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Perspective-taking and intersubjectivity in oral narratives of people with a schizophrenia diagnosis: a cognitive linguistic viewpoint analysis

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Abstract: Disruptions in theory of mind faculties and the ability to relate to an intersubjective reality are widely thought to be crucial to schizophrenic symptomatology. This paper applies a cognitive linguistic framework to analyze spontaneous perspective-taking in two corpora of stories told by people with a schizophrenia diagnosis. We elicited natural narrative language use through life story interviews and a guided storytelling task and analyzed the linguistic construal of viewpoint in these stories. For this analysis, we developed a reliable and widely applicable viewpoint model that allows for the categorization and quantification of speakers' linguistic presentation and navigation of spatiotemporal domains. We found that our participants skillfully presented, navigated and embedded different narrative viewpoints through a variety of linguistic viewpoint devices. They presented complex viewpoints of other people in both the here-and-now of the interaction and the there-and-then of a narrative, and made use of transition markers to demarcate spatiotemporal discourse domains. We found no differences in viewpoint variables when comparing their guided stories to a control group. If problems with intersubjectivity are indeed an essential part of schizophrenia, an explanation of how this group can take on and navigate complex linguistic viewpoints in natural narrative interaction is called for.

Keywords: direct speech and thought; intersubjectivity; linguistic viewpoint; oral narrative; schizophrenia

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1 Introduction

1.1 Schizophrenia and intersubjectivity

People with a schizophrenia diagnosis¹ can experience severe alterations in the relationship to themselves, others, and reality. They might for instance feel like their body is being controlled by someone else, hear voices or see/smell/feel things that others do not. They can experience loved ones as being imposters, perceive that they are continually being followed or talked about, or experience the realization that they are Jesus, Nelson Mandela or an extension of God. Accounts that explain this broad range of experiences through anomalies in the interpersonal abilities of people with this diagnosis have received a great deal of attention in recent decades. Cognitive psychological accounts have, for example, proposed that problems with the capacity to reason about other people's mental states (commonly referred to as 'Theory of Mind' or ToM capabilities; Brüne 2005; Frith 2014; Sprong et al. 2007) or with perspective-taking in general (Bâ et al. 2022; Kronbichler et al. 2019; Langdon et al. 2001) play a central role in the disorder. One influential example of such a view is the one developed in Frith (2004) and Frith and Corcoran (1996), who argue that difficulties in monitoring one's own beliefs result in symptoms like thought insertion, delusions of control and auditory hallucinations, while the inability to accurately reason about other's mental states causes delusions of reference, paranoia and disorganized communication. An association between underperformance on ToM tasks and schizophrenia has indeed been found in a large number of studies (Bora et al. 2009; Brüne 2005; Harrington et al. 2005; Sprong et al. 2007). And although it remains unclear whether ToM is a trait of state variable (Harrington et al. 2005), evidence that relatives of people with the diagnosis also perform worse on ToM tasks as compared to controls, suggests it to be a trait, that is also present in people with the diagnosis who are not acutely psychotic (Janssen et al. 2003; Wykes et al. 2001).

Studies in the field of phenomenological psychiatry confirm the idea of interpersonal difficulties as being central to schizophrenia. Accounts of Fuchs and Röhrich (2017), Sass (1994), van Duppen (2017), and Ratcliffe (2017), for example,

¹ 'Schizophrenia' is described by the 5th Diagnostic and Statistical Manual of Mental Disorders as a psychotic disorder (all people with a schizophrenia diagnosis experience psychosis, but not all who experience psychosis get diagnosed with schizophrenia). It is categorized under the DSM chapter for Schizophrenia Spectrum and Other Psychotic Disorders. The diagnostic criteria are that the individual in question experiences two or more of the following for a significant portion of time during a 1-month period, and at least one of these must be (1), (2), or (3): (1) Delusions; (2) Hallucinations; (3) Disorganized speech (incoherence or derailment); (4) Completely disorganized or catatonic behaviour; (5) Negative symptoms, such as diminished emotional expression (American Psychiatric Association 2022).

describe how people with this diagnosis experience breakdowns of *intersubjectivity*, that is “the sharing of experiential content (e.g., feelings, perceptions, thoughts, and linguistic meanings) with others” (Zlatev et al. 2008).² These phenomenological theories, which are mostly based on first person accounts, infer the loss of an intersubjective reality from (often language expressed) manifestations of perspective-taking problems, such as difficulties with common sense, social convention, other-self demarcation,³ delusion, and language anomalies (Fuchs and Röhrich 2017; Pienkos and Sass 2016; van Duppen 2017). Some more severe intersubjective distortions include feelings and perceptions of ‘devitalization’ (Pienkos and Sass 2016). In those cases, other people can be experienced as ‘puppets’ (Sechehaye 2018) or ‘fleeting-improvised-men’ (Schreber 1955), to cite two famous and often analyzed schizophrenia memories. Pienkos and Sass (2016) describe how some people with the diagnosis “may feel that they have never understood or fully accepted the ‘rules of the game’ that are implicit in typical social interactions” (Pienkos and Sass 2016: 66).

1.2 Schizophrenia, intersubjectivity and language

These issues with intersubjectivity, specifically with ToM, have been suggested as an explanation of ‘abnormal’ or disorganized language use in schizophrenia. Language anomalies, which are often conceptualized as ‘thought disorder’ or ‘disorganization of the mind’, are considered to be one of the most prominent symptoms of the disorder (Barch and Berenbaum 1996; McKenah and Oh 2005; Rodriguez-Ferrera

2 The relationship between the concepts of ToM, intersubjectivity and perspective-taking is complicated and much discussed. Generally, the concept of ToM implies the ability to reason about other people’s mental states in terms of beliefs and desires, according to the concepts of *folk psychology* (Hutto and Ratcliffe 2007). The construct of ToM has been criticized as being too focused on higher cognitive abilities and neglecting the role of perception and the body in social cognition (Gallagher 2001; Gipps 2004). More phenomenologically oriented accounts often use the broader concept of intersubjectivity in denoting the rich ways in which we interact with each other, including directly perceiving and sharing mental states (Zlatev et al. 2008). The authors of this paper support a pluralist notion of social cognition (Andrews 2008; Gallagher 2015) that includes the ability to both consciously and unconsciously take on the perspective of other people, be it through inference, perception or simulation.

3 This can include the experience of *thought insertion*, in which case people feel they are thinking other people’s thoughts, or *thought broadcasting*, where other people are believed to hear theirs. Another example of self-demarcation problems is what Bleuler (1950 [1911]) called ‘transitivism’, where being aware of another consciousness might threaten the person’s sense of self, like described in this quote: “When I look at somebody my own personality is in danger. I am undergoing a transformation and my self is beginning to disappear” (Chapman 1966).

et al. 2001). Observed anomalies pervade all linguistic levels, from phonology, morphology and syntax, to semantics and pragmatics (Chaika 1974; Covington et al. 2005). Especially language use at the semantic and pragmatic levels is thought to diverge from the norm (Cardella 2017; Salavera et al. 2013). The linguistic literature on schizophrenia describes problems with pragmatic skills that require perspective-taking and a grasp on interpersonal dynamics, such as deixis and reference (Covington et al. 2005; Harvey 1983; Sevilla et al. 2018; Zimmerer et al. 2017), consideration of context and conversational maxims (Andreasen and Grove 1986; McKennah and Oh 2005; Meilijson et al. 2004), non-literal use of language (Deamer et al. 2019; Langdon et al. 2002), and the ability to take into account the listener's needs in general (Frith 2014). Overarching such pragma-linguistic aspects, people with the diagnosis were found to have difficulties with story organization (Allé et al. 2015; Chaika and Lambe 1989) and maintaining narrative coherence (Allé et al. 2016; Saavedra et al. 2009; Willits et al. 2018).

