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1. Introduction

1.1 Schizophrenia: the disorder

Schizophrenia is a severe mental illness which affects approximately 1% of the population worldwide (Williamson 2006). It is a disorder which is characterised by a constellation of symptoms with patients presenting heterogeneous profiles of symptomatology (McKenna 2007). The symptoms of the disorder have been conceptualised as clustering into two groups – a positive symptom cluster and a negative symptom cluster (Crow 1980). Positive symptoms are defined as abnormal by their presence and include such symptoms as delusions and hallucinations (Frith and Johnstone 2003). Delusions are ‘fixed false beliefs’ and may be of different types, such as delusions of grandeur (e.g. that one is God) and delusions of persecution (unfounded belief that others are attempting to harm one in some way) amongst the common presentations. Hallucinations - the abnormal perceptual experiences in the absence of any sensory stimulus - may affect any of the senses, but are most commonly auditory in which the individual may hear voices of unseen people, for example. Negative signs involve those presentations which are a paucity of typical function such as avolition and social withdrawal (Daibenton and van Rensburg 2001). Individuals with the disorder may present with a combination of positive and negative symptomatology, with some symptoms being more prominent than others.

Problems in social function and communication are one of the hallmark features of the disorder and have a significant social impact for those individuals presenting with such difficulties. As in the case of psychiatric symptoms, the presentation in terms of language and communication functioning is very variable (Covington et al. 2005). While impairments have been described at different levels of language functioning, such as impaired semantic or syntactic abilities, Frith (1992) suggests that “errors at these levels can be explained as the consequences of higher level processing failure” (p.98). It appears that it is at the level of *language use* or pragmatics that people with the disorder are most likely to have difficulty.

1.2 Pragmatics and Metarepresentational abilities in people with schizophrenia

The investigation of pragmatic abilities in people with schizophrenia has generally relied on structured experimental tasks with the vignettes in which participants need to interpret a character’s utterance. An area which has generated a significant amount of interest and support is the investigation between poor performance on tasks designed to elicit responses related to pragmatic processing, and an impairment in Theory of Mind (ToM) – defined as the individual’s ability to “impute[...] mental states to himself and others” (Premack and Woodruff 1978, 515). Associations have been described between poor performance on ToM tasks and proverb comprehension (e.g. Brune and Bodenstein 2005), irony comprehension (Langdon, Davies and Colheart 2002) and interpretation of ‘indirect speech acts or ‘hints’ (e.g. Corcoran, Mercer and Frith, 1995). The interpretation of metaphors has been demonstrated to be selectively impaired in some individuals, but not associated with ToM (e.g. Langdon et al. 2002). Difficulty with adherence to Gricean maxims is also reported (e.g. Corcoran and Frith 1996), with specific difficulty in adhering to conventions of politeness and tact (e.g. Corcoran and Frith 1996). In analysing these tasks, Corcoran and Frith (1996) suggest that the markedly poor performance of individuals with prominent negative symptoms can be interpreted as an “ignorance of the existence of conversational rules” (Corcoran and Frith 1996, 314), while the more selective deficits seen in those with paranoid symptoms reflect “problems with on-line mentalizing” (Corcoran and Frith 1996, 314).

Frith’s (1992) theory of an ‘abnormality in metarepresentation’ is a mentalizing model of the disorder which attempts to develop a unified account to explain the heterogeneous symptoms seen in schizophrenia. A metarepresentation can be defined as “a representation of a representation: a higher-order representation with a lower-order representation embedded within it” (Wilson 2000, 411), and the ability to entertain metarepresentations are crucial to cognition and communication (Sperber 2000). The

model suggests that an abnormality in metarepresentation, and its cognitive consequences, are what underlie the signs and symptoms of people schizophrenia, including their communicative functioning (Frith, 1992). Frith (1992) suggests that the ability to metarepresent our own or others' *mental states*, "enables us to be aware of our goals, our intentions, and the intentions of others" (Frith 1992, 134). The specific difficulty in representing mental representations encompasses the notion of 'Theory of Mind'.

