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ORIGINAL ARTICLE

The impact of neurotypical cognition on communication deficits attributed to pathologized people: schizophrenia as a case study

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Abstract

Social communication deficits have been robustly documented in schizophrenia spectrum disorders. Historically, attempts to lessen this dysfunction have focused almost exclusively on modifying the person with schizophrenia's own behaviors and cognition. However, social communication is inherently dyadic, and this approach leaves unaddressed the role of the neurotypical interlocutor in communication breakdown. In this position piece, we review psycholinguistic theories and research in order to propose a more comprehensive and equitable understanding of the social dysfunction that people with schizophrenia experience. We do so by drawing attention to the manner in which neurotypical individuals may drive communication failure in schizophrenia. Stigma is proposed to be a major component of this phenomenon. In addition to an overview of our theoretical framework, we provide a research agenda to test the hypotheses this framework has produced. We hope this piece can inform future research directions within psycholinguistics.

Keywords: schizophrenia; language cognition; social cognition; neurotypical cognition; communication failure; communication dysfunction; stigma; social outcomes; theoretical approach

Social communication deficits are a feature of many psychological conditions. For the clinical psychologist, important diagnostic clues are found not only in *what* a person communicates in an interview but also *how* they communicate (American Psychiatric Association, 2013). For example, a monotonous, flat delivery could reflect a different underlying diagnosis than an overly expressive, jittery one (American Psychiatric Association, 2013; Covington et al., 2005). Alternatively, language content that is perceived as tangential to the listener might reflect a different neurotype than thoughts expressed in a logically ordered manner (American Psychiatric Association, 2013; Kuperberg, 2010a).

Consequently, understanding which communicative traits pattern with which psychological condition has proved an important resource for mental health

clinicians, and for the language and cognitive sciences more generally. This is especially true for conditions that are variable and complex, such as the spectrum of conditions collectively referred to as schizophrenia (American Psychiatric Association, 2013). This condition, which is associated with both genetic and environmental factors, impacts approximately 0.5% of people as they reach adulthood (American Psychiatric Association, 2013; Fatemi & Folsom, 2009). Since the earliest descriptions of schizophrenia, researchers have emphasized its effects on language and communication (Bleuler, 1911/1950; de Boer et al., 2020a, 2020b, Kuperberg, 2010a, 2010b; Levy et al., 2010; Palaniyappan, 2021; White, 1949). Indeed, language behaviors affected in schizophrenia are far-reaching as they broadly implicate the pragmatic, semantic, and syntactic levels (Kuperberg, 2010a; Levy et al., 2010; Rossetti et al., 2018; Walther et al., 2020), and some features, such as flat affect, can be seen on the phonetic level (Covington et al., 2005). Although language symptoms are highly heterogenous across individuals (Oomen et al., 2022), common linguistic symptoms of schizophrenia include poverty of speech, derailment, tangentiality, impaired theory of mind, and the use of neologisms (Covington et al., 2005; Kuperberg, 2010a). People living with schizophrenia often report real-world social impairments which decrease quality of life and may be mediated in part by communicative deficits (de Boer et al., 2020b; Degnan et al., 2021; Kurtz et al., 2015; Levy et al., 2010; Muralidharan et al., 2018; Varga et al., 2018).

Research into language and communication in schizophrenia has been conducted from the perspective of several disciplines including psycholinguistics, cognitive neuroscience, and clinical psychology. Work in psycholinguistics has attempted to characterize how speech in schizophrenia differs from neurotypical speech (e.g., Corcoran et al, 2018) and identify the elements of speech production and perception that underlie discourse failure (Rochester & Martin, 1979; Titone, 2010). Cognitive neuroscience studies have investigated the role of specific cognitive processes in language perception and production in schizophrenia and the degree to which these are associated with differences in neural activation and brain morphometry (e.g., de Boer et al., 2020a; Manschrek et al, 1988; Mashal et al., 2013). In the clinical realm, language has been targeted largely indirectly, through interventions such as computer-assisted social skills training programs (e.g., Kurtz et al., 2015) which have the goal of improving real-world social functioning and cognitive remediation (reviewed in Cella et al., 2020) that targets cognitive functions (e.g., auditory working memory) that are relevant to language. More recently, research has targeted language in schizophrenia directly with interventions focused on language pragmatics (reviewed in Joyal et al., 2016 and e.g., Bambini et al, 2022). These clinical methods all have a positive impact on the specific skills they target in the laboratory. However, generalization to real-world functioning has been inconsistent (Cella et al., 2020; Kurtz et al., 2015; Medalia & Saperstein, 2013; Tan et al., 2018).