There is no unambiguous account of the causes of linguistic and narrative anomalies in schizophrenia; yet, ToM abilities are the only cognitive capacities found to correlate with performance issues in the language of people with schizophrenia, contrary to, e.g., executive functions and working or semantic memory (Cardella 2017). Mazza et al. (2008) for example found that people with the diagnosis and their first-degree relatives were outperformed by controls on both false belief and pragmatic conversation tasks, and that there was no correlation with executive function tasks and general cognitive ability. They conclude that a liability for schizophrenia is associated with both ToM and not taking into account Gricean conversational maxims. Other studies found that schizophrenia participants with disorganized speech perform worse than schizophrenia participants without disorganized speech on tasks measuring irony comprehension (Langdon et al. 2002) and false belief identification (Mazza et al. 2001). This is explained through difficulties in tracking and anticipating what listeners need in order to comprehend discourse, which requires a continuous taking into account of their perspective.

Both empirical evidence and theoretical accounts thus suggest that difficulties with intersubjectivity or ToM, which both include taking on perspectives other than one's current viewpoint, are essential to schizophrenic (language) pathology. However, there are reasons for doubt. Almost all of the empirical studies mentioned above involved cognitive or linguistic perspective-taking tasks in an experimental setting. Particularly in the cognitive field, studies on ToM or schizophrenic language use decontextualized data and very infrequently focus on actual conversations of people with a schizophrenia diagnosis in a natural setting. One study that did, by McCabe et al. (2004), analyzed ToM skills in clinical interactions between mental health professionals and people with a chronic schizophrenia diagnosis, and found no evidence of ToM deficits. In the transcripts of these interactions, participants

appear to understand the pragmatics of the interaction and make adequate use of the context in order to interpret the intentions and beliefs of both the conversational partner and occasional third parties; they seem to spontaneously and correctly ‘mentalize’, i.e., theorize about the mental states of others. If ToM problems are not present in a natural, embodied, interactive setting, they might be subject to the boundary conditions of experimental settings and therefore not be the best cognitive candidate for explaining everyday (linguistic) problems in schizophrenia, or for forming a trait based explanatory core of this disorder (Cardella 2017).

Intersubjectivity or ToM deficits have, to our knowledge, not satisfactorily been demonstrated in actual embodied, naturally interactive language in people with a schizophrenia diagnosis. The study by McCabe et al. (2004) is also insufficient evidence to deny these deficits, since it was a small discourse corpus study, limited to a formal clinical setting with a treatment provider dealing with illness related reports. Experimental nor clinical settings are apt to elicit or represent viewpoints of others per se, and McCabe et al. (2004) did not focus on spontaneous oral narratives, which are particularly suitable for studying perspective-taking (Dancygier 2011). Yet, the inconsistency between findings of experimental ToM studies and phenomenological psychiatry on the one hand, and McCabe et al. (2004) on the other, calls for the study of intersubjective skills like ToM in a way that takes both language and perspective-taking seriously as context-bound phenomena that deserve examination in interactional settings. Studying perspective-taking in natural narrative discourse offers the opportunity to assess whether a speaker sufficiently and spontaneously makes use of their intersubjective capabilities to produce comprehensible discourse and build (complex) viewpoint structures.

1.3 Narrative, viewpoint and schizophrenia

Spontaneous narratives are an especially potent vehicle for the presentation of different perspectives, and producing a narrative requires the ability to manage and navigate viewpoint structures and frequent shifts between viewpoints.⁴ Linguistic studies on viewpoint in narratives have shown how a diverse range of linguistic elements can be used to express spatial, temporal, emotional, and psychological aspects of viewpoint, such as verbs of seeing and verbs of cognition, but also connectives and negations, pronouns, and modal verbs (Dancygier 2011; Dancygier and Sweetser 2012; Sanders et al. 2012; van Duijn and Verhagen 2019; van Krieken et al.

⁴ In this article, *perspective-taking* is used to indicate the general cognitive ability of taking on other subjects’ point of view, while *viewpoint* is used to indicate a particular subject’s point of view in discourse.

2019; Verhagen 2005). Viewpoints can also be expressed by the use of speech and thought reports, which paraphrase or demonstrate what someone was saying or thinking at a particular point in time (Sanders and Redeker 1996; Vandelanotte 2009). Use of such viewpoint expressions signals that a speaker or narrator takes on the perspective of another person and describes the event or situation from their point of view.

Previous cognitive linguistic studies on the relation between cognition and narrative viewpoint have focused on children (e.g., Berman and Slobin 2013; van Dijk and van Duijn 2021) and a variety of psychological disorders and pathologies such as Down Syndrome (Neitzel and Penke 2021), Autism Spectrum Disorder (Du Bois et al. 2014; Kuijper et al. 2017; Papafragou 2002) and dementia (Davis and Maclagan 2018). These studies demonstrate the value of cognitive linguistic approaches in understanding the perspective-taking abilities of specific groups. Although narratives are such a potentially rich source of information on intersubjectivity in people with a schizophrenia diagnosis, they have been largely neglected as such. There are a few exceptions like Buck and Penn (2015), who looked mainly at lexical characteristics and not at narrative viewpoint structures.

In the current study, we apply a cognitive linguistic analysis to the stories of people with schizophrenia to examine how they cognitively and linguistically manage narrative viewpoints. A cognitive linguistic analysis of stories allows examination of the richness and varieties in which schizophrenia diagnosed narrators cognitively and linguistically manage these viewpoints. If they are indeed able to navigate different linguistic viewpoints in daily narrative discourse, this should have consequences for theories that pose a deficit in perspective-taking abilities as a central and essential part of 'schizophrenia'. Such an observation might also be relevant for the way we view the connection between explicit ToM abilities as tested in experimental settings and the contextualized ability to take on others' perspectives in daily life. In addition, studying linguistic perspective-taking in this group expands the applicability and usability of cognitive linguistic theories on intersubjectivity (Verhagen 2005) with regards to non-neurotypical groups. Applying cognitive linguistics methods to larger corpora is helpful in establishing theories on the connection between cognitive and linguistic intersubjectivity.

This study therefore examines intersubjective perspective-taking by analyzing viewpoint structures in the spontaneous oral narratives of a group of people diagnosed with schizophrenia. Our aims in characterizing viewpoints in the narrative discourse of this group were to learn i) whether and how theorized problems with intersubjectivity and ToM are expressed in narratives told in an ecologically valid, embodied and interactive setting, and ii) what varieties and regularities can be found in the way speakers navigate viewpoint in spontaneous narratives, using a newly

developed cognitive linguistic coding system. In the remainder of this paper, we describe how viewpoints are construed in a corpus of life narratives and whether there are any differences in viewpoint variables between people with a schizophrenia diagnosis and a control group in a corpus of guided story retellings.

2 Method

In order to study how our participants express and navigate complex viewpoint arrangements in natural narrative discourse, we applied a methodology developed to systematically analyze viewpoint in narrative discourse by combining the Deictic Navigation Network framework (van Schuppen et al. 2019) and the ViewPoint Identification Procedure (Eekhof et al. 2020). This approach enables a categorical and quantified analysis of viewpoint in narrative. In the present study, we apply it to a corpus of life narrative interviews (Corpus I) and a corpus of retellings of a short film (Corpus II). These different types of narrative data enabled both the exploration and description of viewpoint construal in spontaneous narrative discourse by schizophrenia diagnosed (SZ) participants, and the comparison of viewpoint variables between SZ and neurotypical participants in a dataset obtained in a more controlled context. In this section, we will describe how both corpora were created and analyzed.

2.1 Corpus I – Narrative interviews

2.1.1 Participants

Twenty-four participants between 26 and 70 were interviewed over the course of 2 years (2018–2020). Data from two participants were excluded due to insufficient quality of the audio. This resulted in a sample of 22 participants ($M = 48.45$; $SD = 12.35$), of whom 40.9 % were female. All participants were native speakers of Dutch and grew up in the Netherlands. They lived independently or in protected living arrangements, relatively evenly distributed throughout the Netherlands. Most (20) participants were living in cities, some (2) in smaller towns. All participants had received a schizophrenia diagnosis by a certified psychiatrist or psychologist and were in contact with a treatment provider. At the time of the interview, none were committed to any kind of psychiatric hospital care, nor were they experiencing acute psychosis. The latter was checked with their treatment providers where possible.