Research has generally supported the notion that individuals with schizophrenia have difficulty attributing mental states to others (impairment in ToM, or 'mentalizing') (Corcoran and Frith 1996; Corcoran, Mercer and Frith 1995; Pickup and Frith 2001; Corcoran 2000). In reviewing the research which has set out to investigate Frith's metarepresentational model, Corcoran (2000) suggests that the following generalizations emerge: People with negative symptoms have difficulties in mentalizing, which extend to 2nd-order ToM tasks (being able to attribute to others' beliefs about beliefs) while people with paranoid symptoms experience more subtle and selective difficulties in mentalizing, including instances of 'over-mentalizing', or inferring intentions where none exist. Finally, the impairment in ToM in people with schizophrenia is acquired, rather than developmental, and therefore not as severe as seen in people with autism. Research has supported the association between pragmatic performance and ToM ability in people with schizophrenia.

Despite the clear experimental evidence to support a 'mentalizing' model of pragmatic deficits in people with the disorder, limited work has been done on conversational data. An investigation of conversational data by McCabe, Leudar and Antaki (2004) revealed evidence of intact ToM, with participants able to report on the mental states of others and design their conversational contributions in accordance with their hearers needs. This paradox in results of experimental design tasks and the analysis of conversational data requires explanation and further investigation.

1.3 Metarepresentation and Relevance Theory

Relevance Theory (RT) is an inferential approach to pragmatics which attempts to account for how hearers arrive at their interpretation and how speakers choose to make their utterance 'optimally relevant'. The 'driving force' behind pragmatic processing is seen as Relevance – defined as a property of the cognitive effects of the input balanced against the processing costs to achieve that cognitive effect. A particularly useful aspect of RT is its ability to address the metarepresentational demands of verbal communication. RT not only allows for the analysis to take into account how the interlocutors consider their partner's 'perspective' in the communication process, but also how communicators deal with complex cases of linguistic metarepresentation.

One prediction of Frith's model of schizophrenia is that the person with schizophrenia "fails to take account of the knowledge of the listener when constructing their utterances" (Frith, 1992 p.106). This model would therefore predict that there is a disturbance in the ability to "separate their listener's knowledge state from their own" (Corcoran, Mercer and Frith, 1995). The predicted impact of the metarepresentational abnormality is far-reaching:

"The schizophrenic knows well that other people have minds, but has lost the ability to infer the contents of those minds: their beliefs and intentions. They may even lose the ability to reflect on the contents of their own mind. However, they will still have available ritual and behavioural routines for interacting with people, which do not require inferences about mental states" (Frith 1992, 121).

From a RT perspective, however, communication is inherently inferential. Inferring intentions – informative and communicative intentions, is at the heart of successful communication. The communicators must not only be able to infer intentions but also entertain a mutuality of context. The notion of 'the mutual cognitive environment' (Sperber and Wilson 1986/1995) suggests that in interaction, the communicators are aware of the set of assumptions which are potentially available (manifest) to each other. The awareness or mutual manifestness of such a context is essential for successful communication:

"A speaker who intends an utterance to be interpreted in a particular way must also expect the hearer to be able to supply a context which allows that interpretation to be recovered. A mismatch between the context envisaged by the speaker and the one actually used by the hearer may result in a misunderstanding" (Sperber and Wilson, 1986/1995, p. 16).

Communication is not only inherently inferential, but also inherently metarepresentational. Sperber (1994, 197), based on the premises of RT, asserts that:

“Fully fledged communicative competence involves, for the speaker, being capable of having at least third-order metarepresentational communicative intentions and, for the hearer, being capable of making at least fourth order metarepresentational attributions of such communicative intentions”.

