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Assessing thought disorder in patients with schizophrenia

Abstract

Thought disorder (TD) is one of the main symptom clusters of schizophrenia. Most of the researchers approached psychotic speech as the reflection of impairment in thought processes and asserted that disorganized thought emerged as disorganized speech. This approach seeks to measure language elements that are believed to reflect TD elements. On the other hand, linguistic perspective suggests that disorganized speech is the result of cognitive impairments related to the ability of organization of language and seeks to investigate features of language structure relevant to those impairments. As it is difficult to describe TD in a subjective way and in order to increase the reliability of assessing TD, objective language impairments emerging during speech and communication are agreed to be concentrated on. In this review, we aimed to provide a summary of scales used widely for the assessment of TD in patients with schizophrenia.
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Key words: *thought disorder, scale, schizophrenia*

Introduction

Thought disorder (TD) is a characteristic feature of schizophrenia. As TD varies considerably from patient to patient, it is hard for clinicians to specify its differential characteristics [1]. Although TD does not seem to have a standard definition in the literature, generally it might be identified as a multidimensional impairment involving disturbances of thought, language processing and social cognition [2].

Bleuler was the first to emphasize TD in schizophrenia and he stated that loosening of associations was pathognomonic for the disorder [3]. Also Kraepelin asserted that schizoprenia was primarily about TD. Recently Crow associated the origin of psychosis with the evolution of language and he described psychosis as the price that humans paid for the function of language [1, 2].

Most of the researchers approached psychotic speech as the reflection of impairment in thought processes and asserted that disorganized thought emerged as disorganized speech [4, 5]. Because this approach embraced speech impairments as the outcomes of disorganized thought processes, it aimed to measure language elements that are believed to reflect TD elements [6]. Later on, this situation was critized by some theorists and it was argued that normal speech did not mean normal thought. This was explained by our control of language behavior, which enables us to hide what we really think or tell it differently [7]. Chaika argued that language had a different structure apart from thought [8] and only language was worth assessing, not thought [7]. Linguistic perspective suggested that disorganized speech was the result of cognitive impairments related to the ability of organization of language and aimed to investigate features of language structure relevant to those impairments [6]. Although thought and language are closely related to each other and in the literature and thought disorder and language disorder are used synonymously, these concepts are not the same and they define different processes. For this reason, thought disorder and language disorder in schizophrenia might be studied separately. However, the main problem derives from the assessment of thought disoder coming from the patient's verbal outcomes [7]. It is accepted that

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describing TD in a subjective way is difficult and to increase the reliability of evaluation of TD one must concentrate on objective language impairments emerging during speech and communication [9]. In this review, we aimed to provide a summary of scales used widely for the assessment of TD in patients with schizophrenia.

Subtypes of thought disorders

Thought disorders have been assessed in two subtypes: disorders of thought form and disorders of thought content. Disorders of thought form are defined by deficiency in organizing thought in a definite logical sequence for a certain goal. Delusions, obsessions, and mystical and metaphysical exertions are considered within disorders of thought content. Disorders of thought form are more frequent rather than disorders of thought content in chronic phases of schizophrenia [1].

Disorders of thought form are evaluated in two subgroups: Negative TD/alogia meaning poverty of speech and impoverishment in content of speech; and positive TD that is mostly seen during acute phases of schizophrenia. Derailment, loss of goal, poverty of content and tangentiality have been indicated to be the most frequently seen types in patients with schizophrenia [1]. Further, poverty of speech, poverty of content, pressure of speech, distractible speech, tangentiality, derailment, incoherence, illogicality, clanging, neologisms and word approximations have been stated as more pathologic types of TD [9].

Negative formal thought disorder may be directly related to remission in schizophrenia. Poverty of speech and peculiar logic are the specific domains of TD which are related to both symptomatic remission status and social functioning in patients with schizophrenia [10].

