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LANGUAGE CHARACTERISTICS IN SCHIZOPHRENIC PATIENT COMMUNICATION IN GUIDED INTERVIEWS – A FUNCTIONAL LINGUISTIC CASE STUDY

Abstract

The case study presents the preliminary results of an interdisciplinary research related to doctor-patient communication. Discourse analysis is particularly relevant in the context of psychotherapeutic consultations, where the success of the communication and the therapy largely depend on the patient's capacity to adequately interpret the interlocutor's inner mental states, referred to as mentalisation. Numerous studies have outlined that individuals with schizophrenia have mentalising deficiencies, which may be reflected in their language use. The case study involves guided interviews related to Hemingway's short story entitled *The End of Something* conducted by a PhD student of psychology and a patient with schizophrenia and a control participant, separately. The dialogues are analysed from a functional linguistic approach with a special focus on deictic elements in order to describe and categorize the language use of patients with schizophrenia. The findings revealed mild forms of deficiencies at the microlinguistic level, as opposed to more significant impairments on the macrolinguistic level including deictic expressions and Grice's conversational maxims. Hopefully, these findings may contribute to a somewhat deeper understanding of the language use of patients with mental disorders from a pragmatic aspect as well as to the success of psychotherapeutic sessions by offering further methods.

Keywords: doctor-patient communication, schizophrenic speech, mentalisation, deixis, functional pragmatics, short story task

1   Introduction

The doctor-patient conversation has been a popular research area over the past 50 years (Bigi, 2016). Numerous studies have confirmed the importance of medical communication, which not only contributes to patients' satisfaction but also improves their therapeutic co-operation (Pilling, 2018). Applied linguistic research focusing on discourse- and conversation analysis have revealed the continuous interplay of verbal and non-verbal factors during communication. The application of these results in the context of medical communication is particularly exciting (Bigi, 2016). Similarly, analysing doctor-patient communication with special regard to individuals with mental disorders is of outstanding relevance nowadays. According to WHO's data[1] one in four people are affected by some form of mental disorder, including schizophrenia (Pilling, 2018, cf. WHO data).

Schizophrenia is a mental state associated with symptoms of hallucinations, delusions, disorganized speech and behaviour, leading to the impairment of attention, memory, language use, executive functions, and emotions. Moreover, individuals with schizophrenia often display associative disorder and predominantly rely on concrete reasoning suggesting the incapacity of abstract thinking (Tényi, 2009). This deficiency is particularly relevant in the case of understanding non-literal language (metaphors, irony and Gricean conversational implicatures) explained by the fact that the comprehension of these utterances requires pragmatic language skills (Varga et al., 2014).

Since the second half of the 1990s, a large number of studies investigating mentalizing skills of individuals with schizophrenia have indicated that their skills are reportedly impaired or underdeveloped (Thibaudeau et al., 2017), suggesting that they are likely to face difficulty detecting and interpreting others' mental states (Doddel-Feder et al., 2013). These deficits can create substantial handicaps for these individuals on the level of communication and interpersonal skills. As a consequence, schizophrenic individuals cannot adequately take part in social life, their standard of living is low, and they are exposed to marginalization in all aspects of life. Hence, communication impairments associated with schizophrenia are a central issue to investigate in order to optimize their quality of life and functioning in society on both personal and professional levels (Joyal et al., 2016).

Recent studies aim to establish appropriate speech and language therapy (SLT) as part of rehabilitation for patients with schizophrenia by improving their pragmatic or expressive discursive skills. Evidence shows that certain areas of language can be treated through therapy. However, it is difficult to define the type of approach that should be implemented to treat language impairments in schizophrenia (Joyal et al., 2016) because linguistic characterization of schizophrenia depends on which aspects of speech are affected. The impairment of speech production typically refers to formal thought disorder, anomalies in speech perception are associated with verbal hallucinations, while impaired speech content may point to delusions (Hinzen & Rosselló, 2015).

Being a complex research area, studying the mentalising- and language skills of individuals with schizophrenia requires a multifaceted approach involving psychology, psychiatry, neurology, sociolinguistics, and applied linguistics, especially pragmatics. Studies have outlined

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1   World Health Organization: Mental disorders affect one in four people.

that schizophrenia can be clearly indicated by certain communication impairments, and more specifically in the areas of pragmatics and discourse understanding (Joyal et al., 2016). Communication impairments in schizophrenia can be traced in both oral production and comprehension (DeLisi, 2001 in Joyal et al., 2016). As evidence shows, impaired pragmatic and discursive abilities include low self-disclosure in conversation (Byrne et al., 1998 in Joyal et al., 2016), less information provided in narratives (Byrne et al., 1998; Tavano et al., 2008 in Joyal et al., 2016), and difficulty to produce appropriate interpretations (Tavano et al., 2008 in Joyal et al., 2016). Such impairments can be classified as minimal impairments, lexical impairments and interactional impairments (Joyal et al., 2016). Furthermore, pragmatic deficits in schizophrenia have been associated with impairment in theory of mind (ToM) (Brüne & Bodenstein, 2005; Mazza et al. 2007 in Joyal et al, 2016).