Given the reliance of communication on metarepresentational abilities, a disturbance in these abilities would lead to disruption in the process of conveying one’s intentions and interpreting the intentions of others. As suggested above, the predictions of Frith’s (1992) model remain to be empirically demonstrated in conversational interaction – the ‘natural habitat’ of communication.

1.4 ‘Mentalizing’ and communication: what is the relationship?

The ability to entertain complex metarepresentations is arguably unique to humans and central to understanding human, and particularly communicative, behaviour (Sperber 2000). The inferential processes that RT articulates as being at the heart of human communication seem akin to processes described as ToM or ‘mentalizing’ in the psychology literature. In essence both seem to involve a process of representing what another person ‘has in mind’ – a process which requires that one’s own perspective is represented as separate from that of another. However, there are several lines of evidence which suggest that what is typically tested as ToM ability cannot account for the pragmatic processes of communication. The developmental literature has clearly demonstrated that infants ability to interpret communicative behaviours vastly pre-date their ability to pass standard ToM tasks – suggesting that ToM tasks demand different cognitive abilities to what is required to interpret communicative behaviour. In addition, none of the accounts of ToM processes are able to explain how the identification of the intention behind an utterance is both the process and fulfillment of an instance of communication (See Sperber 2000 for discussion of this argument).

Recent work by Sperber and Wilson has built on these arguments and revisited the position ToM abilities underlie the communication process and instead posit the existence of a specialized ‘comprehension module’ (Sperber and Wilson 2002). This module is hypothesized to be a dedicated module that is able to process verbal communication which “presents special challenges, and exhibits certain regularities, not found in other domains”. They propose that this “metacommunicative module” is a “specialization of a more general mind-reading module” (Sperber and Wilson 2002, 5).

Although people with schizophrenia have shown consistent difficulty on experimental tasks tapping pragmatic processes, there is a chance that these tasks in themselves incorporate a level of abstraction which triggers the involvement of other cognitive processes not necessarily at play in online pragmatic processing (Bloom and German 2000; Mascaro and Sperber 2009). Communicative processes contextualized in conversation maintain the level of online processing which is hypothesized to be the domain of the proposed metacommunicative ability or “comprehension module”. Analysis of function in conversation thus stands to provide information on those metacommunicative computational processes underlying online utterance interpretation in this clinical population.

Given the cognitive nature of the models of schizophrenia, a cognitive-pragmatic account of communication may be best placed to investigate such impairments. Given that Frith’s model of schizophrenia asserts that the disorder is fundamentally a disturbance in metarepresentation, RT is particularly well-placed as a tool with which to approach an exploration of conversational data.

1.5 A Relevance Theory approach to Questions: a window into the metarepresentational abilities of people with schizophrenia

The specific focus of this paper is a preliminary analysis of how the person with schizophrenia interprets questions. Investigating the interpretation of questions is particularly pertinent in investigating metarepresentational abilities in conversational data for two reasons – one methodological and one theoretical. Practically, in dealing with recorded conversational data, questions provide relatively clear evidence for their interpretation, given that they are generally followed by a response which provides indirect evidence for how they were interpreted. From a theoretical standpoint, the inherent metarepresentational qualities of questions makes them fertile ground for such an exploration.

Interrogatives, from a RT perspective, represent relevant answers, specifically “represent desirable thoughts (or desirable information)” (Wilson 2000, 154). Questions therefore represent a representation and are, as such, instances of interpretive use which are inherently metarepresentational. Echo Questions, as utterances which act to question some aspect of a thought or utterance attributed to another person, involve an “additional metarepresentational element” of attributed representations (Noh 2000, 145). The existence of two groups of questions, both requiring metarepresentational skills for their use and interpretation, but separated by the feature of attribution is potentially useful in investigation of subtle pragmatic difficulties. A distinction in the performance on regular versus echoic questions has been predicted in individuals with difficulties with second-order ToM tasks which rely inherently on attribution of thoughts to others (Wilson 2000).