2.1.2 Data collection

Participants were recruited through i) an internet forum for people with a schizophrenia diagnosis, ii) newsletters of patient organizations, iii) organizations for protected living or iv) through professional contacts and activities of the first author.⁵ Treatment providers were informed of the research, and were asked to contact the researcher in case they had any objections to participation of their client, whether on the ground of the assumed diagnosis or perceived health risks.

The interviews were conducted by the first author. In a minority of cases, the partner of the interviewee or a research intern was present as observer. All but two participants were interviewed in their own living situations, a minority of which were protected living arrangements. Before the start of the interview, participants were informed about the research aims and data usage and informed consent was obtained. Afterwards, participants received a gift card of 20 euros.

The interviews lasted from 30 to 240 min and were semi-structured by a topic list that was designed to stimulate narrative discourse about personal experiences, their evaluations and the production of a life story. All interviews started with the question “Could you tell me something about your life, up until now?” Subsequent questions were about relationships with other people, daily routines, important memories and thoughts about the future. The interviewer was guided by the principles of the ‘clean language method’ (Lawley and Tompkins 2000), meaning that interference in the interviewee’s story was minimized, and interpretive and morally loaded content words like ‘problem’, ‘normal’ and ‘false’ were avoided. Rather, the interviewer asked for clarification and continuation of the story without offering interpretations, asking questions such as: “What happened next?” and “Can you tell me more about that?”

2.1.3 Data processing

The interviews were audio recorded and transcribed verbatim, including discourse markers and laughter of both participant and interviewer. The transcriptions were subsequently divided into clauses. A clause was defined as a stretch of discourse containing one finite verb. Consequently, finite subordinate clauses were treated as separate clauses, but non-finite and elliptical clauses were not considered as such

⁵ The recruitment of participants and subsequent data management were in line with a research protocol that was waived from being assessed under the Medical Research Involving Human Subjects act (Wet Medisch-Wetenschappelijk Onderzoek met Mensen/WMO) by the Committee on Research Involving Human Subjects (Commissie Mensgebonden Onderzoek/CMO) of region Arnhem-Nijmegen (file nr. 2017–4007). The protocol was also approved by the Ethics Assessment Committee for the Humanities of the Radboud University (file nr. 3625).

and were lumped together with the finite clause before or after it. However, if a non-finite clause occurred in isolation in between utterances of the other speaker, it was classified as a clause. This included instances of isolated ‘yes’ and ‘no’ responses. Discourse markers such as ‘zeg maar’ (‘say’) and ‘weet je wel’ (‘you know’), as well as discourse markers without a finite verb in Dutch, like ‘even kijken/zien/denken’ (‘let’s see/look/think’), were also treated as separate clauses, since these are not part of the propositional content of the clauses they are embedded in. All clause divisions were checked by a second researcher. Conflicts were solved by a third researcher that checked all discrepancies and ensured consistency across transcripts. The interviewer’s intro (explanation of the research) and outro (closing up) in each transcript were excluded from analysis,⁶ as well as the utterances of the interviewer. To avoid disproportionate influence of individual interviews, three exceptionally lengthy transcripts that consisted of more than 2,500 clauses, were cut off at clause 1,500.

2.1.4 Coding categories

Each clause ($N = 23.991$; $M = 1,043.1$; $SD = 359.9$) was coded on the following variables: (1) Domain; (2) Direct discourse; (3) Implicit viewpoint; (4) Origo; and (5) Domain transition. A codebook, which was based on the DNN (van Schuppen et al. 2019) guided the analysis. Reliability and reproducibility of results were ensured by defining the relevant domains and markers and prescribing the coding steps in detail. The different variables were described as follows.

2.1.4.1 Domain

In the DNN, two conceptual domains represent the here-and-now of the conversation (the *Speech Act Domain*) and the there-and-then of a story world (the *Narrative Domain*).⁷ Each utterance of a speaker is coded as anchored to the situational context of one of these two domains. In each domain, a *deictic center* is the point of origin for all deictic expressions anchored to that domain. By moving the deictic center of the conversation to a different place and time than the here-and-now, the speaker opens

⁶ The intro was determined by locating the first question of the interviewer in the transcripts, which was the same for all interviews. The interviewer concluding the conversation with ‘thank you for this conversation’ marked the beginning of the outro.

⁷ In the rare cases in which an utterance was situated in the *here*-and-then, e.g., ‘ja ja tweeduizend woonde ik hier al’/‘yes yes in two thousand I already lived here’ (Participant 003), a clause was considered to be situated in the Narrative Domain, giving temporal displacement precedence over spatial context.

up a story world – a Narrative Domain – in which deictic expressions such as ‘the day before’, ‘there’ or ‘he/she/they’ refer to the narrative there-and-then.

If a clause i) referred to the here-and-now of the linguistic interaction between interviewer and participant or ii) consisted of a general expression, statement or assertion that expressed a judgement or opinion that transcends a definite time and place, the clause was considered to refer to the speech act context and, as such, coded as being anchored in the Speech Act Domain.⁸ This included discourse markers, like ‘zeg maar’ (‘say’) and ‘weet je wel’ (‘you know’). Expressions in the Speech Act Domain were generally centered around the person that speaks. The following examples were coded as situated in the Speech Act Domain:

- (1) “(...) en nou zit ik hier voorlopig wel goed” – Participant 007
“(…) and now I am comfortable here for the time being”
- (2) “Het is eigenlijk allemaal zo banaal eh algemeen en en – Participant 001
global en abstract”
“It is all so banal eh general and and global and abstract really”
- (3) “Go-god van chaos weet je wel de Griekse god Chaos” – Participant 102
“Go-god of chaos you know the Greek god Chaos”

If a clause was referred to the there-and-then of a narrative, the clause was coded as being anchored in the Narrative Domain. The following utterances were coded as situated in the Narrative Domain. In these examples, the slash ‘/’ indicates a division of two clauses.

- (4) “Dat ik toen op de cruise naar [Plaats A] was/ – Participant 001
“That I then went on that cruise to [Place A]/
en daar ontmoette ik een een dame”
and there I met a lady”

⁸ Note that the Speech Act Domain was essentially collapsed with the ground/base, since the here-and-now does not refer to the speech act only: it is the base space of the speech act. In the context of mental space theory (Fauconnier 1985), the clauses entailing general judgments or expository remarks now coded as being situated in the Speech Act Domain, could be classified as referring to the *ground* or *base space* of the interaction: they are modifications of, and references to, (shared) general knowledge about the world and the discourse context that is assumed, used and modified during discourse (Fauconnier and Sweetser 1996; Langacker 1987). For the present, relatively course-grained coding of this particular corpus, they were classified as being non-narrative utterances and coded as belonging to the speech act context.

2.1.4.2 Direct discourse

A speaker can use a multitude of linguistic devices to present and embed viewpoints within the two domains. One prominent viewpoint device is the use of a direct discourse report. By using direct discourse, the speaker reports a stretch of discourse *as if* directly quoting the speaker in question⁹ and explicitly construes the viewpoint of its speaker through a complete deictic shift in which words like ‘here’ and ‘today’ refer to the context of the stretch of direct discourse (Sanders and Redeker 1996; Vandelanotte 2004). In a stretch of direct discourse, a pronoun like ‘I’ will thus refer to the person that is being cited, which is not always the speaker themselves.