Scales to evaluate thought disorders
Thought, Language and Communication Scale was developed by Andreasen [11] including definitions of 18 subtypes of TD. Likert type scale, interval of 0 (none) — 3 or 0 — 4 for rating severity, depending on the item, is used for evaluation [5, 11]. In this scale, Andreasen categorized poverty of speech, poverty of content of speech, pressure of speech, distractible speech, tangentiality, derailment, incoherence, illogicality, clanging, neologisms, word approximations, circumstantiality, loss of goal, perseveration, echolalia, blocking, stilted speech and self-reference items as thought disorders. A standard structured 45-minute interview is used for ratings. During the interview a person is asked to talk about himself for five to ten

minutes without interruption [11, 12]. Following this monologue, the person is asked a standard series of follow-up questions including various subjects (politics, religious faith, family life etc.) [12]. The weakest side of this scale is that it is not sensitive enough for subtle thought disorders seen in relatives of patients with schizophrenia [13].

Thought Disorder Index was developed by Johnston and Holzman in 1979 [14]. Rorschach cards and verbal subscales of Wechsler Adult Intelligence Test (WAIS) are used for assessment. The scale includes 23 TD categories: Inappropriate distance, flippant response, vagueness, peculiar verbalizations and responses, word-finding difficulty, clangs, perseveration, incongruous combinations, relationship verbalization, idiosyncratic symbolism, queer responses, confusion, looseness, fabulized combinations, playful confabulation, fragmentation, fluidity, absurd responses, confabulations, autistic logic, contamination, incoherence, neologisms. TD is rated as 0.25 (minor idiosyncracies), 0.50, 0.75 and 1.00 according to its severity [14, 15]. Contrary to the Thought, Language and Communication Scale, it consists of mild level disorders with a pretty wide range of different TD subtypes. However, it is time consuming for routine use requiring extensive education for grading [13].

In 1986, Marengo et al. [16], developed the **Bizarre — Idiosyncratic Thinking** scale to evaluate positive TD. In this scale positive TD is examined under 5 categories: Linguistic form and structure, content of the statement (ideas expressed), what is intermixed into the response, relationship between question and response, behavior. The Comprehension Subtest of the WAIS or WAIS-R, Gorham Proverbs Test and other verbal tests such as Rorschach Test or free-verbalization situations are also used for assessment [16]. Severity of disorder is rated as 0 (none), 0.5, 1 and 3 (most severe). Because it is time consuming, usage of the test is limited [17].

Chen et al. [18], developed the **CLANG (Clinical Language)** scale in 1996. Syntax (excess phonetic association, abnormal syntax, excess syntactic constraints, neologisms, paraphasic error); semantics (lack of semantic association, discourse failure, referential failures, pragmatic disorder); production (lack of details, aprosodic speech, poverty of speech) are the main three linguistic disorders CLANG focuses on [18, 19]. A minimum of 15 minute verbal response under standardized conditions are assessed and ratings are derived from a four-point severity scale [19]. CLANG not only particularly investigates thought or statement but also searches for way of speaking, like quality of sound and articulation impairments [1].

The Thought and Language Index (TLI) was developed for assessing TD under standardized conditions [13]. Participant is required to produce eight one-minute speech samples in response to the eight standard pictures taken from the Thematic Apperception Test. The two-factor structure of the Turkish version of TLI has a Cronbach alpha value of 0.75 with a high interrater and test-retest reliability [20]. It comprises impoverishment of thought and disorganization of thought subscales. Impoverishment of thought subscale consists of three items: Poverty of speech, weakening of goal and perseveration. Disorganization of thought subscale includes five items: Looseness, peculiar word use, peculiar sentence construction, peculiar logic and distractibility. The entire interview is recorded on audiotape and then transcribed. These transcribed speech samples are assessed according to the TLI manual. As to the TLI manual, a score of 0.25, 0.50, 0.75 or 1.0 is given to each TAT picture depending on the severity of TD [13, 20].

