effects of therapy.

Conversation measures

Conversational measures showed that children shared the conversation more in the post-therapy conversations. Results demonstrated that subjects 1, 3, 5 took a less dominant role in the post-therapy conversations which had been an objective of therapy. Children tended to display a higher degree of

Table 2. *Pre-and post-therapy standardised assessment subtest percentiles*

Subject	1		2		3		4		5		6	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
ACE Inference	99	99	2	2	63	98	91	84	1	5	5	16
ACE Narrative*	84	98	25	50	91	50	75	37	9	16	5	50
Sentence Recall	99	99	1	5	2	75	37	99	1	25	2	37
Form/g.Sentences	99	99	1	84	16	95	98	98	25	98	5	84

*Propositions score only

verbal responsiveness in the post-therapy conversations. Mean verbal response problems indices for Subjects 1 and 3 were lower post-therapy compared to pre-therapy, suggesting that these children made more adequate responses to adult solicitations in the post-therapy conversations. But this was not universal. For some children there was insufficient change in response indices to show change beyond natural variation and some children showed increases in problems post-therapy. The results are therefore mainly positive but demonstrate some important limitations on the potential for change for some children's pragmatic skills.

Discussion

The study sends a clear signal that intensive speech and language therapy resulted in improvements in pragmatic and other communication skills for individual children with PLI. Intensive pragmatic language therapy resulted in significant changes, but not necessarily in the same aspects of language and not always in those targeted specifically in intervention. This indicates a generalised as well as some specific effects of intervention, in line with previous case studies of this population. Some children improved substantially across all measurable communication skills and this was reflected further in educational progress. The fact that these changes can be affected in such a short period of time, after a long period of lack of progress, has important implications for the way in which speech and language therapy services are delivered to these children.

Conversational measures were sensitive to changes beyond normal variation in pragmatic behaviour. Whereas language tests showed some changes in overall communication and language processing abilities, conversation measures pinpoint changes in interpersonal interactions that lan-

guage tests cannot tap into. Conversation analysis is time consuming and the instrument used here requires further refinement to enable it to be used at a clinical level.

Visual rather than statistical inspection has been adopted in this study as the appropriate means of interpretation at the case study level. To have grouped subjects and used inferential statistics would have masked clinically significant changes or resulted in statistical error due to the intercorrelations between data points. Yet the large scale randomised controlled trial is the method of choice to prove the effectiveness of an intervention. Large-scale trials of PLI will never be possible because of recruitment limitations but some small group studies may be possible. The implications of this study is that the way in which outcome measures are set up at the start of a study is critical to the findings. Considering the conversation measures used in this study, for instance, some measures went up for an individual, whereas for another individual the same measure went down. In a group statistical design these changes would essentially be cancelled out. However both changes represent progress for individual children with respect to the targets of intervention. Individual children's progress, therefore, requires careful interpretation in relation to the aims of therapy. Outcome measures should take the degree of variability within the PLI group into account.

Pragmatic impairment was associated with language comprehension, recall and formulation difficulties and social cognitive impairment, although the balance of impairment varied considerably amongst study participants. The results of this project found participants fell into two groups, those with greater underlying language impairment resulting in pragmatic difficulties and those with greater impairment in social cognition with relatively unimpaired language. This is in line with Bishop's (2000) notion of PLI and PLI Plus (plus social deficits) groups. The children with impairment in social cognition were found to have central difficulties with reading social situations, social cues, social adaptation and knowing how to modulate their own responses according to the context. In general these children showed less overt improvement but they did show some. Children with PLI without marked degrees of social impairment appeared to show greater progress in both language and social pragmatic skills compared with those children with marked impairment in social cognition, but this is an impressionistic finding only which requires further exploration. This might suggest that pragmatic impairment resulting from language deficits is more amenable to remediation.

Illustrative Case Study

Subject 1: Chronological age at start of study 9;09

Presentation

S1 was highly verbose on first assessment. He frequently used avoidant strategies to conceal lack of task comprehension. His conversational strategies included commanding the floor, talking over his conversational partner, tangential speech and repetitive initiation of set topics relating to animals, gardening and science. S1 recited scripts and factual information with little regard to whether his interlocutor was listening or following his meaning. He had a compulsion to finish his topic, ignoring adult interjections or comments. He had limited insight into his difficulties although recognised that he preferred controlling the topic and had little interest in listening to others topics.

S1 used descriptive, conventional and elaborative gesture appropriately and facial expression to convey emotions. He gave a warm rapport with effective use of social overtures and initiation of social interaction. He was engaging and successful at eliciting and sustaining adult attention and was popular with adults and peers. He had difficulty reading hidden social intention conveyed in non-verbal signals and tended to interpret language literally. Social difficulties had led to a restricted range of contacts with peers. S1 showed little awareness of peer responses and he persisted with his own topics of conversation even when peers showed little interest.