A clause was coded as ‘Direct Discourse’ if it consisted of a stretch of discourse presenting speech, thought or writing in the direct mode. This included both real and hypothetical speech, thought, and writing reports. For example:

- (5) *“Maar ja hij heeft ook niet netjes effe gezegd van eh/* – Participant 006
“But yes he didn’t properly tell me like eh”/
“Je je je ziet me niet meer” ”
“You you you won’t see me anymore” ”

2.1.4.3 Implicit viewpoint

Another important linguistic device for viewpoint presentation is the use of implicit viewpoint markers. These present a cognition, emotion or perception of one of the story characters. Contrary to expressions in the direct mode, which are considered to be cases of *explicit* viewpoint presentation, in which the responsibility for the validity the utterance can often be mostly attributed to the speaker of the represented speech or thought, the term *implicit* viewpoint points out that a stretch of discourse refers to, or merely presupposes, a speaker, hearer or character’s consciousness without explicating its contents as if verbatim (Sanders and Redeker 1996). In the case of implicit viewpoint, the speaker in the here-and-now of the discourse context is responsible for the validity of the statement. Having said this, the implicitness or explicitness of viewpoint is always a question of degree. For the purpose of coding of this corpus, only direct speech, thought or writing (‘direct discourse’) expressions were considered to be an explicit viewpoint representation. Relatively implicit viewpoint markers like ‘think’ or ‘see’ were coded as implicit viewpoint. Take for instance the following clauses:

⁹ This does not mean that the stretch of direct discourse is in (exact) concordance with what was ‘originally’ said. Direct discourse is often used as a way of demonstrating a speakers point or evaluating a stretch of narrative (Clark and Gerrig 1990; Short et al. 2002).

- (6) *“Dat ik dacht/* – Participant 107
“That I thought/
“Oh dus niet alles is voor altijd” ”
“Oh so not everything is forever” ”

In this example, the first clause presents an implicit viewpoint through the verb ‘thought’, while the second presents an explicit viewpoint through the use of direct discourse.

Referring to a person’s cognition, perception, or emotion, such as by the word ‘thought’ in the above example, allows hearers to imaginatively access the mind of the subject of consciousness (Eekhof et al. 2020). Thus, one important type of implicit viewpoint marker are verbs like ‘to think’, ‘to see’ or ‘to enjoy’, but also adverbs and adjectives (Sanders 2010). Another type are epistemic modal adverbs, such as ‘probably’ or ‘apparently’, that add a measure of subjectivity to an utterance, indicating that the subject of consciousness is partially describing a thought process. By indicating the epistemic status of the proposition, the speaker takes into account the viewpoint of the hearer as well. Furthermore, adjectives like ‘miserable’ or ‘excited’ present the emotions of the origo they are anchored to, soliciting the hearer to take on their viewpoint.

Consequently, if a clause contained a linguistic expression that presupposes a character’s consciousness without quoting this consciousness explicitly by means of reported discourse, this clause was coded as ‘implicit viewpoint’. In order to systematically code these expressions, we made use of the appendix of Eekhof et al.’s (2020) paper on the Viewpoint Identification Procedure (VIP). This is a list of Dutch perceptual (verbs like ‘see’), cognitive (verbs like ‘think’ and epistemic adverbs like ‘probably’) and emotional (verbs like ‘to be disappointed’ and adjectives like ‘angry’) viewpoint markers. While performing the present study, the VIP list was complemented on the basis of the data, applying VIP instructions (Eekhof et al. 2020: 10). Words encountered in the corpus were added to the list of implicit viewpoint markers if they were i) a synonym or single-word paraphrase (based on intuitions supplemented by dictionary queries) of a word that was already in the list; ii) an expression that was morphologically related to or derived from a marker in the original VIP list; iii) a multi-word paraphrase of a word on the original list; or iv) a clear single-word perceptual, cognitive or emotional viewpoint marker that was not in the original VIP list, but occurred frequently in this specific corpus (e.g., ‘to hallucinate’). Furthermore, the ‘emotional adjectives’ category of the original VIP list was expanded to include emotional adverbs as well. Adverbs were added if they clearly expressed an emotion and were a (approximate) synonym of a marker of emotional viewpoint that was already in the list. A total of 131 markers were added to

the original VIPP list. The underlined words in the following clause are examples of coded implicit viewpoint markers.

- (7) “Ik had nog steeds niet door/ – Participant 201
 “I still hadn’t noticed/
dat ik eh verliefd was”
 that I eh was in love”

2.1.4.4 Origo

The term ‘origo’ was introduced by Bühler (2011 [1934]) and refers to the center of a deictic frame of reference. Expressions in the Speech Act Domain or Narrative Domain are to be interpreted in reference to the spatiotemporal context of an origo, which can for example be the speaker, addressee, or a character in the story. If a clause was coded as containing a viewpoint in the form of direct discourse or implicit viewpoint marking, it was subsequently coded for the origo to which the viewpoint could be attributed. This could be either the participant’s origo; the interviewer’s origo; a generic origo; a third party origo; a ‘we’ origo; or a combination of the previous if there was more than one viewpoint presented in a single clause (‘multiple’). If a discourse report or implicit viewpoint marker was linked to a generic ‘you’, or if an implicit viewpoint marker was used without a clear and explicit indication of the subject of consciousness (e.g., ‘it *was/seems* terrible’ as opposed to ‘I *found* it terrible’ or ‘it was terrible *for me*’), it was coded as ‘generic origo’. ‘Third party’ origos referred to any subject that was not present at the time of the interview. The ‘we’ origo was coded if the utterance contained the viewpoint of the first-person plural, i.e., of a group of people including the speaker. The following examples contain clauses attributed to the participant (8), the interviewer (9), a generic origo (10), a third party origo (11) and a ‘we’ origo (12). The markers for coding are underlined (origo + implicit viewpoint marker in (8a) and (9)–(12), and origo + direct discourse in (8b)) in the clauses that were coded for presenting a viewpoint and origo.

- (8) a. “En de volgende dag zei ik natuurlijk/ – Participant 107
 “And the next day of course I said/
 b. “ja ja het gaat wel weer goed” ”
 “yes yes it is going okay again” ”
 [...]
- (9) “Weet je wel”
 “You know”
 [...]

- (10) *“je hebt ook van die theorieën/
 “you also have those theories/
 dat mindfulness helpt/
 that mindfulness helps/
 dus dat je dat je ervaringen die je in je lichaam hebt of zo/
 so that your that your experiences that you have in your body or something/
 dat je daar bewust van wordt”
 that you become conscious of that”
 [...]*
- (11) *“Ja nu weten mensen inmiddels/
 “Yes now people know/
 dat je best wel mondig mag zijn tegen artsen en verplegers en behandelaars/
 that it is okay to speak up to doctors and nurses and treatment providers/*
- (12) *maar toen ja wij wa- wij geloofden gewoon nog echt in hun visie en
 deskundigheid”
 but back then yes we wer- we just really believed in their vision and
 expertise”*

2.1.4.5 Domain transitions

Lastly, all clauses were coded for domain transition (either Speech Act Domain to Narrative Domain; or Narrative Domain to Speech Act Domain). Clauses were first coded for a transition occurring (yes/no). A clause was coded as containing a domain transition if the previous clause was coded as a different domain than the clause in question. Subsequently, the type of transition marker was coded. The domain transition markers were based on van Krieken and Sanders (2019), who coded domain transitions in news narratives, and found temporal adverbs/tense shifts and speech and thought reports to be frequent markers. In line with their coding, transition clauses were coded as containing temporal adverb/tense shifts; direct discourse; ‘other’ markers; or no markers. In addition, we added the category ‘discourse marker’, since most encountered discourse markers, like ‘zeg maar’ (‘like’), ‘weet je wel’ (‘you know’), are less common in written narratives (Schourup 1999), but often effectuate a domain transition in spoken discourse because they are always situated in the Speech Act Domain. In the following example, clause (14) was marked as a domain transition.

- (13) *“Ik vind het gewoon moeilijk/* — Participant 106
“I just find it hard/
- (14) *want ik heb het wel geprobeerd op school”
 because I have tried in school”*

In this sequence of clauses, a transition takes place from the Speech Act Domain in (13), when the participant talks about something that she/he finds difficult nowadays, to the Narrative Domain in (14), when the participant starts talking about something that took place in the past, in school. This transition is marked by a tense shift from the simple present in (13) to the present perfect in (14).

In order to distinguish domain transitions that consisted of a discourse marker clause from those that entailed a more radical and persistent shift in focus space (Fauconnier and Sweetser 1996), we coded whether a transition was preceded by a discourse marker clause. Finally, we coded whether a transition followed an interruption by the interviewer and whether such an interruption consisted of a content question in order to account for the interviewer inducing the transition as opposed to the participant.