The practice of ‘anticipating questions’ (Carston 2002, 146), seen in typical interaction, involves the speaker anticipating where relevance lies for a questioner and providing this information even if it is not explicitly represented as relevant by the question. For example, although yes-no questions represent confirmation/disconfirmation as relevant, there may be further information implicitly represented as relevant in an answer. “Helpful speakers” (in this case responding to a question) provide the information represented by the question as relevant at minimal processing cost (van der Henst, Carles and Sperber 2002, 458) and therefore should ideally anticipate what may be relevant for their conversational partner in that context. If this practice of ‘anticipating questions’ could be demonstrated in the hearers with schizophrenia, this would provide evidence for not only being able to engage in metarepresentational processes inherently demanded by questions, but also an ability to ‘predict’ the questioner’s desired cognitive effects – which is surely a metacommunicative act.

This paper presents a preliminary analysis of four extracts from conversations with people with schizophrenia. The analysis is focused on considerations of how different question forms, as inherently metarepresentational structures, are interpreted by the individuals with the disorder. This approach will begin to answer the question of “is there evidence for impaired metarepresentational abilities in the conversational performance of people with schizophrenia?”

2. Methodology

The data set presented here is taken from a larger set of data which forms the basis for an ongoing PhD study. The larger PhD study involves a qualitative analysis of communication behaviours of those participants displaying delusional talk exploring metarepresentational (dis)ability using Relevance Theory. Data was collected within a specialized psychiatric hospital setting. All participants were from non-forensic, acute wards of a large psychiatric hospital in South Africa. Ethical approval was sought and granted by the Trinity College Dublin Faculty of Health Sciences Research Ethics Committee and also by The Human Research Ethics Committee (University of the Witwatersrand, South Africa) as the ethics committee overseeing research conducted at the hospital.

2.1 Participants

In this paper, the preliminary exploration of question interpretation is based on extracts from 2 of the participants presenting with delusional talk. The participants are referred to by their transcription codes – BRF and HLD.

The Positive and Negative Syndrome Scale¹ (PANSS), carried out by consultant psychiatrists, was scored using the Standard Model (Kay, Opler and Fiszbein 2006). In this paper the Composite Index and the Paranoid/Belligerence cluster score are reported. The composite score represents relative preponderance of negative-positive symptomatology. Positive scores on the Composite Scale thus suggest a predominantly positive profile of symptoms, while a negative score suggests prominent negative symptomatology. The Paranoid Belligerence Scale includes items of the PANSS which relate to paranoia. The participants chosen for the preliminary analysis represent the different profiles of positive and negative symptomatology. BRF presents with prominent positive symptoms (paranoid delusions), and HLD with more prominent negative symptomatology, as based on scores on the PANSS (Kay, Fiszbein and Opler 1987).

¹ A medical scale used in the rating of symptoms of schizophrenia

Table 1. Participant Characteristics

Participant	PANSS Composite	PANSS Paranoid	Performance on a structured discourse task: implicit attribution of mental states
BRF	9 (93 rd percentile)	8 (68 th percentile)	Successful in identification of deceitful intentions & false beliefs
HLD	-13 (8 th percentile)	3 (8 th percentile)	No evidence of consideration / attribution of mental states

The participants performance on a structured task involving implicit attribution of mental states is also presented in Table 1. This rating was based on performance on a discourse level task in which participants produce several responses after listening to a Fable. Comprehension of the fable is inherently dependant on the participants' ability to metarepresent attributed beliefs, desires and intentions to the characters. A scoring method was developed and piloted (Jago, in preparation; Jago and Bernath, in preparation) to reflect the degree of mental state attribution achieved by the participant. The participants selected allow for initial consideration of whether the patterns of performance are in keeping with the predictions of Frith's (1992) model and the hypothesis and individuals with difficulty on mental state attribution tasks would have proportionally greater difficulty on tasks involving increasingly complex linguistic metarepresentation.

