

# Proverb comprehension reconsidered—‘theory of mind’ and the pragmatic use of language in schizophrenia

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## Abstract

**Background:** For decades, impaired proverb comprehension has been regarded as typical of schizophrenic thought disorder. Testing patients’ proverb understanding has widely been abandoned, however, due to poor reliability and validity of the assessment procedures. Since the underlying cognitive deficit of impaired proverb interpretation remained obscure, this study sought to determine the relation of proverb understanding with other cognitive domains, particularly ‘theory of mind’ or ‘mindreading’, in schizophrenia.

**Methods:** 31 patients diagnosed with schizophrenia were assessed using a novel German Proverb Test [Barth, A., Küfferle, B., 2001. Die Entwicklung eines Sprichworttests zur Erfassung konkretistischer Denkstörungen bei schizophrenen Patienten. *Nervenarzt* 72, 853–858.], a ‘theory of mind’ test battery, a variety of executive functioning tests and verbal intelligence. Psychopathology was measured using the PANSS [Kay, S.R., Opler, L.A., Lindenmayer, J.P., 1989. The Positive and Negative Syndrome Scale (PANSS): rationale and standardisation. *Br. J. Psychiatry* 158 (suppl. 7), 59–67.]. Patients’ task performance was compared to a group of healthy control persons.

**Results:** ‘Theory of mind’, executive functioning and intelligence were strongly correlated with patients’ ability to interpret proverbs correctly. In a regression analysis ‘theory of mind’ performance predicted, conservatively estimated, about 39% of the variance of proverb comprehension in the patient group.

**Conclusions:** The ability to interpret such metaphorical speech that is typical of many proverbs crucially depends on schizophrenic patients’ ability to infer mental states. Future studies may further address differences between schizophrenia subtypes or the relation to specific symptom clusters.

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**Keywords:** Proverbs; Metaphor; Pragmatics; Theory of mind; Social contract theory

## 1. Introduction

Psychiatrists have recognized for at least 100 years that patients with schizophrenia tend to interpret proverbs literally (e.g., Finckh, 1906; Vigotsky,

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1934; Chapman, 1960). Several scholars even asserted that impaired proverb understanding was almost pathognomonic for schizophrenia (Gorham, 1956), but the use of proverbs as a diagnostic tool was criticized due to its poor reliability and the concept was subsequently widely abandoned (Andreasen, 1977). However, the cognitive deficit underlying schizophrenic patients' impaired ability to accurately interpret proverbs is still inadequately understood (Gibbs and Beitel, 1995). For example, it is unclear whether poor proverb comprehension in schizophrenia is linked to a more general cognitive impairment such as intelligence, poor executive functioning or to a more specific problem in information processing, or whether the ability to think abstractly is indispensable for proverb comprehension at all (Gibbs and Beitel, 1995).

Research into communication disturbances has revealed syntactical and semantic speech abnormalities in schizophrenia (Thomas et al., 1996; Docherty et al., 1996), as well as deficits in patients' pragmatic use of language (Frith and Allen, 1988; Langdon et al., 2002a,b). The rules of pragmatics involve the capacity to extract the figurative meaning of an utterance (Grice, 1975; Sperber and Wilson, 2002). Therefore, a speaker and his interlocutor must be able to go beyond the literal meaning of a phrase—precisely what many schizophrenic patients' so-called 'concretistic' way of thinking is lacking (Goldstein and Scheerer, 1941).

According to what has been termed 'Relevance Theory', both encoding and decoding of speech involves the expression and recognition of intentions in both speaker and hearer. This process requires a metapsychological inference mechanism that is commonly referred to as having a 'theory of self and others' minds' (ToM; Sperber and Wilson, 2002). Many studies have shown that schizophrenic patients often fail on tasks involving ToM (overviews in Lee et al., 2004; Brüne, 2005). Poor ToM in schizophrenia has been associated with impaired metaphor and irony comprehension (Mitchley et al., 1998; Langdon et al., 2002a,b; Tényi et al., 2002) and with thought, language and communication deficits (Sarfati and Hardy-Baylé, 1999). The association of poor ToM with impaired proverb understanding has remained under-explored, except in a recent study using Gorham's proverbs and a subjective rating of 'bizarreness' of the given responses (Greig et al., 2004). Indeed, establishing a link between proverb comprehension and ToM could substantially

support the assumption that an intact ToM is a prerequisite for efficient verbal communication of schizophrenic patients as, for instance, during clinical interviews (McCabe et al., 2004).

In this study, we sought to explore the relationship between impaired proverb understanding and ToM performance in schizophrenia. We hypothesized according to 'Relevance Theory' that ToM task performance would be specifically linked to schizophrenic patients' ability to interpret proverbs, and that impaired ToM would predict deficits in proverb comprehension in patients better than general intelligence, executive functioning or measures of psychopathology.

## 2. Methods

### 2.1. Participants

Thirty-one schizophrenic patients (23 males, 8 females) diagnosed with schizophrenia according to DSM-IV (APA, 1994) participated in the study after giving informed consent. All patients were on antipsychotic medication and naive to the aims of the study. Patients' mean age at onset of the disorder was 26.4 years (12–59 years, S.D.  $\pm 9.1$  years) and the mean duration of illness was 11.8 years (0–35 years, S.D.  $\pm 8.1$  years). Patients mean age at time of assessment was 38.6 years (range 20–66 years). The comparison group consisted of 21 healthy control subjects (10 males, 11 females; mean age 33.9 years, range 19–62 years) with no history of psychiatric disorders, who were recruited from the community and hospital staff. All control subjects were unaware of the study hypotheses.

### 2.2. Proverb test

The proverb test used in this study was developed by Barth and Küfferle (2001). It comprised 14 metaphorical proverbs in German, of which the figurative, non-literal meaning had to be construed by choosing 1 out of 5 written statements given in random order. Type I answer was meaningful and abstract (the only correct choice). Type II answer was meaningful and partially concretistic. Type III answer was meaningful but highly concretistic. Type IV answer was meaningless

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