2.1.5 Statistics

The second coder coded approximately one fifth (5.005 clauses, 20.86 %) of the total corpus. Inter-coder reliability for the coding of domains and viewpoints was good. Reliability scores were excellent for all variables: domain ($\kappa = 0.88$), direct discourse ($\kappa = 0.99$), implicit viewpoint ($\kappa = 0.88$), origo ($\kappa = 0.87$), domain transition ($\kappa = 0.99$), transition marker ($\kappa = 0.92$), discourse marker as previous clause ($\kappa = 0.96$), and interruption by interviewer ($\kappa = 0.96$).

Since we ran four separate tests per data set, we used a Bonferroni correction to reduce the risk of Type 1 errors, setting the level of significance at $\alpha = 0.05/4 = 0.0125$.

2.2 Corpus II – Pear stories

The analysis of Corpus I enabled an assessment of whether people with a schizophrenia diagnosis are able to linguistically navigate viewpoints in narrative and in which ways they do so, but does not provide information on their performance in comparison to people without the diagnosis. The creation of our second corpus (Corpus II) facilitated a comparison of this group's retellings of a film to a control group. After the life story interviews, the participants of the interview study were asked to watch and retell an audiovisual stimulus, the 'Pear Film'. These retellings were expanded with similar retellings by a control group of non-neurotypical participants.

2.2.1 Stimulus

The 'Pear Film' is a 6 minutes wordless audiovisual narrative (Chafe 1980) developed to study variations in (narrative) language use between groups. This stimulus was originally produced with the specific purpose to elicit linguistic construal of

universally recognizable events and situations, without prescribing a right or wrong way of doing this. The Pear Film starts with a man who is harvesting pears from a tree. A boy on a bicycle passes by and without the pear picking man noticing, steals a basket of his pears. After riding off with the basket, the boy is distracted by a girl on a bike, hits a rock and falls, consequently spilling the pears on the ground. Three boys, passing by on foot, help him pick up the pears and are each rewarded with a pear. The film ends with the pear picking man's discovery that one basket of pears is missing and then seeing the three boys walking away while eating their pears.

2.2.2 Participants

The SZ participants of this corpus largely overlap with the participants from the life story interviews. One participant of the interview study did not wish the pear story retelling recorded, while the two participants whose life stories were excluded from the interview corpus analysis did submit a pear story retelling. The resulting 23 participants were aged between 26 and 70 ($M = 48.39$; $SD = 12.16$), of which 43.48 % were female. For the control group, 57 non-SZ participants were recorded retelling the pear story.¹⁰ In order to create a paired sample, 23 of these participants were selected for analysis. The sample was matched on gender ratio, as well as age distribution. These participants were aged between 29 and 71 ($M = 49.09$; $SD = 13.45$) and 43.48 % were female. They were all native speakers of Dutch, living distributed throughout the Netherlands with slightly more people living to the east of the Netherlands than in the SZ sample. Seven participants lived in (small) towns, the other 16 lived in cities.

2.2.3 Data collection and processing

After obtaining informed consent, retellings were elicited by asking participants to watch the movie, after which they were instructed to 'please tell me about the events in the film as if I had not seen it before'. The stories were audio recorded and transcribed verbatim using a uniform transcription protocol. The transcribed pear stories were divided into clauses using the same protocol as in the life story corpus (see above). This resulted in a SZ pear story corpus of 913 clauses ($M = 39.70$; $SD = 23.16$) and a non-SZ pear story corpus of 1.313 clauses ($M = 57.09$; $SD = 22.27$).

¹⁰ These stories were obtained by means of a video call during the 2020 pandemic lockdown. The participants of the control group were recruited by 5 BA students 'Communication and Information Sciences' of the Radboud University in Nijmegen, who collected the data as part of their bachelor thesis research. The protocol for this control study was approved by the Ethics Assessment Committee for the Humanities of the Radboud University (file nr. 3625).

2.2.4 Coding categories

After all transcripts were divided into clauses, they were coded on the same variables as the clauses of the life stories: (1) domains, (2) direct discourse (3); implicit viewpoint; (4) origo, and (5) domain transitions. Two adjustments were made to the codebook. First, the category of ‘interviewer’ was excluded from the ‘origo’ variable because the pear story retellings did not contain any interactions with the interviewer. Second, for the variable ‘domain’, an additional domain was added in order to account for an extra deictic center in the timeline of the pear story retelling, i.e., the ‘Narrative Experience Domain’. This was necessary since utterances in the pear story retellings could, in addition to i) the here-and-now of the retelling or general statements in the ground (Speech Act Domain) and ii) the narrative content (i.e., the events in the movie; Narrative Domain), also be deictically anchored to iii) the there-and-then of the movie *viewing* (Narrative Experience Domain). In this particular domain, participants express their narrative experience: the thoughts, perceptions and emotions that they had while watching the film. These experiences are presented in the retellings through expressions like ‘I saw that ...’; ‘It seemed that ...’; ‘I thought that he was ...’ and can be distinguished from the Narrative Domain and Speech Act Domain in that the deictic and implicit viewpoint markers are not referring to the spatiotemporal position of the pear story itself (i.e., the narrative ‘now’ in the movie), or of the moment of retelling, but to the moment of the film viewing.

2.2.5 Statistics

The second coder coded approximately one fifth (203 clauses, 22.23 % for the non-SZ group; 252 clauses, 19.19 % for the SZ group; 455 clauses, 20.44 % in total) of the entire corpus. Inter-coder reliability for the coding of domains and viewpoints was good. Reliability scores were excellent for all variables: linguistic domain ($\kappa = 0.83$), direct discourse ($\kappa = 1.00$), implicit viewpoint ($\kappa = 0.91$), origo ($\kappa = 0.91$), domain transition ($\kappa = 1.00$), transition marker ($\kappa = 0.83$), and discourse marker as previous clause ($\kappa = 1.00$).

Since we ran four separate tests per data set, we used a Bonferroni correction to reduce the risk of Type 1 errors, setting the level of significance at $\alpha = 0.05/4 = 0.0125$.

3 Results

3.1 Corpus I – Narrative interviews

3.1.1 Distribution across domains

The aim of the interview corpus (Corpus I) study was to analyze how viewpoints are construed in natural, oral narratives by people with a schizophrenia diagnosis in

Table 1: Number and percentage of viewpoint markers as distributed over the domains.

		Domain		
		Speech Act Domain	Narrative Domain	Total
Viewpoint marker	Direct discourse	289 (2.1 %) ^a	861 (8.2 %) ^b	1,150 (4.8 %)
	Implicit viewpoint	3,669 (27.3 %) ^a	2,379 (22.6 %) ^b	6,048 (25.2 %)
	Direct discourse + implicit viewpoint	105 (0.8 %) ^a	315 (3 %) ^b	420 (1.8 %)
	No viewpoint	9,399 (69.8 %) ^a	6,974 (66.2 %) ^b	16,373 (68.2 %)
	Total	13,462 (100 %)	10,529 (100 %)	23,991 (100 %)

Note. Each superscript letter denotes a subset of ‘domain’ categories whose column proportions do not differ significantly from each other.

order to learn more about their (linguistic) perspective-taking abilities. We started our analysis with the way in which different viewpoint devices were used in different conceptual domains – the Speech Act Domain and the Narrative Domain. The overall distribution of clauses over the two domains was quite balanced, with 43.9 % of the clauses being situated in the Narrative Domain. Of all clauses, 31.8 % contained a viewpoint expression, either in the form of an implicit viewpoint marker (25.2 %), direct discourse (4.8 %) or both (1.8 %). The percentage of clauses with a viewpoint expression was similar for the Narrative Domain (33.8 %) and the Speech Act Domain (30.2 %). Table 1 shows the distribution of the various types of viewpoint markers over the Speech Act Domain and the Narrative Domain.