An enduring assumption across much of the work on language and communication in schizophrenia is that communication failures are attributable solely to the person with schizophrenia. Thus, the conceptual and empirical focus of the schizophrenia literature is on identifying schizophrenia-related behaviors (Covington et al., 2005; Docherty et al., 1996, Lavelle et al., 2013), cognitive capacities (Chen et al., 1994; Faber & Bierenbaum Reichstein, 1981; Langdon et al., 2002), and neural

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differences (de Boer et al., 2020a; Li et al., 2009; Spitzer, 1997) that contribute to communication problems. Arising naturally from this perspective, the vast majority of efforts at intervention target specifically the person with schizophrenia (Cella et al., 2020; Joyal et al., 2016; Kurtz et al., 2015).

Importantly, from both a theoretical and a human perspective, approaches that consider only the pathologized person in a communication failure leave unaddressed the role of the "healthy" (i.e., neurotypical) interlocutor whose communicative behaviors may reinforce and exacerbate the barriers faced by this vulnerable group. Thus, our goal in this paper is to draw attention to the ways neurotypical people might drive social communication failures when interacting with people with schizophrenia. In doing so, we hope to motivate other researchers to consider this angle when developing strategies for improving communication and social outcomes in schizophrenia. A more balanced perspective on the nature of communication failure could improve mutual understanding, reduce demands on people with schizophrenia, and potentially elucidate strategies for improving functional outcomes.

Positionality statement

The first author is deeply embedded in a community of people with severe mental illness, including schizophrenia. The motivation for this paper came from discussions with dear friends about how the normative view of schizophrenia fails those who live with this condition. The goal of this paper is to provide scientific support for an intuitive notion shared by all in the first author's close-knit community: The symptoms of schizophrenia are not the only factor impacting the success of any given communicative attempt. Thus, the first author wishes to encourage a more balanced understanding, and humanizing view of people with schizophrenia, by highlighting how neurotypicals' cognitions can cause communication failure. The long-term goal of this effort is to improve the quality of interactions that people with schizophrenia have every day, be they with clinicians, researchers, neighbors, or friends.

The second author has conducted largely cognitive neuroscience research in schizophrenia for the past 35 years. She feels a sense of connection with patients and frustration for them that despite concerted research efforts, their lives have not much changed across that span. The diagnosis and symptoms are frequently met with labeling and distancing from those in the person's social circle and even sometimes from clinicians. She hopes this article can help those not suffering from schizophrenia to better communicate with and support those who are.

The senior author has had long-standing personal and professional connections to people living with schizophrenia, who evidenced an often astounding resilience to systemic interpersonal and societal challenges imposed upon them. As a researcher, the senior author was privileged by opportunities to investigate language use by people living with schizophrenia from a psycholinguistic perspective throughout her career. She hopes that turning a spotlight on the pivotal role that "healthy" people play in facilitating meaningful communication might help to chip away at the social othering of those who live bravely and inspirationally with this condition.

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Models of successful communication

Communication is inherently dyadic: all parties involved have a role in its success (Dragojevic et al., 2015; Fusaroli & Tylén, 2016; Garrod & Pickering, 2009; Oben & Brône, 2016; Pickering & Garrod, 2004). Interventions that target the person with schizophrenia alone neglect to address the potential for the neurotypical interlocutor to be a cause of communication failure. This perspective limits our ability to develop strategies to improve real-life social outcomes and is one potential reason for the gap between experimental results in the laboratory and the real-world impact on social functioning. To overcome such limitations, we must take a step back and consider our understanding of the factors that lead to communicative success. We do so now by reviewing two psycholinguistic theories: Communication Accommodation Theory (CAT; Dragojevic et al., 2015; Zhang & Giles, 2017) and the Interactive Alignment (IA) model (Garrod & Pickering, 2009; Kootstra et al., 2020; Oben & Brône, 2016; Pickering & Garrod, 2004).

