Language, communication, & schizophrenia

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**Abstract**

The study of language and schizophrenia has a long history dating back to the earliest reports of the disorder. These early reports have been enriched, in recent years, by empirical, theoretical, and methodological advances in the psycholinguistics and cognitive neuroscience. The goals of this Special Issue are to sample from this rich literature, with the hope of advancing both neoulinguistic theory and ideas about how to use this knowledge to improve the communicative capacities of those diagnosed with schizophrenia. The areas of language studied, the methods used, and the research goals are diverse, although certainly not exhaustive. Nevertheless, for those unfamiliar with the way in which language and communication has been studied in schizophrenia, this Special Issue may serve as a useful introduction.

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Schizophrenia is a brain-based disease whose diagnosis arises in large part from clinical observations of how and what people communicate through language. The study of language and schizophrenia has a long history dating back to the earliest phenomenological descriptions of the disorder. These early reports have been enriched in recent years by empirical, theoretical, and methodological advances in the fields of psycholinguistics and cognitive neuroscience. By sampling from this rich literature, this Special Issue highlights several ways in which language functions are currently studied in people with schizophrenia. The editors hope that this Special Issue will encourage more rigorous study of linguistic and communicative functions in people with schizophrenia, with the dual goals of enriching neurolinguistic theory and improving the communicative capacities of individuals suffering from this disorder.

Despite the long history of scholarly work on language and schizophrenia, mainstream psycholinguistic and neurolinguistic researchers are often unaware of this literature, or perhaps simply put off by its complexity. Certainly, few disorders are more complex than schizophrenia. It is heterogeneous in...
its clinical presentation, it affects virtually all aspects of psychological well-being (e.g., perception, cognition, social-interpersonal function, motor function, etc.), and it is usually treated by psychopharmacological agents that may impact the very processes under study. Unlike other neuropsychological conditions traditionally embraced by psycholinguistics and neurolinguistics (e.g., people suffering from the consequences of stroke or dementia), there is no diagnostic neural signature or behavioural test other than clinical evaluation. Moreover, unlike stroke patients, people with schizophrenia use language relatively normally when one examines coarse linguistic markers. For example, they do not have the halting unintelligible speech of Broca’s aphasia, nor do they produce the “word salad” classically attributed to Wernicke’s aphasia (although a minority of schizophrenia patients with severe formal thought disorder produce a “word salad” of their own). Thus, the impairments are both more subtle, more state-related, and more intermittent than those observed in neurological disorders.

So why persist in devoting resources to such a complex disease? One reason is that the language disorder seen in schizophrenia speaks directly to the dynamic interplay of linguistic, cognitive, and neural capacities enabling the symbolic exchange of ideas within a social context. While it only subtly (but significantly) affects discrete linguistic capacities, it profoundly affects how these capacities come together in the service of real-world communication. In this way, schizophrenia, like cognitive neuroscience itself, forces us to abandon modular psycholinguistic approaches that have historically relegated real-world contextualized language understanding to “pragmatics” or “problem-solving.” Such ideas about the nature of language are not new to mainstream psycholinguistics and neurolinguistics. In almost every area of study involving language (e.g., speech perception, reading, lexical-semantics, syntactic parsing, discourse), the models of the day tend to contrast modularity with interactive theoretical approaches (with modular models being somewhat “down in the polls” as of late across a variety of psycholinguistic domains). Thus, the time may now be ideal for serious consideration of schizophrenia within mainstream psycholinguistics and neurolinguistics. The editors hope that this Special Issue represents a very small step in that direction.

The articles included in this Special Issue, as well as a recent JNL article by Timothy Crow (2010, Volume 23, Issue 1), were solicited from researchers who are working at the forefront of advancing our understanding of language and communication in relation to schizophrenia. The areas of language studied, the methods used, and the research goals are diverse, although certainly not exhaustive as many other important research programs are not represented here. Nevertheless, for those unfamiliar with the many ways that language has been studied in schizophrenia, this Special Issue will serve as a useful introduction.