A chi-square test showed that the relation between domain and the type of viewpoint marker was significant ($\chi^2(3) = 675.35, p < 0.001$). Direct discourse was used relatively more often in the Narrative Domain than in the Speech Act Domain, whereas the implicit viewpoint markers were used relatively more often in the Speech Act Domain than in the Narrative Domain. The proportionate use of a combination of direct discourse with an implicit viewpoint marker, which articulates a recursive embedding of viewpoints, occurred significantly more often in the Narrative Domain as compared to the Speech Act Domain. Finally, the Speech Act Domain contained a relatively larger number of clauses without a viewpoint than the Narrative Domain.

3.1.2 Origos

Next, we examined for each domain how the viewpoints were anchored to the different origos (participant, interviewer, generic, third party, ‘we’, multiple) in order to explore to what extent participants expressed their own viewpoints and the viewpoints of others, and in which ways. Tables 2 and 3 show how the different

Table 2: Number and percentages of origo viewpoints as presented through the use of direct discourse, implicit viewpoint markers or a combination of both in the Speech Act Domain.

		Viewpoint			Total
		Direct discourse	Implicit viewpoint	Direct discourse + Implicit viewpoint	
Origo	Participant	132 (45.7 %) ^a	2,286 (62.3 %) ^b	56 (53.3 %) ^{a,b}	2,474 (60.9 %)
	Interviewer	9 (3.1 %) ^a	587 (16 %) ^b	3 (2.9 %) ^a	599 (14.7 %)
	Generic	45 (15.6 %) ^a	495 (13.5 %) ^{a,b}	8 (7.6 %) ^b	548 (2.6 %)
	Third party	93 (32.2 %) ^a	207 (5.6 %) ^b	9 (8.6 %) ^b	309 (7.6 %)
	“We”	7 (2.4 %) ^a	25 (0.7 %) ^b	0 ^{a,b}	32 (0.8 %)
	Multiple	3 (1 %) ^a	69 (1.9 %) ^a	29 (27.6 %) ^b	101 (2.5 %)
Total		289 (100 %)	3,669 (100 %)	105 (100 %)	4,063 (100 %)

Note. Each superscript letter denotes a subset of ‘viewpoint’ categories whose column proportions do not differ significantly from each other.

Table 3: Number and percentages of origo viewpoints as presented through the use of direct discourse, implicit viewpoint markers or a combination of both in the Narrative Domain.

		Viewpoint			Total
		Direct discourse	Implicit viewpoint	Direct discourse + Implicit viewpoint	
Origo	Participant	489 (56.8 %) ^a	1,758 (73.9 %) ^b	162 (51.4 %) ^a	2,409 (60.9 %)
	Interviewer	2 (0.2 %) ^a	14 (0.6 %) ^a	0 ^a	16 (0.5 %)
	Generic	17 (2 %) ^a	196 (8.2 %) ^b	2 (0.6 %) ^a	215 (6 %)
	Third party	332 (38.6 %) ^a	339 (14.2 %) ^b	49 (15.6 %) ^b	720 (20.3 %)
	“We”	5 (0.6 %) ^a	46 (1.9 %) ^b	0 ^a	51 (1.4 %)
	Multiple	16 (1.9 %) ^a	26 (1.1 %) ^a	102 (32.4 %) ^b	144 (4.1 %)
Total		861 (100 %)	2,379 (100 %)	315 (100 %)	3,555 (100 %)

Note. Each superscript letter denotes a subset of ‘viewpoint’ categories whose column proportions do not differ significantly from each other at the 0.05 level.

origos are presented within the Speech Act Domain and the Narrative Domain, respectively.

A chi-square test showed that the relation between origo and the type of viewpoint marker was significant for the Speech Act Domain ($\chi^2(10) = 591.32, p < .001$). In the Speech Act Domain, implicit viewpoint markers were used relatively more often than direct discourse to present the viewpoint of the participant, the ‘we’ origo and the interviewer. Interestingly, third party viewpoints were relatively more often presented by means of direct discourse, indicating that participants often made a full deictic shift in their stories when presenting the viewpoint of people that were not present at the time of the interview.

A combination of viewpoint devices (direct discourse + implicit viewpoint) was mostly used to express the viewpoint of either the participant (relatively as often as implicit viewpoint markers or direct discourse were used for this purpose) and of multiple origos (relatively more often than implicit viewpoint markers or direct discourse were).

There were no significant differences in generic origo construal between direct discourse or implicit viewpoint, although a generic viewpoint was relatively more often expressed through a combination of viewpoint devices as compared to direct discourse alone.

A chi-square test showed that the relation between origo and the type of viewpoint marker was also significant for the Narrative Domain ($\chi^2(10) = 989.01$, $p < 0.001$). In the Narrative Domain, implicit viewpoint markers were used relatively more often than either direct discourse or a combination of devices to express the viewpoint of the participant, 'we' and generic origos. In this domain, third party viewpoints were also relatively more often presented by means of direct discourse, as compared to implicit viewpoint markers or a combination of viewpoint devices.

A combination of implicit viewpoint marking and direct discourse was mostly used to express the viewpoint of either the participant, third parties and of multiple origos (more often than implicit viewpoint markers or direct discourse alone). In the case of expression of generic origo viewpoint, the use of a combination of devices was relatively less frequent than the use of implicit viewpoint and similar to that of the use of direct discourse.

There were no significant differences in interviewer viewpoint presentation in the Narrative Domain, in which the interviewer origo was relatively rare.¹¹

3.1.3 Domain transitions

In order to determine whether and how speakers navigated between domains in the life-narratives, we analyzed the occurrences of transitions between the two domains and their linguistic marking. For this part of the analysis, we excluded domain transitions caused by discourse markers or interviewer interruptions.¹² The majority

¹¹ Instances of interviewer viewpoint presentation in the Narrative Domain could, for example, include a reference to something the interviewer had expressed during earlier interactions that was being recalled by the participant.

¹² Transitions caused by discourse markers or interviewer interruptions were excluded from analysis in order to focus on more robust transitions that were intrinsic to the story of the participant. Interestingly, also short interviewer interruptions like 'hmm' or 'yes' seemed to induce domain transitions, since including them resulted in a significant difference in unmarked transitions between domains: if interviewer interruptions without semantic content were included in the analysis,

Table 4: Number and percentages various markers of domain transitions - from Speech Act Domain (SAD) to Narrative Domain (ND) and vice versa.

		Direction transition		Total
		SAD to ND	ND to SAD	
Marker	Tense shift/temp adv	700 (81.8 %) ^a	650 (82.5 %) ^a	1,350 (82.1 %)
	Direct discourse	35 (4.1 %) ^a	2 (0.3 %) ^b	37 (2.3 %)
	None	121 (14.1 %) ^a	136 (17.3 %) ^a	257 (15.6 %)
Total		856 (100 %)	788 (100 %)	1,644 (100 %)

Note. Each superscript letter denotes a subset of 'direction transition' categories whose column proportions do not differ significantly from each other at the 0.05 level.

of transitions was marked with a tense shift or temporal adverb (82.1 %), whereas relatively few transitions were marked by direct discourse (2.3 %). The remaining transitions were not linguistically marked (15.6 %).

Table 4 shows how transitions from the Speech Act Domain to the Narrative Domain and vice versa were marked. The marker category 'other' did not occur and was therefore left out.

A chi-square test showed that there was a significant relation between the direction of the transition (Speech Act Domain to Narrative Domain or the other way around) and the type of marker that was used ($\chi^2(2) = 29.40, p < 0.001$). This significance is expressed in that direct discourse, which is more frequently used in the Narrative Domain, relatively more often marks a transition from the Speech Act Domain to the Narrative Domain than the other way around. The direction of transition was not significantly related to the other markers: tense shifts and temporal markers were used equally often to mark transitions from the Speech Act Domain and the Narrative Domain and transitions from the Narrative Domain to the Speech Act Domain. Likewise, transitions from the Narrative Domain to the Speech Act Domain and vice versa remained equally often unmarked.

3.2 Corpus II – Pear stories

The pear stories as told by people with a schizophrenia diagnosis were compared to those told by a control group in order to establish whether any differences between groups could be establish for our viewpoint variables.

transitions from the Narrative Domain to the Speech Act Domain were significantly more often unmarked than the other way around.