To our knowledge, data on linguistic-pragmatic disturbances in individuals with schizophrenia are scarce. More specifically, few studies have aimed at establishing effective methods to improve speech and language skills in individuals with schizophrenia with impaired mentalising skills. Improving mentalising skills via language use is an unexplored area, especially in the context of psychiatry, where the place of SLT is small and circumscribed. However, in recent years, projects have started to explore the potential development of SLT in adults with schizophrenia in hopes of legitimating SLT in adult psychiatry (Joyal et al., 2016). The primary objective of the present case study is to explore linguistic-pragmatic impairments in this patients group with the help of a functional linguistic approach to analyse the language use of individuals with schizophrenia, whose speech may reflect mentalizing deficiencies (Herold, 2005). The functional linguistic analysis particularly focuses on the phenomenon of deixis, which can be defined as "an operation that extends discourse interpretation to involve the participants' physical and social world; that is, to rely on their contextual knowledge based on their mental processing of spatial, temporal, and interpersonal relationships of the given speech situation" (Tátrai, 2010, p. 232).

The present case study targets the description of recurring linguistic patterns based on deictic expressions contained in the selected corpus involving one patient and one control interview. The analysis also concentrates on the violation of Gricean maxims. The examples illustrate the relation between mentalising deficits and linguistic disturbances.

2   Mentalising skills and language use

Theory of mind (also known as ToM, mindreading, or mentalisation) refers to the capacity and skill to "conceptualize other people's mental states (e.g. their beliefs, knowledge and intentions) and hence to explain and predict their behaviour" (Herold, 2005, p.13). Mentalising skills have two major types: cognitive and affective skills, which can be either implicit (automatic) or explicit (deliberative) (Turner et al., 2017). Cognitive mentalizing skills are understood as the capacity to draw inferences from others' beliefs and intentions, whereas affective mentalising skills imply drawing inferences from others' emotions (Sebastian et al., 2012). The success of communication – the pragmatic aspect of language – depends on the extent to which one is able to properly infer the conversation partner's beliefs and intentions. A significant part of communication can be successfully realised with the help of linguistic tools, for example the use of deictic expressions reflecting the speaker's perspective in the

context of communication (Tátrai, 2011). Multiple studies have maintained that improving mentalising skills cannot be separated from language use, these capacities at least partially depend on it (Hinzen & Rosselló, 2015).

Language is a crucial instrument in the development of mentalising skills. Out of the different linguistic fields, pragmatics studies the interlocutors' intentions and language use, that is, the way utterances are interpreted. Reflecting on others' mental states and the capacity of adequate language use are closely related processes; hence, presumably the investigation of mentalising skills and pragmatics may also yield some corresponding results (Herold, 2005). Former studies have shown evidence that language and mentalising skills are closely related phenomena, which explains how the low mentalising performance of individuals with schizophrenia is linked to their linguistic-pragmatic skills (Herold, 2005, p. 16). As language is closely related to mindreading capacity, the impaired mentalising skills are likely to reflect themselves in impaired linguistic expression.

The underlying reason for selecting these criteria is on the one hand due to the fact that schizophrenic patients commonly face difficulty in representing others' perspectives related to the context of the communication. The case study illustrates these disturbances linguistically via a tool of reference known as deixis. On the other hand, individuals with schizophrenia also show deficiency in abiding by certain maxims associated with the cooperative principle during communication.

Grice (1975) has established four conversational maxims that the partners of communication are expected to respect and follow. The four maxims include a. the maxim of quantity "Say enough to be informative, but do not say too much" b. the maxim of quality "Be truthful" c. the maxim of relation "Be relevant" d. the maxim of manner "Be clear in what you say, avoid ambiguity or obscurity, be brief and orderly in your contribution."

Several studies have pointed out that individuals with schizophrenia often display difficulties and errors at the microlinguistic level of language including phonology, morphology, syntax and semantics. However, more severe forms of impairments can be detected at the macrolinguistic level of language use involving pragmatics, the language use in context (Tényi et al., 2002). In order to illustrate language impairments realized in the form of semantic, syntactic, morphologic and pragmatic violations, the functional linguistic analysis of the case study focuses on the phenomenon of deixis and two of the four conversational maxims defined by Grice that have been violated by the patient with schizophrenia in the analysed interviews of the selected corpus.