Formal Thought Disorder (FTD) Scales, one for patients (FTD-patient) and one for carers (FTD-carer) were developed by Barrera et al. [17] in order to assess pragmatics, cognitive, paralinguistic, and non-verbal aspects of communication. FTD-patient includes 29 items and FTD-carer consists of 33 items. FTD-patient items are responded to by the patient as "yes/no" subjectively. Responses are graded as 2 (extraordinary response) and 1 (ordinary response) [17]. Scale items are loaded under verbal working memory deficit, excessive spread of activation through semantic network, affective overexcitement/psychosis, circumstantiality, fading of intention guiding language production factors, reduced drive to engage in verbal exchanges, sustained attention deficit factors. FTD-carer items are replied to by the caregiver of the patient as "never, sometimes, often and almost anytime" subjectively. Responses are evaluated between scores of 1–4 [17]. Items are loaded on four factors: Affective overexcitement/psychosis, disorganization of speech production, deficit of sustained attention, pragmatics deficit. These scales are important in a way that they explain TD from both patient's and caregiver's points of view and in company with clinical assessment, they might provide a holistic understanding of TD in patients with schizophrenia. Despite that, misunderstandings of items are possible because of lack of accompanying clinical interviews [21].

Thought and Language Disorder (TALD) scale was developed by Kircher et al. [21] and it evaluates objectively observed symptoms in addition to subjective phenomena. The scale is comprimised of 30 items: Rumination, thought interference, blocking, expressive speech dysfunction, tangentiality, circumstantiality, pressure/rush of thought, poverty of thought, derailment, inhibited thinking, restricted thinking, slowed thinking, dysfunction of thought initiative and intentionality, rupture of thought, logorrhoea, concretism, crosstalk, receptive speech dysfunction, poverty of speech, pressured speech, poverty of content of speech, dissociation of thinking, semantic paraphasia, phonemic paraphasia, manneristic speech, perseveration, neologisms, verbigeration, echolalia, and clanging. Items are loaded under four factors: Objective positive, subjective negative, objective negative and subjective positive. A 50-minute clinical interview consisting of two parts is used for scoring. In the first part, the person is asked about general topics (daily life, hobbies etc.), and in the second part, semi-structured questions are asked. While objective evaluation of the scale is carried out through the interview, the subjective evaluation is limited by the previous 24 hour period before the interview. Severity of FTD is rated from 0 (not present) to 4 (severe) [21]. As TALD reflects wide variety of FTD dimensions, including subtle subjective FTD symptoms, it provides a comprehensive and sensitive assessment of FTD which enables to be used in prodromal stages and in relatives of patients as well.

Thought disorder in first episode psychosis

Antipsychotics may reduce thought disorder related to acute episodes. Negative thought disorder identified with poverty of speech and poverty in content of speech, usually remains stable over the course of schizophrenia.

First episode patients were found to have significantly higher scores on the items of poverty of speech, weakening of goal, perseveration, looseness, peculiar word use, peculiar sentence construction and peculiar logic compared to controls. Poverty of speech, perseveration and peculiar word use were the significant factors differentiating FEP patients from controls when controlling for years of education, family history of psychosis and drug abuse [22].

Streszczenie

Zaburzenia myślenia są jednym z podstawowych wymiarów objawów w schizofrenii. Większość badaczy traktuje zaburzone wypowiedzi osób psychotycznych jako odzwierciedlenie zaburzeń ich myślenia i uznaje, że zdezorganizowane wypowiedzi są uzewnętrznieniem dezorganizacji procesów myślowych. Takie podejście leży u podłoża dokonywania oceny i pomiaru wypowiedzi słownych (zaburzeń językowych) jako odzwierciedlających zaburzenia myślenia. Perspektywa lingwistyczna sugeruje jednak, że dezorganizacja wypowiedzi jest skutkiem trudności kognitywnych związanych ze zdolnością do organizacji języka. W związku z tym badane są cechy struktury języka istotne dla tych trudności. Ponieważ istnieje trudność w opisie zaburzeń myślenia w perspektywie subiektywnej i w celu zwiększenia rzetelności ich oceny, badania koncentrują się na obiektywnie stwierdzanych zaburzeniach językowych pojawiających się w trakcie wypowiedzi i komunikacji osób ze schizofrenią. Celem prezentowanej pracy jest przedstawienie narzędzi badawczych szeroko stosowanych w ocenie zaburzeń myślenia u osób z rozpoznaniem schizofrenii.

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