2.2 Data Collection and Analysis

The conversational data is comprised of audio-recorded conversations between the researcher (coded as REA in the extracts presented) and the individual participants (BRF and HLD). The conversational data occurred around formal language assessment tasks and during refreshment breaks from these tasks, with the bulk of conversation occurring during refreshment breaks. At the time of data collection, the analysis as one of a reflection on metarepresentational abilities, was not decided and thus no specific agenda in terms of manipulating the conversation existed. Several factors were considered in facilitating the interaction. The first principle was that the conversation occurred in a naturalistic way as far as possible, with the researcher engaging in the conversation as a participant. Secondly, the participants conversational and topic lead was followed wherever possible and situationally appropriate². The final consideration was that of topic introduction. Where the participant did not naturally introduce a topic, the researcher would use a question related to a closed set of topics related to the setting and experiences of the participant (occupational therapy attendance, relationships within the ward, activities or work outside the hospital or comments on environmental stimuli).

Transcriptions of conversations between the researcher and people with schizophrenia which were transcribed using CHAT transcription and coding format (MacWhinney 2000). Relevance Theory was used to analyse all interactions, with specific focus on features which shed light on the manifestation of metarepresentational abilities in conversation data. In this paper the preliminary analysis of question interpretation is reported on two participants.

² Appropriateness was determined situationally – overt sexual or racial topics or aggression were all deemed inappropriate in the context and the topics terminated.

3. Findings

3.1 Performance of Participant 1: BRF

In extract (1) below, BRF is relating her concerns about the side-effects of her medication. The experience she is talking about is a common side-effect and the talk is considered non-delusional.

- (1) 75 *BRF: the medicine is making my jaw # too too too slow. •
76 *REA: mmhm. •
77 *REA: have you spoken to the doctor about it? •
78 *BRF: I did. •
79 *BRF: she gave me an injection, but it's not helping. •
80 *BRF: every morning when I wake up I'm fine as soon as I take the
81 medication it starts from # the beginning. •
82 *REA: mmhm. •

BRF answers the regular yes-no question in line 77, “*have you spoken to the doctor about it?*” directly in line 78, providing the confirmatory answer requested by the question. Despite the fact that yes-no questions explicitly represent only a confirmation or disconfirmation as optimally relevant, BRF appears able to anticipate what further information is implicitly represented as relevant, elaborating on her direct confirmation to provide a response which addresses the implicit question of “*what did the doctor say about your complaint?*”? Her response in lines 79-81 gives direct evidence to suggest that she has anticipated that it is relevant to REA what the outcome of the interaction with the doctor was. BRF’s response appears to suggest a sensitivity to the hearer’s need within the context, requiring her to take into consideration what is mutually manifest and how the utterance can make the implicated conclusion more manifest (i.e. that the doctor has not helped). Evidence of this process of “anticipating questions” reflects an ability to ‘predict’ the questioner’s desired cognitive effects beyond what is overtly required by the utterance and is further evidence of the participant’s abilities in ‘mentalizing’.

Extract (2) represents delusional talk, in which BRF is talking about her ‘Samurai Ancestry’. REA asks a number of questions in this extract, both regular questions (lines 208-209, 214, 217, 220) and echo questions (212, 216). Lines 216 and 217 present a challenge to the analysis process taken here given that they represent an echo question followed immediately by a yes-no question. The result is that it is not possible to dissect BRF’s response in relation to the interpretation of either specific type of question.