2.1   Deixis and mentalising skills

Deixis originates from the ancient Greek term 'deiktikos' meaning indicating or pointing. Deixis belongs within the domain of pragmatics because it directly concerns the relationship between the structure of language and the context in which they are used (Levinson, 1983), i.e. understanding the meaning of certain words and phrases in an utterance requires contextual information, involving the participants' physical and social world, more specifically "the spatial, temporal, and interpersonal relationships of the given speech situation" (Tátrai, 2010, p.232). Discourse participants experience and process the physical world from their

own perspectives, but "that process is embedded in socio-cultural praxis, due to the fact that the operation of deixis presupposes social interaction" (Tátrai, 2010, p. 232).

Deixis is one of the most commonly used tool of reference and perspectivization in prose. It can be classified into three categories: person deixis (e.g. *you, us*), spatial deixis (*here*, *there*), and temporal deixis (*now*, *then*). Correspondingly, temporal deixis points to the time of the discourse or to events that can be interpreted within a specific time frame. Spatial deixis refers to the physical aspects of the discourse, whereas personal deixis represents the interpersonal relations between the participants of a specific discourse (Tátrai, 2011). Deixis can be realised with the help of deictic elements, deictic expressions, deictic markers or deictic words; they are also called indexicals. Words are deictic if their semantic meaning is fixed, but their denotational meaning varied depending on time and/or place (Levinson, 1995 in Dylgjeri, & Kazazi, 2013). By using deictic elements – primarily personal and demonstrative pronouns, verbal personal suffixes or possessive markers and definite articles among others –, the interlocutor can indirectly refer to the situational context of the discourse (Tátrai, 2011). Therefore, deixis plays an essential role in indicating the complex perspectives of dialogues. The deictic elements are organized in an "*egocentric way*" (Tátrai, 2011) around a deictic centre (*I*, *here*, *now*), where the point of reference is the speaker. With the help of deictic expressions, the interlocutors are continuously analysing and interpreting their surrounding environment, implement this knowledge into the context usually by representing their perspectives with the tools of language (Tolcsvai, 2006). The speaker employs deictic expressions in order to draw the addressee's attention to the speech situation, or to an object or event occurring in it, or to a constituent or property of such an object or event (Tátrai, 2010). More precisely, the speaker refers to the spatial, temporal and personal dimensions of the discourse, and the interlocutor will draw upon the perspectives proposed by the speaker. Therefore, it is possible to link mentalising skills and deictic expressions because it can be suggested that the speaker activates the addressee's mentalising skills by enouncing deictic elements. However, the speaker is required to respect the crucial principle of applying deixis; that is, associating the referenced entity with the context in such a way that the interlocutor can mentally access it with the least possible effort (Janssen, 2002 in Boronkai 2010).

Based on predictions formulated in recent research, the use of deictic and definite noun phrases can be predicted to be impaired and anomalous (Hinzen & Rosselló, 2015). Therefore, our hypothesis is that the more forms of deictic references are used grammatically, the more they are likely to reflect linguistic anomalies and impairments. In order to test this theory, the case study targeted the analysis and comparison of deictic elements in the language use of an individual with schizophrenia and a healthy control subject via guided interviews based on a short story task.

2.2   A new method to improve mentalising skills via language use

Recent studies have proposed that providing short story tasks for individuals with schizophrenia can be considered one possible and highly effective method for improving mentalising skills. Reading literary fiction provides the opportunity to ameliorate empathy, broaden one's knowledge about others' thoughts, emotions and intentions. While reading literary fiction,

the reader is called to activate mentalising processes including mindreading and imaging or interpreting specific characters of a short story (Kidd & Castano, 2013).

The present case study is based on Ernest Hemingway's short story entitled *The End of Something*. There are specific reasons why the research study applied by Dodell-Feder et al. (2013) relied on Hemingway and this specific short story. On the one hand, the short story has a direct style and a language easy to understand: it relates a conflict between a romantic couple, more exactly the end of their relationship as the title suggests. Nick, the male protagonist has a dispute with his girlfriend, Marjorie, and eventually breaks up with her. On the other hand, Hemingway is recognized for his unique style also referred to as the "iceberg theory", meaning that he does not explicitly uncover the characters' inner mental world. Hence, the readers are required to draw mentalising inferences of the characters' inner thoughts, emotional states or intentions, necessary for interpreting the story (Dodell-Feder et al., 2013). The linguistic representation of mental states can be realised via expressions linked with perception (describing experiences), desires (e.g. likes), basic emotions (e.g. angry, scared), social emotions (e.g. envious, guilty), intentions (e.g. wants), or other cognitive terms (e.g. knows) (Langdon et al., 2017).