The first three papers in this Special Issue review the long history of scholarly research on language function in schizophrenia, and highlight the different kinds of participant groups that may be studied that are of relevance to this area. In “The genetic basis of thought disorder and language and communication disturbances in schizophrenia”, Deborah Levy et al. (this issue) review findings involving each kind of dysfunction in people with schizophrenia. Work in these three areas developed from early descriptions of “thought disorder,” which Levy et al. argue is best characterized by “deviant verbalizations” or “deviant use of language.” They help to orient the importance of this larger topic in the context of emerging molecular genetics opportunities in two ways. First, they emphasize how studies of unaffected relatives of people with schizophrenia suggest a genetic liability for impaired language use. Second, they provide examples of how the study of this genetic liability may help to advance a broader understanding of the genetic bases of language function. Michael Kiang, in “Schizotypy and language: A review”, focuses on the study of clinically well people who score high on psychometric measures of schizotypal personality disorder. Here, the schizotypal trait of “odd speech” is conceptually linked to “disorganized speech” seen in people diagnosed with schizophrenia. Kiang reviews a series of electrophysiological studies that investigate how the trait of odd speech manifests itself in the event-related potential (ERP) response associated with semantic memory organization and access during real-time comprehension. Finally, Borofsky et al. (this issue) in “Semantic processing and thought disorder in childhood-onset schizophrenia: Insights from fMRI,” review the domain of childhood-onset schizophrenia. They present the results of a novel functional magnetic resonance imaging (fMRI) study that characterizes the semantic and syntactic neural network involved in childhood-onset schizophrenia, and link this network to clinical observations of thought disorder.

The next three papers in this special issue highlight some of the ways that semantic processing may be impaired in people with schizophrenia, with specific reference to the cognitive neuroscience
literature on normal semantic processing. In “Brain/behavior asymmetry in schizophrenia: A magnetoencephalographic (MEG) study of cross-modal semantic priming,” Karen Froud et al. (this issue) investigate the classic semantic priming effect, which is notoriously variable in behavioural studies of schizophrenia. In this paper, the authors adopt a case-study approach in which individuals with schizophrenia are examined with respect to both behavioural and neural indices of semantic priming. Intriguingly, the results show that behavioural measures of priming (lexical decision responses) are relatively normal whereas the MEG response is not, suggesting that schizophrenia patients may recruit alternative neural circuits in order to maintain normal behavioural performance. In “Abnormal N400 responses but intact differential hemispheric processing of ambiguity in schizophrenia,” Dean Salisbury (this issue) investigates semantic processing in schizophrenia using electrophysiological studies of lexical ambiguity processing. This area has a long history beginning with the groundbreaking work of Loren and Jean Chapman in the 1950s. Salisbury reports an ERP study showing that the neural response to the subordinate, or less frequent, meanings of homographs (e.g., the river meaning of bank) is less pronounced in people with schizophrenia, despite relatively intact relative hemispheric contributions to comprehension. Both the Froud and Salisbury findings identify discordances in brain-behavior relationships in schizophrenia. Finally, in “Building coherence: A framework for exploring the breakdown of links across clause boundaries in schizophrenia,” Tali Ditman and Gina Kuperberg (this issue) review recent cognitive and neuroscience work on discourse processing in schizophrenia. This newer work extends the semantic processing literature from the single word- and sentence-level to larger segments of meaningful language. Notably, Ditman and Kuperberg also touch on the important but unresolved issue of how more general aspects of cognitive function (e.g., working memory, pragmatic constraints) may come to bear on aspects of language dysfunction in people with schizophrenia.

The final three papers of this Special Issue highlight recent developments in the use of new methodological approaches to the study of language and schizophrenia, illustrating the relevance of language in schizophrenia to communication as it happens in natural real-world contexts. In “An automated method to analyze language use in patients with schizophrenia and their first-degree relatives,” Brita Elvevåg et al. (this issue) apply new methods taken from computational linguistics and statistical-based semantic analysis to patient and relatives samples. Elvevåg et al. report promising new results supporting the utility of such methods for objectively discriminating among patients, relatives and controls on the basis of naturalistic verbal output. Maud Champagne-Lavau and Emmanuel Stip (this issue) continue the theme of real-world communication in, “Pragmatic and executive dysfunction in schizophrenia.” They report a novel study investigating the relations among pragmatic language use (i.e., metaphor and indirect language comprehension), theory of mind, and executive function in people with schizophrenia. Interestingly, the results show that pragmatic dysfunction may be more aligned with impaired theory of mind than with compromised executive function, suggesting some selectivity in the effects of schizophrenia-related impairments in general cognitive capacities on language and communication. This Special Issue concludes with “Neocognition and social skill in older persons with schizophrenia and major mood disorders: An analysis of gender and diagnosis effects,” by Kim Mueser et al. (this issue) They report a novel study that emphasizes social skills in schizophrenia. The work reviewed by Mueser et al. is especially noteworthy, because the study of social skills and social skills training, which comprises both verbal and nonverbal communicative abilities in real-world social contexts, offers a direct avenue for translating what we know about language dysfunction in schizophrenia to actually improving communicative function. Not only is this approach useful in potentially improving the lives of patients, but it also sheds light on the potential plasticity of neural systems involved in normal language and communication.

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