In class he had great difficulty attending to the topic set in the curriculum and frequently distracted and wandered onto his own chosen agenda. S1 needed continual one-to-one support to structure his environment, re-focus his attention and direct him to the topic.

Aims of intervention

In the case of S1, the synthesis model suggested intervention should be focused largely on social interactions with some work on high-level inference in discourse and classroom interactions and introduction of meta-pragmatic training. Intervention aimed to increase the appropriate use of language by reducing the use of tangential topics, develop awareness of listening skills and conversational skills, by practicing turn taking, introducing a topic, maintaining topics and ending a topic in conversational exchanges.

The intervention also aimed to develop understanding of social inference and social intentions by developing the ability to empathise and read other people's emotions. Intervention strategies were used to increase flexibility and adaptation to his interlocutor. Further strategies focused on his environment, advising all adults to carefully monitor their language complexity to make this compatible with his understanding, use concrete language and avoid metaphors.

Intervention methods

Initially individual structured intervention sessions focused on good listening and conversational rules. Listening rules included listening actively for the meaning, no interrupting, no butting in, and no changing of the topic. Good conversation rules included: being relevant; banning switching onto favourite themes; keeping expression short and sticking to the main points; knowing when to finish; pausing to allow the listener to speak; waiting for a pause to ask relevant questions and showing interest in the other person's topic.

These were demonstrated and S1 identified conversational breakdown in role play using puppets including being impolite: interrupting, switching topic, too much talking, no finishing, no pause, asking too many questions and being disinterested. Finishing a topic was practiced using "guess the ending of a story" scenario and narrative skills developed using a beginning, middle and ending structure. Visual prompts were used to identify speaker and listener roles and practice switching roles. S1 was allowed a set time at the end of each individual session and each day to talk about his set favourite topics. At these set times the adults followed his interest and topic of conversation, at other times the adults re-directed S1 back to the relevant topic under discussion.

Social stories and comic strip conversation relating to real life experiences and recent events in school or home were drawn to facilitate understanding of social intentions and problem solving social or interaction difficulties. This was achieved by the therapist drawing a happy and sad ending followed by S1 deciding on the possible consequences of the social scenarios. Insight and empathy was facilitated by attributing emotions to faces in storybooks and in social stories. Real life conflict situations were presented in a story scenario to develop insight into his own and others emotions. This was reinforced in the class and at playtime by the assistant labelling emotions and problem solving ongoing social difficulties. Adults applied social stories related to events in the playground and peer interaction.

This was followed by training of all adults in his environment at home and school in the conversational rules and social stories. Key adults including the teacher and assistant observed individual sessions and received training on adapting their language input and giving S1 a strategy for signalling lack of understanding. Adults were trained to re-focus the topic to the relevant subject under discussion and prompt S1 when he used tangential speech. Visual symbols were used to aid generalisation of skills.

Outcome of intervention

Using adapted and re-phrasing spoken language to match S1's language comprehension was effective in supporting listening skills and increasing focusing on the curricular topic. Outcome measures of conversation skills showed some improvement in less dominance of the conversational floor and a decrease in conversational response problems. The use of visual pictures of social scenarios developed heightened understanding of social intentions and attributing emotions. Although reciprocal conversations were increased in rehearsed contexts, he needed continual prompting to apply appropriate social and conversation rules to novel social situations. But there are limitations to how much therapy can achieve with a child who has a marked degree of social impairments. Peer interactions were not changed; peers were particularly sensitive to the lack of social adaptation and meshing.

Conclusions

There is now convincing evidence that speech and language therapy produces beneficial effects on the language and pragmatic skills of children with PLI. The study reported here has generated methods and measures which can now be used in a larger scale group of these children. Using a synthesis model of social, cognitive and linguistic development to underpin language intervention planning and targeting of specific skills for individuals, significant gains were made, not just in pragmatics, but in other language abilities and educational attainments. There are variable effects however, so the research needs to be replicated with a larger cohort of subjects to tease apart which group of children benefit most from therapy.

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Appendix: Recommended published materials for pragmatic language intervention and key supportive texts

1. Anderson-Wood, S & Smith, B.R. (1997) *Working with Pragmatics*. Winslow, Bicester.
2. Bliss, L.S. (1993) *Pragmatic Language Intervention: Interactive Activities*. Thinking Publications. USA.
3. Brinton, B. (1989) *Conversational management with language-impaired children*. Rockville: Aspen.
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