CAT states that when speakers adjust their communication styles to accommodate another person, they are rewarded by greater communicative success and positive social affiliation (Dragojevic et al., 2015; Zhang & Giles, 2017). Communication accommodation that encourages social affiliation is often achieved through *convergence*, that is, changing one's communication style to be more similar to the interlocutor's. This could involve, for example, slowing down one's speech when speaking with a beginning learner of a second language, or mirroring the body language of an acquaintance you wish to be closer with. However, these strategies are considered accommodation only when deployed respectfully; patronizing use of these strategies is a form of nonaccommodation that creates interpersonal distance (Cretchley et al, 2010; Zhang & Giles, 2017). CAT states that communication accommodation strategies underlie the creation of mutual understanding and shared communicative goals. Accommodation can be implemented for the sake of creating a sense of unity with the interlocutor, interpretability, discourse management, the maintenance of social roles, expressing empathy, or any combination of these motivations (Dragojevic et al., 2015; Zhang & Giles, 2017). When interlocutors fail to accommodate one another's communicative needs, communicative breakdown and social distancing can occur (Choi, 2018; Choi & Giles, 2012; Dragojevic et al., 2015; Farzadnia & Giles, 2015). Thus, the willingness to take an interlocutor's perspective to determine their communicative needs is vital to communicative success.

A more cognitive theory of communication is the IA model (Garrod & Pickering, 2009; Oben & Brône, 2016; Pickering & Garrod, 2004). This model proposes a cognitive algorithm through which communicative success is achieved. According to IA, the primary goal of communication is for both interlocutors to (at least temporarily) align their perspectives, "meeting in the middle." Each interlocutor enters communication with a set of prior beliefs and a communicative goal. In speaking to one another, interlocutors' adopt and reflect each other's language patterns (at the level of the lexicon, grammar, pronunciation, and syntactic structures), a strategy that primes alignment at other linguistic levels and allows them to develop shared mental representations of a described situation (Garrod & Pickering, 2009; Kootstra et al., 2020; Pickering & Garrod, 2004). IA also allows them to repair the

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breakdowns that occur when their representations diverge (Garrod & Pickering, 2009; Pickering & Garrod, 2004). In this way, the misunderstandings that underlie the need for IA are a normal part of communication, even in the neurotypical population. For example, when one person gives directions to another person to find a nearby store, they may say "Turn left at the maroon house." However, if the recipient of the instructions does not perceive the house as maroon, but instead as brown, they will not reach the store. This would be a failure of the communicative goal of the conversation. Alignment, in this case, would come in the form of using language to clarify this discrepancy. For example, the directions-receiver could ask, "Do you mean the brownish house?". This attempt at alignment asks the directions-giver to temporarily adjust their perspective of the situation to ensure the communicative goal is met. Although it is likely that the directions-giver will return to conceptualizing the house as maroon once the conversation is over, this temporary act of alignment is necessary for the success of the interaction. Communicative success, thus, relies on interlocutors being willing to incorporate the perspective of another into their own understanding of the situation (Garrod & Pickering, 2009; Pickering & Garrod, 2004). In this way, perspective-taking – a component of social cognition (Ames, 2004; Stietz et al., 2019) – underlies IA.

When considering a conversation between someone with schizophrenia and a neurotypical interlocutor, it might be assumed that the neurotypical individual will engage in normative social cognition and behavior. However, this is frequently not the case. The literature on communication between people with schizophrenia and their neurotypical caregivers has shown a great deal of socially disaffiliative behavior on the part of the neurotypical participants (e.g., Doane, 1978; Hinojosa-Marqués et al., 2020; O'Driscoll et al., 2019). In fact, there is a well-established literature on expressed emotion in families, particularly high rates of critical comments toward the person with schizophrenia, that shows a robust association with risk for relapse and poorer long-term outcomes (Butzlaff and Hooley,1998; Ma et al, 2021). Family interventions to reduce caregiver stress and increase collaborative problem-solving have been successful in lowering expressed emotion and improving outcomes (Pharoah et al, 2010). Medical providers have also been reported to engage in socially disaffiliative behavior toward people with schizophrenia (e.g., Schneider et al., 2004; McCabe et al, 2002). Although doctor–patient alliance is a critical factor in medication compliance (Totura et al, 2018) and outcomes (Bourke et al, 2021) in schizophrenia, controlled intervention studies targeting the communication strategies of medical providers are severely lacking (McCabe et al 2016; Papageorgiou et al 2017).