- (2) 208 *REA: so if you were going to live in another country if you were going to
209 go on an adventure or visit another place where would you go? •
210 %Com: following language test item about old man being in another country
211 *BRF: go back home, to the samurai kingdom. •
212 *REA: to the samurai kingdom? •
213 *BRF: ja. •
214 *REA: what country is that? •
215 *BRF: uh, China. •
216 *REA: China, not Japan? •
217 *REA: Is it China? •
218 *BRF: China, Japan. •
219 *BRF: it's what's in the middle isn't it? •
220 *REA: so the Samurai country does it include China and Japan? •
221 *BRF: only China. •
222 *REA: oh only China. •
223 *REA: # I don't know too much about the samurai culture. •
224 *BRF: me neither I have to find out more. •

BRF’s responses to the regular questions (Lines 208, 214, 220) appear to present the information represented by the questions as relevant. Her response to the question in lines 208-209, although the content is bizarre, it presents the information represented as relevant – the name of a place she would like to visit. This response suggests then that her interpretation of the question was appropriate and her response is in keeping with her beliefs and assumptions, which are delusional in this respect. Similarly, her response to the wh-question in line 214, “*what country is that?*”, BRF provides the information represented as relevant. Again, in relation to the yes-no question in line 220, BRF clarifies by providing one of the options presented by REA as relevant.

In contrast to her successful performance in interpreting regular questions, BRF’s response to the echo question in line 212 appears to trigger a sequence of negotiation of meaning, suggesting that her response was not optimally relevant. BRF responds with a single confirmation (line 213) where in fact, the

information represented as desirable by REA would plausibly be more along the lines of why the Samurai Kingdom is considered home or where the Samurai Kingdom is (evident from the sequence of talk that follows). Interpreted in this way, the echo question in line 212 implicitly represents some level of elaboration as relevant. The apparent difficulty in metarepresenting the echo question may be related to the nature of the question – that of the additional layer of metarepresentation. However, it would appear that the difficulty may just as easily be explained as not an impairment in entertaining complex metarepresentations, but rather a difficulty in accurately representing the mutual cognitive environment. If delusional talk is taken to be talk about ‘fixed false beliefs’ then these false beliefs comprise a subset of the assumptions available to BRF and perhaps assumed to be mutually manifest encyclopedic knowledge. Thus, if BRF assumes that it is manifest to REA that far eastern countries are ‘home’, for example, she would be justified in interpreting the echo question as a request for confirmation of the original utterance.

3.2 Performance of Participant 2: HLD

The context of (3) is non-delusional talk involving HLD and REA, in which HLD has asserted that he supports ‘The Swallows’ soccer team, one of the local South Africa teams. In line 98 REA asks a question, using a negative proposition presented as an echo question. In this question she is metarepresenting an implicated conclusion attributed to HLD. The question can be interpreted as a metarepresentation of the higher order explicature, ‘*am I right in inferring that you don’t support the chiefs or pirates*’. HLD interprets this appropriately, to represent information about why he supports the Swallows over the Pirates or Chiefs (the more popular teams in South Africa), rather than a mere confirmation or disconfirmation.

- (3)
- | | | |
|-----|-------|---|
| 91 | *REA: | I also support the swallows. • |
| 92 | *HLD: | mean you? • |
| 93 | *REA: | me. • |
| 94 | *HLD: | ja, uh me and and I like swallows=. • |
| 95 | *REA: | =you love swallows=. • |
| 96 | *HLD: | at the home I I I support swallows. • |
| 97 | *REA: | okay. • |
| 98 | *REA: | you don't support chiefs or pirates? • |
| 99 | *HLD: | lai, chiefs is the is the young brother, man. • |
| 100 | *HLD: | I like swallows. • |

HLD’s metaphorical response includes a reason as to why he does not support the most popular team. By calling them ‘the younger brother’ within a culture revering older siblings and the older generation, he dismisses the team as having little to offer. This reasoned elaboration provides evidence that he has interpreted the echo question in line 98 and represented not merely a confirmation or disconfirmation but desired information incorporating a reason.