During the story, characters often display signs of sarcasm, non-verbal and indirect communication, complex emotions (e.g. shame), and sometimes they even try to conceal their emotions or intentions from other characters. As Hemingway does not explicitly state these contents, the reader is called to draw mental state inferences of first-order (inferring a character's thought and emotions) and second order (inferring what one character thinks about another character's belief, thoughts, intentions, emotions or actions) in order to understand the characters' inner mental state and social interactions (Dodell-Feder et al., 2013).

3   Method

3.1   Corpus

The corpus of the functional linguistic research involves guided interviews between a PhD student of Psychology and individuals with schizophrenia displaying mentalising difficulties treated at the Department of Psychiatry of the University of Pécs, Hungary, and control participants with no diagnosed disorders, respectively. The method of guided interviews was used in order to assess mentalizing performance in the two distinct groups. The entire corpus consists of 95 guided interviews including 47 individuals with schizophrenia and 48 controls. However, the case study presents the results of the linguistic analysis of guided interviews conducted in the Hungarian language involving one individual with schizophrenia and one control participant who were randomly selected. The guided interviews follow 14 questions related to Hemingway's short story entitled *The End of Something* (Appendix 2). The study design was approved by the Committee on Medical Ethics, University of Pécs (ethical permit number: 6539).

3.2   Methodological procedure

The interviews were digitally recorded by the experimenter. In line with previous research methodology (Dodell-Feder et al., 2013), before reading the short story, participants received the following instructions:

> *"You are going to read a short story called The End of Something. The story is only a few pages, but take your time reading it. Try to get a sense of what happens and what the relationships are between the characters. After you're finished, I'm going to ask you some questions and tape-record your responses. Do you have any questions before we begin?"*

Participants were asked to read the short story in Hungarian prior to the interview. Next, the experimenter asked a series of 14 open-ended questions in a structured format. Participants were allowed to consult the text in case they needed to check specific details. Before starting the guided interview, the participants were instructed as follows:

> *"Now I'm going to ask you some questions about the story. Here is a copy of the questions I'll be asking so you can read along. For most of the questions, there are no right or wrong answers and the questions can be answered with short responses. We're also interested in the character's thoughts, feelings and intentions when it applies to the question."* (Dodell-Feder et al., 2013).

The 14 questions are designed to assess mentalising performance. Of them, 5 questions are related to comprehension (participants are invited to give a brief summary of the plot), 1 question investigates spontaneous mental state reasoning, and 8 questions are directed to explicit mental state reasoning (inferring the characters' thoughts, emotions and intentions) (Dodell-Feder et al., 2013).

As a first step of the analysis, the .wma audio files were transcribed by the author with the help of Folker 1.2 transcription software, which can also provide information regarding the number and length of turns and pauses as well as the number of tokens and types in the dialogues. The examples are drawn from the original Hungarian transcriptions and are translated into English by the author. However, during the translation process, major differences in the morphological and syntactical structures in Hungarian and English could be identified and taken into account in order to demonstrate similar morphological and syntactical errors in English, especially in the case of suffix endings, as illustrated later in [1a], where the absence of the suffix in Hungarian is translated with absence of a complementary preposition in English.

The case study predominantly applied manual qualitative analysis of the answers given to the 14 interview questions from a linguistic perspective.

As previously mentioned, the qualitative analysis investigates deictic expressions contained in the Hungarian corpus reflecting linguistic forms of cognitive and affective mentalising skills. The interviews were analysed with the help of discourse analysis, focusing on deictic elements in the speech of individuals with schizophrenia. Analysing the frequency of deictic expressions used during the interviews as well as the different types of deixis typical of each conversation were thought to help describe the participants' cognitive and affective mentalising skills.

The investigated categories including micro- and macrolinguistic features, linguistic expressions linked to affective and cognitive mentalisation, mentalising phrases related to perception, as well as examples illustrating the 3 major types of deixis (temporal-, spatial-, and personal deixis) are labelled in italics in the Results section.

4   Results

4.1   Type-token ratio

The case study was based on mixed methods. The quantitative analysis aims to evaluate and compare the participants' vocabulary by investigating the type-token ratio. During the discourse, the patient used altogether 211 tokens and 93 word types (0.44), whereas the control participant used 259 tokens and 140 word types (0.54).

The following paragraphs list the results of the categories investigated as part of the qualitative analysis. The excerpts are based on the Hungarian transcripts and are presented in English maintaining the conventions regarding the orthography of the transcripts. Deictic expressions of the selected transcript excerpts are labelled in bold.