Stigma

Experience of stigma is a significant predictor of negative outcomes for people with schizophrenia (Degnan et al., 2021; Eliasson et al., 2021; Morgades-Bamba et al., 2019). Studies analyzing quality of life in people with schizophrenia often distinguish between different domains of functioning, such as the psychological, social, and physical domains. In all of these domains, measures of stigma experienced from others or internalized into one's self concept have been shown to have direct

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negative effects on quality of life (Degnan et al., 2021; Eliasson et al., 2021; Morgades-Bamba et al., 2019). In fact, even receiving the diagnostic label of "schizophrenic," which should theoretically enable access to recovery resources, has been found to have a detrimental impact on subjective measures of recovery, regardless of symptoms (Vass et al., 2017). This suggests that being placed into the "schizophrenic" category creates an additional burden for people struggling with mental health. Experimental research supports the notion that a categorical view of schizophrenia is associated with greater stigma; recent large studies targeting stigma have found that framing psychotic symptoms as being on a continuum of normal experience reduces stigma and increases participants' felt similarity with people with schizophrenia (e.g., Violeau et al, 2020; reviewed in Peter et al, 2021).

The ubiquity of social stigma may contribute to the strength of its negative impact on outcomes. In studies of mass media, such as the tabloid press, a linguistic analysis found the word "schizophrenia" to be overwhelmingly associated with graphically violent language, promoting alienation (Bowen et al., 2019). Similarly, a supervised machine learning analysis of tweets concerning schizophrenia, made between January and May 2018, found that a staggering 47% of English-language tweets contained stigmatizing language (Jilka et al, 2022). Thus, stigma is transmitted not only interpersonally, but by mass communication. Even among healthcare providers, schizophrenia is among the most highly stigmatized of mental illnesses (Valery & Prouteau, 2020). While this great degree of stigma is known to negatively impact social outcomes in people with schizophrenia, how does it affect their neurotypical interlocutors?

Neuroimaging research on ingroups and outgroups has provided insight into how stigma affects our neural responses to stigmatized groups. In a landmark functional magnetic resonance imaging (fMRI) study in 2006, Harris and Fiske found that photographs of members of stigmatized outgroups failed to activate the regions associated with social cognition and instead evoked a neural activation pattern consistent with disgust. Numerous subsequent studies have confirmed reduced activation of the frontal region associated with mentalizing and empathy when viewing members of outgroups compared to ingroups (Krendl, 2016; Lantos & Molenberghs, 2021; Merritt et al., 2021).

Given the importance of social cognition to successful communication, it seems likely that this effect could impact communicative outcomes between neurotypicals and members of stigmatized outgroups. Despite the robusticity of the literature, there has been relatively little linguistic inquiry into how stigma manifests in communication. In order to provide a concrete, albeit anecdotal, example of communication that seems to be impacted by stigma, we turn to a conversation from the television show *Dr. Phil*, a daytime television talk show that features former clinical psychologist Dr. Phil McGraw ("Phil McGraw", March 2022). It was the highest-rated syndicated talk show for 150 consecutive weeks in 2019 and continued to hit new rating milestones in 2020 (Nakamura 2019, 2020). In this show, McGraw provides psychological advice to troubled people in front of a live studio audience ("Phil McGraw", March 2022). The following is a transcript from season 16, episode 91 of Dr. Phil, wherein he has a conversation with a 21-year-old woman, "X," suffering from an unspecified schizophrenia spectrum disorder that causes her to experience delusions of being romantically involved with a stranger.

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PM: You say that you truly think it's the love story of the century. Really?

X: I do, yes. I'm writing a book about it, actually.

PM: It's the love story of the century, but you've never physically met.

X: No, sir.

X: [Addressing the audience] And y'all can laugh at me, it's fine. I will be your spectacle. I will be your laughing, laughing spectacle. You can all laugh at me, it's fine. [A]

PM: Well, you know what, I think we're just gonna shut this down 'cause I'm not into all this melodrama, and you playing the victim and everything, so. You're saying the audience is making a spectacle out of you, that's not what I'm about. That's not what I do. I had you come here to help you. And you're saying people are ridiculing, making fun of you, you're gonna be a spectacle. I don't want to be any part of that. [B]

X: I'm not-

PM: I'm sorry, so you know what, this has just gone in a really bad direction. I'm gonna talk with Y. I'm gonna talk with your mother. And I'm just gonna let you head on home. [C]

X: Why?

PM: And go because I'm not gonna play . . .

X: Is there anything I can say to fix this? [D]

PM: No.

X: I'm so sorry. [E]

PM: No, no, all of the melodrama about ridicule in the audience, and they can laugh at you and all that, I don't play those kinda games . . .

X: I'm sorry. [F]

PM: You're very manipulative, and I'm not interested in all of that. So, I'm gonna let X move on and when I come back I'm gonna talk to Y about how to protect herself from this and we'll talk to X's mom next. We'll be right back.