Extract (4) is taken from delusional talk in interaction with HLD. He is asserting that his father is in a national soccer team (‘The Swallows’). While ‘The Swallows’ exist as a soccer team, HLD has no familial connection to any of the players. REA asks a number of regular questions in this extract in lines 220, 229, 233 and 239. Of these instances, only the questions in lines 220 and 229 appear to be interpreted and answered in a manner which satisfies REA’s search for relevant information. HLD responds to REA’s question in line 220, “*which one is your father*”?, in a way which suggests that he has interpreted it as representing specific information as desirable and therefore relevant. Although the content itself appears to be delusional, (“*William Shakespeare*”) HLD does not appear to have had difficulty metarepresenting what information this question represents as desirable. He provides a name, an unexpected name, but a name or identity which suggests he has interpreted the question as representing the same. In response to REA’s question in line 229, HLD appears to anticipate that what is relevant to REA is not merely whether he read Shakespeare or not, but how he became familiar with William Shakespeare if not from the usual school environment. HLD’s response, “I didn’t read [...] this man he tell me”³, fulfills REA’s expectation of relevance by providing the context of his knowledge of Shakespeare. HLD’s response to the regular questions in lines 233 and 239 are less successful in satisfying REA’s expectations of relevance. In both cases he provides merely a confirmation where the

³ The grammatical structure of this utterance is in-keeping with Black South African English (BDAE) spoken by HLD

context (particularly the context of meaning negotiation) and intonation suggest confusion and indicates that REA is in fact representing elaboration and clarification as optimally relevant information.

HLD appears to have similar difficulties with the echo Questions in this extract (lines 222, 245, 247). In all three instances meaning negotiation is associated with their interpretation. REA's question in line 222, "*William Shakespeare*"? appears to be interpreted as a request for confirmation of an attributed utterance, rather than as a request for clarification. A similar pattern is noted in the interpretation of the echo question in line 247. HLD does not appear to be sensitive to the incredulity or confusion communicated by the intonation, nor is he aware of the contextual need for clarification.

- (4)
- | | | |
|-----|-------|--|
| 220 | *REA: | which one is your father? • |
| 221 | *HLD: | uh, William Shakespeare. • |
| 222 | *REA: | William Shakespeare? • |
| 223 | *HLD: | ja. • |
| 224 | *REA: | but William Shakespeare is a # a olden day author. • |
| 225 | *HLD: | huh? • |
| 226 | *REA: | he [/] William Shakespeare is someone who used to write stories. • |
| 227 | *HLD: | yes yes yes yes yes yes. • |
| 228 | *HLD: | is my father. • |
| 229 | *REA: | okay, did you read William Shakespeare at school? • |
| 230 | *HLD: | I didn't read his this man he tell me. • |
| 231 | *REA: | okay. • |
| 232 | *HLD: | ja. • |
| 233 | *REA: | is there a man called William Shakepeare in the swallows who plays |
| 234 | | soccer? • |
| 235 | *HLD: | yes yes #. • |
| 236 | *HLD: | yes. • |
| 237 | *REA: | does he have another name as well? • |
| 238 | *HLD: | huh? • |
| 239 | *REA: | does he have another name, this man, [William Shakespeare? • |
| 240 | *HLD: | lja, ja. • |
| 241 | *REA: | what's his other name? • |
| 242 | *HLD: | he's Jan van Riebeeck. • |
| 243 | *REA: | who plays for swallows! • |
| 244 | *HLD: | yes. • |
| 245 | *REA: | plays soccer? • |
| 246 | *HLD: | who? • |
| 247 | *REA: | Jan van Riebeeck? • |
| 248 | *HLD: | ja, ja, he plays soccer. • |

Given HLD's additional difficulty with some of the regular questions, it appears that he may have difficulty with the echoic aspect of these questions, specifically the attitude of confusion and incredulity communicated. A disturbance in interpreting echo questions appears evident, but the reason underlying this difficulty may be more than a pure difficulty with the degree of metarepresentation involved. Instead, it is possible that HLD has difficulty with the attitudinal aspect communicated in certain questions. In a number of the questions the intonation suggests an attitude of incredulity or confusion, which does not appear to be interpreted by HLD (that is he does not respond to refute the incredulity or clarify the confusion). However, as with BRF it is possible that his difficulty interpreting these specific questions is related not to the degree of metarepresentation involved, or even the attitudinal aspect of the utterance, but to the delusional nature of the talk. In all instances of interpretation difficulty, REA's questions are about delusional content. The nature of delusional beliefs implies that HLD is likely to presume that such assumptions are mutually manifest by virtue of being 'encyclopaedic knowledge' and hence require no explanation or clarification. Delusional content which he presumes is mutually manifest. In contrast, REA's question in line 229 refers to HLD's personal experience and, therefore, it is manifest to HLD that the interlocutor does not have access to the relevant assumptions.