4.2   Microlinguistic level

The qualitative analysis investigated microlinguistic impairments on the level of morphology and syntax. The answers of the patient reveal morphological errors, especially the absence of the adequate suffixes in the original Hungarian script, which was demonstrated by the absence of the adequate preposition in English. Both can be illustrated by the following example quoting the patient's answer to interview questions 1 and 2:

Question 1: In just a few sentences, how would you summarize the story?

> Patient: …*and this nick and this marjorie or i don't know how to pronounce their names were fishing and then their love affair ended that's all* **for trouts and were fishing perches.** [1a]

> Control participant: *well err there used to be here a (err) lumber mill once on this spot which was sold off everything was transported from there in effect only the buildings remained* [1b]

Question 2: What do Nick and Marjorie observe on the shoreline as they are rowing to the point to set their fishing lines?

> Patient: *well errr on the shoreline well they were observing that* **thethis lumber mills** *this lumber mill city disappeared and err they were observing* **as the as they** *rowed* **to the from the bay** *to the lake they rowed there* [2a]

> Control participant: *well the remains of this err the lumber mill i think* [2b]

4.3   Macrolinguistic level

4.3.1   Violation of Gricean maxims

Investigating at the level of pragmatics, the qualitative analysis has detected severe forms of impairments and disturbances. For example, in the case of Gricean maxims. The following examples illustrate the violation or flouting of the maxims of quantity and relation via the patient's answer to Questions 7 and 11 in contrast with that of the control participant.

Question 7: Why does Marjorie reply, "Oh Nick, please cut it out! Please, please don't be that way"?

> Patient*: **this was mentioned in the previous question**** [3a]

> Control participant: *well this is a good question she interprets this as a kind of teasing in my opinion as if nick had been bothered by the fact that the girl knows everything whereas he taught it to her.* [3b]

Question 11: Why does Marjorie take the boat and leave and what is she feeling at that moment?

> Patient: *well she said that she would take the boat and you go she told nick that you go around that point but **i don't know exactly why she takes the boat.*** [4a]

> Control participant: *well because for nick love is no longer fun and that's why she leaves him there maybe helping him by going away from there. well i think she must have been really disappointed then.* [4b]

4.3.2   Affective mentalising skills in the language use

As for affective mentalising skills, Table 1 illustrates the distinctive types of emotions and their occurrence identified in the patient's and the control participant's answers. Questions 11 and 13 investigated affective mentalising skills.

Question 11: Why does Marjorie take the boat and leave and what is she feeling at that moment?

> Patient: *well she said that she would take the boat and you go she told nick that you go around that point but **i don't know exactly why** she takes the boat.* [4a]

> Control participant: *well because for nick **love is no longer fun** and that's why she leaves him there maybe **helping him** by going away from there. well i think she must have been really **disappointed** then.* [4b]

Table 1
Frequency of expressions related to affective mentalising

	Patient	Control participant
Shame	1	-
Disappointment	-	1
Fear	1	-
Spiritual burden	-	1
Teasing	-	1
Dispute	1	-
Dislike	1	-
Emotion	-	2
Boredom	5	4

Question 13: What is Nick feeling when he says, "Oh, go away, Bill! Go away for a while!"?

> Patient: *maybe in order that he can think it over and because i don't know i don't understand why this bill appears [interviewer asks the question again]* **he doesn't like this bill** *and that's why he sends him away.* [5a]

> Control participant: *because the real problem was not that* **he was bored with love** *so this is a* **spiritual burden** *for him that he has sent the girl away and that's why* **he would like to be alone** *so that he can* **cope with this.** [5b]

4.3.3 Cognitive mentalising in the language use

The respective cognitive capacities in the answers of the patient and the control participant can be compared based on their responses to interview questions 5, 10, 11, 12, and 13. The expressions related to cognitive capacities are marked in bold.

Question 5: Do Marjorie's actions suggest that she is experienced or inexperienced at fishing? What makes you say that?

> Patient: **in my opinion** *she is experienced [experimenter asks if she remembers any specific details to support her argument]* **i don't remember.** [6a]

> Control participant: *well she must have fished previously but she received instructions from nick[…]* **so it is probable that** *she is inexperienced at fishing* **compared to** *nick[experimenter asks if she remembers any specific details to support her argument]. well nick gave her the instruction to leave the ventral fin in the fish.* [6b]

Question 10: Why does Marjorie sit with her back toward Nick when she asks, "Isn't love any fun?"?

> Patient: *well **i don't know** why she is sitting with her back toward him but **maybe** she is ashamed to tell him that she is afraid of that.* [7a]

> Control participant: *well **i don't know this but in my opinion i don't know but** it might have been by accident that they were in this situation.* [7b]

Question 11: Why does Marjorie take the boat and leave and what is she feeling at that moment?