X: I apologize that I offended you in any way, shape, or form. That was never my intention. [G]

PM: Well, you certainly have. So Z, if you'll take X off? It's good to meet you, and I wish you well.

X: Thank you.

PM: I'm not doing this.

(Dr. Phil [Youtube Channel], 2018)

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This conversation illustrates the way bias against people with schizophrenia spectrum disorders may contribute to communicative failure. Approaching this situation, one would assume that both X and McGraw share somewhat similar goals – to speak together openly about the mental health struggle she is facing for a television audience ("Phil McGraw", March 2022). However, this goal is not achieved, as X is removed from the stage before the intended end of her segment. But what caused this to happen?

The impetus for X's removal seems odd. As she is currently experiencing psychotic symptoms, it does not seem unusual that in utterance [A] she is expressing some distress due to being watched by an audience. Moreover, the soundtrack supports her observation that the audience is laughing at her delusions. As schizophrenia spectrum disorders frequently include paranoid symptomatology (American Psychiatric Association, 2013), X's attribution of negative motives to the audience might be expected even if the audience were sympathetic. Utterance [A] can be taken as an attempt by X to accommodate or align with the audience and McGraw: while she feels her delusions are reality, she is accepting that for the time she engages with the audience and McGraw, they are only a "spectacle." However, McGraw does not respond with alignment in kind; in utterance [B], he responds with accusations of melodrama and "playing the victim," an active rejection of (or even insult to) her perspective, then terminates the conversation [C]. By using negative, stigmatizing language, McGraw seems to be evoking anti-schizophrenic bias to delegitimize X's perspective and shift the blame for communication failure from himself to her. This is despite the repeated efforts that X makes to initiate communicative repair and re-align perspectives [D, E, F, G], efforts that are rebuffed by McGraw. The power differential between host and guest, older man and younger woman, and most importantly here, putative neurotypical and mentally ill enables McGraw to create and enforce communicative failure and to blame her for it.

While this transcript depicts just a few minutes of a television show, it illustrates one way that stigma against people with schizophrenia can both create communication breakdown and justify it, regardless of the quality of the social skills exhibited by the person with schizophrenia. Considering the enormous success of *Dr. Phil* (Nakamura 2019, 2020), this segment of the show provides anecdotal evidence of (1) the cultural normalization of socially disaffiliative behavior toward people with schizophrenia and (2) how a lack of conversational accommodation by the neurotypical interlocutor might contribute to the poor social outcomes that people with schizophrenia experience.

Experimental and computational data are needed to evaluate these inferences, to characterize the ways in which stigma can manifest in communication, and how it can contribute to communication failure. Such data are also a necessary foundation to evaluate the effect of interventions that seek to foster positive, affiliative interactions with people with schizophrenia (e.g., McCabe et al 2016). Public health interventions that target stigma might also be evaluated in terms of their effect on neurotypical interactions with people with schizophrenia.

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Conclusion

In the preceding sections, we highlighted the dyadic nature of communication and the under-investigation of the role of the neurotypical interlocutor in communication dysfunction in schizophrenia. We described the stigmatization of schizophrenia and its impact on outcomes and have proposed that stigma-related impairment of social cognition in neurotypicals may be a major failure point in communication with people with schizophrenia. It could also be a mechanism by which stigma is translated into poorer functioning and reduced quality of life in schizophrenia. If our hypotheses are correct, interventions to address the neurotypical interlocutor's role in interactions with people with schizophrenia may provide a route to improving outcomes. These hypotheses are also relevant to other stigmatized disorders. With schizophrenia as our focus here, research required to lay the groundwork for this approach includes investigating:

(1) social cognition in neurotypicals when interacting with people with schizophrenia.
(2) whether simple knowledge of someone's diagnosis changes the communicative strategies of healthy people
(3) the specific mechanisms of communication failure experienced by people with schizophrenia
(4) the qualitative and quantitative impacts of neurotypical social cognitive behaviors on interlocutors with schizophrenia
(5) the effect of interventions that activate social cognition and promote communicative alignment when engaging with people with schizophrenia.

This foundational knowledge would help determine if the theoretical position detailed in this paper could bear fruit for improving quality of life for people with schizophrenia. We believe there is compelling evidence that it may, and for this reason, we invite researchers to join us, whether by investigating the research agenda above, or applying its perspective to one's own interests such as other stigmatized populations. It is our hope that by adopting this rehumanizing and more equitable framework, psycholinguists and others will help recast people living with schizophrenia as partners in dialog, rather than sources of communicative dysfunction.

Conflict of interest. The authors declare none.

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