4. Discussion

While the preliminary analysis of the data suggests that these two participants experience some difficulty in interpreting echo questions, the difficulty is by no means pervasive, nor is it confined to echo questions alone. Given the inherently metarepresentational nature of questions from a RT account, the successful performance of BRF and HLD on many of the examples attests to a level of ability not predicted by the 'mentalizing models' of the disorder. In other words, the performance appears to be different to what would be predicted on initial interpretation of Frith's model, given the psychiatric profiles of the

individuals involved. Indeed, despite Frith's model predicting that the individuals would have available to them only "ritual and behavioural routines for interacting with people, which do not require inferences about mental states" (Frith 1992, 121), the participants demonstrated sophisticated abilities to predict the cognitive effects sought by their interlocutor. Both participants also displayed instances of successful interpretation of echo questions, a feature not predicted given the additional metarepresentational and attributive characteristics of these types of utterances.

Disturbances in interpreting questions did occur, and appeared to perhaps be slightly more significant for HLD (extending to regular questions). This performance is in-keeping with the prediction that HLD would have more difficulty inferring what information is available to REA due to his prominent negative symptoms and the associated poorer implicit mental state attribution, confirmed on the structured discourse task (The Fable Task). Although on this extremely limited data set no strong conclusions can be drawn, this finding does partially support the hypothesis that individuals with more severe mentalizing disturbances would have greater difficulty with linguistic metarepresentation.

The difficulties in interpreting questions which emerged from the data on these two participants did appear to be concentrated in extracts of delusional talk. This pattern may suggest that there is something specific about delusional talk which influences how questions may be interpreted. As alluded to above, this feature may be the presumed manifestness of delusional assumptions. In other words, the difficulty in interpretation may occur not because of impairment in the pragmatic process of question interpretation but in the process of predicting what information is available to the conversational partner.

The question which arises is why these participants are so competent in conversation overall – engaging in pragmatic processes which are clearly metarepresentational in nature. The one clear possibility is that there are facilitators in the "online" mentalizing process. As suggested by Frith (2004), conversational demands on metarepresentational abilities may be qualitatively different from the demands in "offline" tasks which have been more traditional in the research on the topic. An intriguing possibility is that of "resilient metacommunicative abilities". Although not conclusive from the preliminary analysis presented, it does seem possible that the metarepresentational abilities which are robustly manifest are those which are clearly metacommunicative or processes served by the proposed "comprehension module". The difficulties appear, it seems, at the interface between metapsychological abilities of mentalizing and the metacommunicative processes involved in the pure process of utterance interpretation. This may be occurring either (1) when there is overt demand on predicting what assumptions are available to the interlocutor, or (2) in processing the attitudinal information of the questions, an ability which would appear to be a candidate process for the metapsychological or ToM module. If this approach is extended, it would imply that online pragmatic processes are far more resilient in people with the disorder than has been previously thought. The reported poor performance on structured controlled pragmatics tasks may be reflecting a difficulty with a degree of abstraction and mentalizing present in these tasks but not necessarily in the 'online' processing of utterances.

The investigation of the communicative abilities of individuals with schizophrenia stands to benefit from a cognitive-pragmatic account of interactional behaviour. RT has been shown to be useful in approaching such data, and as such should be considered a potential tool to explore the complexity of conversational data in a clinical pragmatic domain.

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