> Patient: *well she said that she would take the boat and you go she told nick that you go around that point but **i don't know exactly why** she takes the boat.* [4a]

> Control participant: *well **because** for nick love is no longer fun and **that's why** she leaves him there **maybe** helping him by going away from there. well **i think** she must have been really disappointed then.* [4b]

Question 12: Who is Bill and what does he reveal when he asks Nick, "Did she go alright? … Have a scene?"?

> Patient: *well **i don't understand** who this bill is who shows up there at the end **i didn't understand** this that at once this bill shows up but it's not written down who he is eventually. **i thought** this bill was a man[…]while it is written that he didn't touch this nick[…]. well **i think** nick and marjorie had a dispute.* [8a]

> Control participant*: well bill is a completely new character for me but **this makes me think that** the real problem here was not being bored with their love but **for some reason** it must have been a pre-determined issue that the woman must be eliminated from there and he was curious to know how this happened […]. **in my opinion** nick expected that this nick would show up **that's why** the girl had to leave.* [8b]

Question 13: What is Nick feeling when he says, "Oh, go away, Bill! Go away for a while!"?

> Patient:***maybe** to **think** it over and **because i don't know this I don't understand this** that this bill shows up.* [5a]

> Control participant:***because in my opinion** the real problem was not that he was bored with love **so** this is a spiritual burden for him that he has sent the girl away and **that's why** he would like to be alone **so that** he can cope with this.* [5b]

4.3.4 Mentalising skills and perception in the language use

Interview questions 1 and 8 examined mentalising skills associated with perception.

Question 1: In just a few sentences, how would you summarize the story?

> Patient: *well this hortons bay **was a kind of lumber mill city** and then at once the logs did not arrive and (err) then these wood were transported and **this nick and this marjorie** or i don't know how to pronounce their names were fishing and then their love affair ended for trouts and perches.* [1a]

> Control participant: *well err there used to be here a (err) lumber mill once on this spot which was sold off everything was transported from there in effect only the buildings remained and then a couple came by (there) by boat who were fishing and at the end of the day they anchored there and here err in my opinion there was a sort of love intrigue forming **it seems** that the guy is already bored with love but **i'm not sure** if this is the real reason why the woman had to leave.* [1b]

Question 8: Why is Nick afraid to look at Marjorie?

> Patient: (**he**) *only looks at the back of this marjorie and because he is actually bored with love or at least **it was written like this.** [9a]*

> Control participant: *well **in my opinion** here he has something to hide. [9b]*

4.4   Comparative analysis of the occurrence of deixis types

Table 2 illustrates examples for the three major categories of deixis identified in the language use of the patient and the control participant.

Table 2
Examples for deixis types in the answers of the patient and the control participant

	Patient	**Control participant**
Temporal deixis	*at once* this bill showed up *and then* she told him that it's not true that I know everything *and then at the end* she told him that you know everything *and then* their love affair ended	*at the end of the day* they anchored there *and then* a couple came by *there used to be here a lumber mill **once** on this spot* *she must have been really disappointed **then***
Spatial deixis	*well **this hortons bay** was **a kind of lumber mill city***	*there used to be **here** a lumber mill **once on this spot***
Personal deixis	*and **this nick** and **this marjorie** or i don't know how to pronounce **their names** were fishing* *well **a certain bill** shows up at the end* ***he** doesn't like **this bill*** ***he** only looks at the back of **this marjorie***	***nick** expected that **this bill** would show up* ***he** has something to hide* *that's why **she** leaves **him** there* *i'm not sure if this is the real reason why **the woman** had to leave* ***the girl** knows everything* ***the guy** is bored with love*

The above examples show that the patient described the entities of time, space and interpersonal relations using more deictic expressions than the control participant.

4.5   Summary of mentalising skills and language use

Table 3 provides a comprehensive summary of the major differences of language use of the patient and the control participant in terms of the two major types of mentalising skills.

Table 3
Mentalising skills and language use

	Patient	Control participant
Affective ToM	affective dullness, derailment, tangentiality avoids answering certain questions	capable of interpreting and expressing emotions in a more sophisticated way uses subjective expressions
Cognitive ToM	associative disorder, uncertainty does not understand / know / remember the details	capable of making inferences has a more confident content knowledge better memory capacity
Language use	sometimes uses slangish registry ordinary and poor, less sophisticated vocabulary incoherent speech	more sophisticated and eloquent sentences coherent speech

5   Discussion

In the present study, we described the mentalising skills of an individual with schizophrenia and a control participant involved in two separate guided interviews. The interviews were directed to 14 standard questions addressed to the patient and the control, separately. The comparative analysis was based on a functional linguistic approach due to the relatively large number of deictic expressions in the dialogues constituting the corpus. The deictic expressions proved to be potentially suitable for describing mentalising skills especially of individuals with schizophrenia.