Table 5 shows the distribution of clauses over the coded variables for each group. In both groups, the majority (about 83 %) of the clauses were situated in the Narrative Domain. Approximately the same number of clauses were anchored in the Speech Act Domain and the Narrative Experience Domain. Utterances in the latter domain refer to the time and space in which the participants saw the movie, which is not applicable to the narrative interviews, in which participants only referred to the here-and-now or the there-and-then of the story. In Corpus II, participants primarily use implicit viewpoint markers (25.3 %) and only occasionally direct discourse (2.7 %) to express viewpoints. Third party viewpoints were the most prominent (53.9 % of all origos) in the pear stories.

In the control group, 18.6 % of total clauses showed a domain shift. This was true for 17.8 % of all clauses for the SZ group. As can be seen in Table 5, transitions between domains were in most cases unmarked (74.1 %), in both groups. If they were marked, it was mostly through a tense shift or temporal adverb (22.9 %).

A chi square test showed no differences between the control group and the SZ group in the distribution of clauses over the three domains ($\chi^2(2) = 0.372, p = 0.830$), in

Table 5: Number and percentages of all variables (domains / viewpoint presented through direct discourse or implicit viewpoint markers / presented origos / domain transition markers) in the pear stories as told by people with a schizophrenia diagnosis and the control group.

		Group		
		Control group	Schizophrenia group	Total
Domain	Speech Act Domain	111 (8.5 %)	76 (8.4 %)	187 (8.5 %)
	Narrative Domain	1,090 (83.1 %)	753 (82.5 %)	1,843 (82.8 %)
	Narrative Experience Domain	111 (8.5 %)	84 (9.2 %)	195 (8.8 %)
Viewpoint	No viewpoint	919 (70 %)	669 (73.3 %)	1,588 (71.4 %)
	Direct discourse	32 (2.4 %)	29 (3.2 %)	61 (2.7 %)
	Implicit viewpoint	354 (27 %)	210 (23 %)	564 (25.3 %)
	Direct discourse + implicit viewpoint	7 (0.5 %)	5 (0.5 %)	12 (0.5 %)
Origo	Participant	101 (25.8 %)	64 (26.2 %)	165 (26 %)
	Generic	58 (14.8 %)	37 (15.2 %)	95 (15 %)
	Third party	210 (53.7 %)	132 (54.1 %)	342 (53.9 %)
	‘We’	6 (1.5 %)	5 (2 %)	11 (1.7 %)
	Multiple	16 (1.5 %)	5 (2 %)	22 (3.5 %)
Transition	None	177 (73.8 %)	119 (74.7 %)	296 (74 %)
	Tense shift/temp adv	57 (23.8 %)	35 (21.6 %)	92 (23 %)
	Direct discourse	3 (1.3 %)	1 (0.6 %)	4 (1 %)
	Discourse marker	3 (1.3 %)	5 (3.1 %)	8 (2 %)

viewpoints ($\chi^2(3) = 5.22, p = 0.156$), nor in the origos to which the viewpoints were anchored ($\chi^2(4) = 1.41, p = 0.842$). There were also no significant differences regarding the type of markers used to signal the transition from one domain to another ($\chi^2(3) = 2.214, p = 0.529$).

4 Discussion

4.1 Conclusions

In this paper, we presented an integrated approach to describe and analyze spontaneous perspective-taking in oral narratives. Applying the DNN and VPIP frameworks to a corpus of narrative interviews and a corpus of guided retellings allowed for the quantification of linguistic perspective-taking in natural narrative utterances of a group of people that have been hypothesized to experience serious difficulties with ToM and intersubjectivity. We were able to show that our participants were able to skillfully and spontaneously present, navigate and embed narrative viewpoints through the use of various linguistic viewpoint devices. In the studied corpora, they made the cognitive, emotional and perceptual viewpoints of other people explicit. Participants showed skill in presenting the viewpoints of others in both the here-and-now of the Speech Act Domain, and the there-and-then of the Narrative Domain, demonstrating the ability to move their viewpoint from character to character, along an independently construed narrative timeline.

In the studied narratives, participants' own viewpoints were most often presented through the use of implicit viewpoint markers as compared to direct discourse. Implicit viewpoint markers were also prominent in expressing the viewpoint of the interviewer in the Speech Act Domain, and generic viewpoints in the Narrative Domain. The viewpoints of third parties, on the other hand, were predominantly presented in the Narrative Domain and by means of direct discourse. Doing this requires the speaker to explicitly and fully shift their viewpoint to that of the direct discourse origo, thereby suppressing their own viewpoint and prompting a full deictic shift: the deictic expressions in direct discourse need to be interpreted as referring to the context of the there-and-then of the story protagonist (Sanders and Redeker 1996). The fact that this viewpoint device was largely used by participants to present viewpoints of other people, who were not present at the interview, exemplifies the complexity of the viewpoint constellations that the participants presented in their discourse.

In addition, the observed skillful layering of viewpoints indicates that our participants were able to present complex embedding. This recursivity of viewpoints

would sometimes add up to multiple embedded layers in one clause, as in the following example:

- (15) “*T werd haar op een gegeven moment duidelijk van/* – Participant 103
 “At a certain point it became clear to her/
“Oh maar dit is heel eigenlijk/
 “Oh but this is really very/
deze jongen is geobsedeerd/
 this boy is obsessed/
of die is eh in ieder geval heel veel bezig met mij” ”
 or in any way he is very occupied with me” ”

In this example, the participant tells the interviewer about the girl he has been in love with, and how she realized that this was the case. In these clauses, the participant clearly and skillfully presents his viewpoint on her viewpoint on his viewpoint on her. The viewpoint of the girl is expressed through the use of both implicit viewpoint (‘it became clear to her’) and direct thought. The way in which the girl then thinks about his viewpoint on her is made clear through the use of implicit viewpoint markers like ‘obsessed’. This fragment is one example of the skillful multiple embedding and complex viewpoint navigation that we came across in the interview corpus.

In distinguishing and navigating deictic domains, the participants were found to predominantly use tense shifts and temporal adverbs to linguistically mark transitions from one domain to another. Almost 85 % of domain transitions were linguistically marked, demonstrating the participants’ ability to take the listener’s perspective into account. Note that this kind of linguistic marking is additional to nonlinguistic pragmatic markers, such as gestures, body shifts and eye gaze, that can also play a role in demarcating domain shifts (Janzen 2004; Sweetser and Stec 2016).

These findings are all indications that people with a schizophrenia diagnosis can linguistically express and navigate viewpoints in narrative, but they are not informative on whether they are as adept at it as people without the diagnosis. In order to give some indication of whether this group has more difficulties with narrative perspective-taking than neurotypical people, we have compared the retellings of a film between people with this diagnosis and a control group. The use of a guided storytelling task enabled us to systematically compare different construals of the same events. We found no significant differences in viewpoint navigation between the groups.

There were some observable differences between the groups in the pear story corpus that were not included in our viewpoint analysis, like a larger variation in

story length – the standard deviation in the number of clauses per participants was 13.5 for the control group and 23.2 for the schizophrenia group. The latter contained, for example, a story of only 5 clauses whereas the shortest story in the control corpus was 16 clauses. In addition, the stories in the schizophrenia corpus were more often incomplete and 11 of them left out the ‘punch line’ of the story (where the farmer finds out his pears have been stolen), as compared to 4 stories with a less explicit construal of the punch line in the control corpus. The SZ corpus also contained some remarkable pragmatic inferences (e.g., describing the farmers shawl as a “strange piece of plastic”) and some more explicit moral judgments (e.g., describing participants as evil). In general, differences between participants in the schizophrenia group seem to have been larger, both with regards to content and form of the stories (see also van Schuppen et al. (2020) for a qualitative characterization of a number of pear stories as told by the people in the schizophrenia group).

The methodology we have used in this paper builds upon the cognitive linguistic research value to take seriously the complexity of natural language use. The method of analysis introduced in this study presents a clear and replicable tool for the analysis, quantification and comparison of different kinds of narrative: interactively told, or singular; from memory, or from a visual input. In comparing these different kinds of storytelling, our findings raise questions on the differences between retelling a fictional story and a lived experience. Answering these questions adds to the cognitive linguistic literature on storytelling in all its variation.

The use of tense shifts and temporal adverbs to mark domain transitions was, for example, less common in the pear story corpus. This was true for both the schizophrenia and the control group retellings. An explanation might be that, although most life stories in Corpus I were told in the past tense, with shifts to the present tense indicating a transition to the Speech Act Domain and shifts to the past tense indicating a transition to the Narrative Domain, most (19 out of 23 for the control group/18 out of 23 for the schizophrenia group) of the Pear Stories in Corpus II were told in the present tense – they seemed to be situated in the ‘eternal now’ of the film. In those cases, the past tense was sometimes used to mark a shift to the Speech Act Domain or Narrative Experience Domain, instead of to the Narrative Domain. But often, this resulted in domain transitions that were not explicitly linguistically marked as such, with the speaker continuing in the present tense. In these cases, domain transitions often needed to be pragmatically inferred from the context. These findings indicate that retellings of a fictional narrative that can be replayed, show a tendency to present the story from a more generalized viewpoint. In these cases, the story is projected in a constructed, unanchored space to which speaker nor listener are temporally connected (Sanders and van Krieken 2019), whereas stories that people tell about their lives from a particular viewpoint, were projected in a specific past moment that anchors speaker and listener together.

4.2 Implications for thinking about ‘schizophrenia’

Our findings do not support the consensus in the empirical literature that people with a schizophrenia diagnosis have problems taking on the perspectives of others. If people with this diagnosis are, overall, significantly disturbed in their ability to take on other perspectives and this is an essential part of the pathology of the disorder, like current theories suggest, we need to explain how it is possible that this group can take on and navigate different complex linguistic viewpoints in daily, narrative interaction.

This ambiguity might be explained in a number of ways. First of all, there could be a discrepancy between widely used experimental cognitive perspective-taking tasks and spontaneous linguistic perspective-taking in natural oral discourse. There are many ways in which people can take on and manage viewpoints, and the skill that ToM tasks measure might be just one of them (Andrews 2008). Many cognitive perspective-taking tasks, like the Hinting task, False Belief tasks and the Mind in the Eyes task, do not involve direct, physical interaction with another person (Brüne 2005; Harrington et al. 2005). Engaging in conversation in one’s home is a more natural and pre-reflectively embodied experience than being in a laboratory setting. This might make it easier for participants to relate to another person and take their perspective into account, or it might trigger other social cognitive capacities than participation in the mentioned ToM tasks does. In addition, the discrepancy between our findings and the ToM literature might also be magnified by the fact that a number of previous studies used tasks that focused on reaction times, for which our methodology cannot account.

One might also suggest that schizophrenia arises from the disruption of a more fundamental, embodied intersubjectivity or world-sharing than the habitual, or maybe ‘higher cognition’, perspective-taking that is required for viewpoint construal. However, higher order cognitive perspective-taking abilities are theorized to build on more embodied, primary intersubjective skills (Fuchs and Röhrich 2017). Using domain transition markers and discourse markers – such as most of our schizophrenia narrators do – indicates that they, as speakers, pre-reflectively anticipate listeners’ needs for being able to understand the story and take them by the hand in telling it. This is not self-evident in storytelling. Consequently, there is substantial intersubjective skill involved in this kind of storytelling. This indicates that the participants have, at least to a significant extent, an embodied, intersubjective understanding of the common ground and the background and perspective of the listener.

Thirdly, the participants with a schizophrenia diagnosis were not acutely psychotic at the time of the interview. Our results could indicate that if (linguistic) perspective-taking problems are to be viewed as symptomatic, they may be

symptoms of psychosis, and not of schizophrenia per se. This could also point to ToM problems as a state, rather than a trait, variable (Harrington et al. 2005). Linguistic perspective-taking might not be suited as a diagnostic criterion for *schizophrenia*. These findings support a more symptom centered approach that gives precedence to the concept of psychosis over that of schizophrenia (van Os 2016).

Lastly, the discrepancy between ToM task results and our findings might also be due to heterogeneity within the group of people diagnosed with schizophrenia: the way in which individuals speak varies greatly, both between subjects and within subjects over time. Essentialist theories on ‘schizophrenia’ could take the heterogeneity of this group more seriously and explicitly into account. Future research might benefit from a focus on the modelling of individual differences and differences over time (Borsboom et al. 2019; Molenaar and Campbell 2009).

4.3 Limitations and suggestions for further research

The quantitative application of cognitive linguistic theory to the analysis of narrative discourse may contribute to the clarification of the language – cognition relation, both in schizophrenia and in general. Although an impressive body of evidence suggests a strong link between ToM/intersubjectivity and language problems in schizophrenia, there is no unambiguous account of its causes or even of the exact manifestation or gestalt of these problems (Lorenz 1961; Schwartz 1982). The present study will not untangle this clutter, but focusing on natural language use instead of experimental tasks guides towards respecting the complexity of both language and social cognition, and directs to the reasons for the knot (see, e.g., van Dijk and van Duijn 2021). Further research might ask participants to engage in both storytelling and cognitive perspective-taking tasks to see if there is a correlation between both, or whether there might be a difference between on-line and off-line ToM processing, like Frith (2004) has suggested. This kind of triangulation might shed light on the relation between cognitive and linguistic perspective-taking.

In the coding of the domain transitions, we have used the markers that are described by van Krieken and Sanders (2019) in their study on journalistic crime stories. Since these markers were based on written, journalistic discourse, a qualitative exploration of possible markers in oral narratives might result in a more fitting codebook for the analysis of this corpus. The direct discourse marker variable was not very frequent in our corpora, for example, and its significance as a marker of transitions from the Speech Act Domain to the Narrative Domain can be explained by direct discourse being more frequent in the Narrative Domain. Qualitative studies on domain transitions might be able to clarify the specific ways in which domains are marked and navigated in spontaneous oral discourse. Especially the role of phonetics

and embodied attunement might be essential in the demarcation and transition of domains (Janzen and Schaffer 2008).

Lastly, future research might focus on more fine-grained analyses of these kinds of narratives. Speakers have a variety of linguistic viewpoint devices available of which the analysis was beyond the scope of this project (Dancygier and Sweetser 2012). In addition, future studies could take into account how implicitness in viewpoint marking could be a matter of degree. Verbs of cognition such as ‘thought’ could for instance be considered as a less implicit marker than epistemic verbs such as ‘could’. In addition, differentiating between more subjective (e.g., epistemic and modal indicators) and intersubjective (e.g., discourse markers and common ground modulators) linguistic markers in these kinds of studies could provide interesting future insights, although they might be hard to distinguish.

Many essentialist theories of schizophrenia view the language use of the people diagnosed with it as a kind of ‘mirror to the mind’; as either a symptom of a deeper cognitive problem or an expression of an existential predicament. Our study shows that their language use in everyday narrative conversation is, at least in many cases, not inadequately viewpointed. Fundamentally, this brings us back to the question of how language and narrative, as intersubjective devices, not only reflect, but construe the minds of both speaker and listener in a dynamic way. Studying spontaneous perspective-taking in natural language might help to understand this process.

Data availability statement

The narrative interview dataset that was generated for this paper (Corpus I) contains information of a sensitive nature. Access to the pseudonymized transcriptions of these interviews is therefore restricted. Access can be requested through contacting the corresponding author via the Radboud Data Repository (RDR) at <https://doi.org/10.34973/re1a-6f34>, and will be granted if the aim of the request is in line with the research aims and protocol as approved by the Central Committee on Research Involving Human Subjects (CCMO) and ethical committee of the Radboud University. This includes access for reasons of scientific integrity.

The anonymized transcriptions of the pear story dataset (Corpus II) will be freely accessible through the RDR for the control group at <https://doi.org/10.34973/grr8-0635>. The pear stories of our participants with a schizophrenia diagnosis will be accessible for registered and licensed users of the repository at <https://doi.org/10.34973/sa9h-x351>.

The codebooks can be freely requested from the corresponding author.

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