It is a well-known fact that individuals with schizophrenia have lower living standards due to their impaired mentalising skills. On the other hand, the speech of individuals with schizophrenia is characterized by tangentiality, derailment (loose associations), incoherence, circumstantiality, affective dullness, blocking, and poverty of content of speech (laconic speech) and thought (McKenna & Oh, 2005). In order to facilitate their social integration, to ameliorate their interpersonal relations and to improve their social–behavioural skills as well as their living standards, adequate mentalising skills are indispensable.

In the present case study, the participants' mentalising skills were explored and described based on the answers to the 14 interview questions. According to the results of the quantitative analysis measuring the type-token ratio, the patient used altogether 211 tokens and 93 word types during the entire dialogue, whereas the control participant's discourse contained 259 tokens and 140 word types. Although the case study presented one type of quantitative result, these data point to important implications and may provide grounds for future

research. As expected, the control participant not only used a larger amount of tokens than the patient (resulting in a type-token ratio of 0.44), but also in terms of quality, she used a more diverse, versatile language indicated by the larger amount of word types. The type-to-ken ratio (0.54) measured in the case of the control participant suggests that she uses a richer vocabulary, and is able to express her mental states in a more sophisticated way.

The microlinguistic analysis showed mild forms of impairments at the level of morphology and syntax in the patient's speech. In Question 1, the patient briefly summarized the plot (e.g. *their love affair ended that's all for trouts and were fishing perches*), but her answer included a syntactic error, which was demonstrated with the absence of the preposition 'for' (*were fishing perches*).

In Question 2, several morphological errors (i.e. lack of adequate suffixes) can be observed (e.g. *the this lumber mills; as the as they; to the from the bay)*. Combined with deictic expressions (*this nick*, *this marjorie*), the patient's answer suggest hesitation making the content of her answer vague and less confident as opposed to the control participant. Overall, these morphological and syntactic errors in the patient's language production can be regarded as relatively mild forms of impairments, which do not hamper the semantic meaning, as confirmed by Badcock et al. (2011).

As for the macrolinguistic analysis investigating the Gricean maxims, the analysis identified the violation or flouting of the maxims of quantity and relation. Answering why Marjorie asks Nick to stop saying and behave in a rude way (Question 7), the patient gave a visibly shorter answer and violated the maxim of quantity by only referring back to her previously stated answer (e.g. *this was mentioned in the previous question*). By contrast, the control participant provided a more detailed explanation by listing some possible reasons (e.g. *she interprets this as a kind of teasing;* as *if nick had been bothered by the fact that the girl knows everything*). Based on the patient's answer as to why Marjorie takes the boat and what she was feeling at that moment (Question 11) it can be observed that she avoids answering the affective aspect as she does not provide any response as to what Marjorie is feeling when she takes the boat. As for the reason for taking the boat, the patient does not seem to have a clear understanding of the female protagonist's motivation ("*i don't know exactly why she takes the boat*"). First, she violates the maxim of relation as her answer is not clearly relevant (e.g. *she told nick that you go around that point*). Secondly, she also flouts the maxim of quantity because her answer is not informative enough and displays poverty of content. By contrast, the control participant is able to detect the characters' emotional states and motivations, and her response is sufficiently informative and relevant as well (e.g. *for nick love is no longer fun; she must have been really disappointed then*). Overall, the patient's flouting or violation of the maxims of quality and relation indicate her impaired pragmatic capacities i.e. in failing the cooperative principle defined by Grice (1975).

Taking a closer look at the relation between affective mentalising and language use, the patient's reply to Question 11 expresses affective dullness due to poverty of content and tangentiality as she is unable to detect the female protagonist's feeling, hence she does not answer the question. However, the control participant is able to identify the characters' non-verbal and indirect communication and sophisticated feelings and intentions (e.g. *for nick love is no longer fun; she leaves him there maybe helping him by going away; she must have been really disappointed then*). Question 13 explored the male protagonist's feeling when he asks Bill to leave him alone for a while. As for the patient, she can only name a single type of

basic emotion after the experimenter repeatedly asks her to describe the male protagonist's feelings (e.g. *he doesn't like this bill*). By contrast, the control participant lists several types of nuanced mental states including emotions and desires (e.g. *he was bored with love*; *this is a spiritual burden for him*; *he would like to be alone*; *so that he can cope with the situation*). Confirming the results of the short story task assessing theory of mind capacities in adults with schizophrenia (Dodell-Feder et al., 2013), affective and cognitive ToM skills are clearly reflected in language use. In the case study, the patient's poorer and less sophisticated vocabulary and brief answers are clearly linked with her affective mentalising deficits, more specifically affective dullness (cf. McKenna & Oh, 2005).

Analysing cognitive skills in the mirror of language use, the patient expressed uncertainty on several occasions. This was linguistically realized with the help of cognition terms frequently applied in negation forms (e.g. *i don't remember*; *i don't know why she is sitting with her back toward him*; *i don't know exactly why she takes the boat*; *i don't understand who this bill is who shows up there at the end i didn't understand this*). As a result, the patient's language use expressed hesitation and uncertainty, combined with a less confident content knowledge (e.g. *maybe to think it over and because i don't know this i don't understand this that this bill shows up*). Moreover, the patient had poorer capacities to draw logical inferences of the characters' thoughts, intentions, beliefs, desires and other mental state contents. In addition to affective dullness and poverty of content, further typical features characterizing the speech of individuals with schizophrenia could be identified as stated by the literature, including tangentiality, derailment (loose associations), incoherence, circumstantiality, and poverty of content of speech (laconic speech) and thought (McKenna & Oh, 2005). Unlike the patient, the control participant expressed more instances of subjective opinion and logical deductions indicating a more detailed understanding of the story and the characters' inner mental states (e.g. *in my opinion here he has something to hide*; *that's why he would like to be alone so that he can cope with this*; *this makes me think that the real problem was not being bored with their love*; *it might have been by accident that they were in this situation*; *it is probable that she is inexperienced at fishing compared to nick*). The control participant's richer and sophisticated vocabulary and coherent answers may point to better cognitive mentalising skills.

Investigating perception as part of cognitive mentalising capacities, the language use of the participants was compared in terms of the frequency of using the distinctive types of deixis. As for the patient, her enunciations visibly contained more instances of deictic expressions as opposed to the control participant. For Question 1 requiring a brief summary of the plot, the patient uses more deictic elements to refer to the temporal entities (e.g. *and then their love affair ended; at once this bill shows up*), whereas the control subject can also define the exact time of actions (e.g. at the end of the day they anchored there).

Concerning spatial deixis, the patient commonly applies deictic elements (e.g. *this hortons bay; a kind of lumber mill city*) similarly to the control participant, who also points to the location of the lumber mill citing more precise details and combining spatial and temporal deictic expressions (e.g. *there used to be here a lumber mill once on this spot*).

With regard to personal deixis, the patient usually adds deictic elements to refer to names (e.g. *this nick and this marjorie, a certain bill shows up at the end*), whereas the control participant names the characters by using definite and indefinite articles, personal pronouns or

simply refers to them by their names (e.g. *a couple came by*, *they anchored there*; *nick expected this bill would show up; that's why she leaves him; the girl knows everything; he has something to hide; the guy is already bored with their love; the woman had to leave*).

In line with the preliminary hypothesis assuming that the more forms of reference are used grammatically, the more they are likely to represent anomalies and impairment, especially the use of deictic and definite noun phrases (Hinzen & Rosselló, 2015), several instances of linguistic anomalies have been identified in the patient's language use. It could be observed that impairments typically presented at the highest levels of language processes, that is, lexical, syntactic, and phonological knowledge were relatively unimpaired, whereas pragmatic processes including the communicative aspect showed severe deficiencies (Frith 1992 in Hinzen & Rosselló, 2015)

When the patient uses deictic expressions, she presumably tries to compensate her impaired cognitive and mentalising skills, which can be observed in the poverty of content, affective dullness, loose associations, derailment, tangentiality, uncertainty. These features result in a significantly poorer vocabulary use as indicated by the type-token ratio and eventually incoherent speech. By contrast, a healthy control participant has better cognitive and affective mentalising skills implying better memory capacities, a better ability to express subjective opinions and draw logical deductions.

6 Conclusion

Overall, the case study indicates the necessity for further research in order to confirm the results and to be able to describe and categorize the specific language features in a more nuanced way. It is important to note that the results refer to the present case study. In order to depict tendencies more accurately and reliably, a considerably larger number of cases needs to be processed. Therefore, the objective for future research is to extend and apply the criteria described in the present case study to the entire corpus to gain a more thorough and detailed description of the language use of patients with schizophrenia. In contrast with the manual qualitative analysis outlined in the present study, the transcriptions of the guided interviews constituting the corpus are going to be qualitatively analysed with the help of WordSmith Tools concordance software to identify collocations typical for schizophrenic patients' utterances.

The findings may contribute to the success of psychotherapeutic sessions by offering further linguistic methods and a somewhat deeper understanding of patients with mental disorders. A systemic and detailed description of patients' language use with the help of concordance analysis could also be applied as a useful supplementary tool and guideline during future communication trainings in graduate and postgraduate programmes and psychotherapeutic sessions and counselling alike.

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