

Original article

Stability of Thought Disorder Index among high-risk and low-risk adoptees in the Finnish adoptive family study of schizophrenia

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Abstract

The aim of the study was to evaluate whether thought disorders are stable, trait-like features specific to subjects who have a genetic liability to schizophrenia or a psychiatric disorder. The thought disorders of adoptees genetically at high risk (HR) or low risk (LR) for schizophrenia from the Finnish adoptive family study of schizophrenia were evaluated twice at a mean interval of 11 years, using the sum of the Thought Disorder Index (TDI) scores on the Rorschach (TD_R). At the initial assessment, the mean TD_R scores of women were significantly higher than those of men, while no association between genetic risk and psychiatric status or their interactions with the TD_R scores at baseline were found. The main finding was that the initial TD_R scores statistically significantly predicted the TD_R scores at follow-up, thus indicating the stability of thought disorder over time. However, neither genetic or psychiatric status nor gender or any interaction between these variables associated with TD_R at follow-up.

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1. Introduction

Thought disorders are commonly associated with psychiatric disorders and especially considered a primary feature of schizophrenia. The thinking and speech of schizophrenic patients are confused and disorganized and contain many idiosyncratic and peculiar phrases [15,16,26]. Among schizophrenia patients, thought disorder most often occurs during the acute phase of the disease [3,12,19]. However, some patients continue to have thought disorder even after the acute phase, while improvements in specific aspects of thought disorder have also been reported. Thought disorder is present in other psychiatric disorders as well. Previous studies have revealed thought disorders in patients with affective [6,23,36], schizoid [37,38], and borderline personality disorder [9,11], in autistic [7] and bulimic children [25], and in children with attention-deficit hyperactivity disorder (ADHD) [5].

Although thought disorders have been reported to be present in several psychiatric disorders, only a few studies have explored whether thought disorders have trait-like (stable) features. Marengo and Harrow [18] evaluated thought disorder in schizophrenia, schizoaffective disorder, and other psychotic and non-psychotic disorders at 2, 4.5, and 7.5 years after index hospitalization, and they found the stability of thought disorder to be most prominent in schizophrenia (correlations of 0.42–0.47, depending on the length of follow-up). Thought disorder was also stable in the other diagnostic categories, although this stability was quite low and did not last throughout the whole follow-up period. Earle-Boyer et al. [8] found negative thought disorder 10 days after acute admission to be relatively consistent across admissions in schizophrenics, but less consistent in manic patients. Adair and Wagner [1] studied the Rorschach protocols of 50 outpatients with schizophrenia who had been tested twice at an average interval of 6.4 years. They found no significant differences in the group mean of unusual verbalizations (UVs) scores between the first and second tests. The

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correlations between the tests were, however, modest at best ($r = 0.16$ – 0.50).

Thought disorders are commonly related to psychiatric disorders. However, it is noticeable that the occurrence of minor cognitive slippages are possible in healthy individuals as well. They occur most frequently during periods of anxiety or fatigue [27]. The early presence of some categories of thought disorder in healthy individuals has also been found to predict future psychiatric disorders [20].

Generally speaking, thought disorder appears to be a trait, at least in some subgroups of schizophrenic and manic patients [4,13]. However, previous studies have also shown that thought disorder could have both trait and state (depending on context) features in psychiatric patients [14,22]. Among healthy individuals, the occurrence of thought disorders could be assumed to be more a state-like feature. On the other hand, Wahlberg et al. [35] reported communication deviance to be a trait-like characteristic among adult subjects ($r = 0.58$). Subscales measuring “thinking problems” (close to the thought disorder index, TDI scale by Johnston and Holzman [16]) had some stability among adult subjects (language anomalies: $r = 0.35$; reasoning problems: $r = 0.29$), but not among subjects aged 20 years or younger.

1.1. Aims of the study

In this study, we investigated whether thought disorders were permanently present among the adoptees in the Finnish adoptive study of schizophrenia. Two assessments of the TDI sum scores on the Rorschach (TD_R) of the adoptees [16], the TD_R at the initial assessment and the TD_R at follow-up, were performed. In addition, comparisons of the TD_R mean scores between genders, between adoptees at low and high genetic risk, and according to psychiatric status were conducted both at baseline and at follow-up.

2. Material and methods

2.1. Subjects

The subjects for this assessment were drawn from the Finnish adoptive family study of schizophrenia [30–32]. The total Finnish national sample of high-risk (HR) adoptions includes the adoptive families of all the children adopted away by women hospitalized because of schizophrenia (or paranoid psychosis) in Finland during 1960–1979 [30]. Women were excluded if they had an organic brain syndrome, severe mental retardation, primary alcoholism (preceding schizophrenia), or any other major physical illness. Adoptees were excluded if they had been adopted by a relative, adopted abroad, or adopted after the age of 4 years. The final sample included 190 genetically HR offspring whose biological mothers had verified DSM-III-R diagnoses of the broad schizophrenia spectrum [17,32,33]. The HR offspring were blindly compared with 192 adoptees at low genetic risk (LR), who

had been adopted away from biological mothers with non-spectrum diagnoses or no psychiatric disorder (NPD).

All adoptees were evaluated twice. At the initial assessment, the psychiatric status of the adoptees was assessed. Individual Rorschach was part of the study to evaluate the thought disorders and communication patterns of the adoptees and their family members. The adoptees were independently re-examined in the same manner after a mean interval of 11 years. The mean follow-up period was 11 years for the HR adoptees and 12 years for the LR adoptees. The difference was not statistically significant. The design, sampling, and diagnostic procedures of the adoption study as a whole have been described earlier [30–32].

The subsample discussed in this report included the 158 adoptees whose thought disorder had been assessed by TDI both at the baseline of the study and at follow-up. A further inclusion criterion was that the Rorschach records had been tape-recorded and transcribed. Of these subjects, 78 were HR and 80 LR adoptees. The demographic and clinical data of the subjects according to their genetic status are presented in Table 1.

2.2. Instruments

The TDI scale was developed by Johnston and Holzman [16]. TDI tags, classifies, and measures putative disturbances in thinking, and it allows assessment of both qualitative and quantitative disturbances of thought. To assess thought disorder by TDI, any verbal sample can be used, but the technique is most commonly applied to responses to Rorschach cards. Clinical experience has shown that by using TDI, it is possible to find a range of severity of thought disorders from mild to severe [15]. Therefore, a revised version of TDI includes 24 categories weighted along a continuum of severity (0.25, 0.50, 0.75 and 1.0) [27].

In the present study, the sum of weighted TDI scores on Rorschach (TD_R) divided by the number of Rorschach responses was used to assess the stability of thought disorders (the full 10-card procedure) at the initial assessment and at follow-up. The Rorschach test is a rich source of deviant verbalization, and the subjects cannot use any overlearned or stereotyped answers. In addition, in the Rorschach procedure it is not possible to draw any conclusions concerning the correctness of the answers, and this stimulate the person’s potential liability to produce thought disorder under environmental stress. The use of the Rorschach procedure also permits the administration and scoring without knowledge of the purpose of the study. However, the Rorschach test is a rather time-consuming method, and the test situation could thus be quite fatiguing to the subjects. The examiners must also have extremely good education in the use of the method to guarantee reliable results. In this study, the tests were audiotaped and transcribed. The developers of the TDI scale [15,16] used weighted scores, and the following formula was applied to calculate the TDI on the Rorschach score (TD_R),

$$TD_R = \frac{0.25(A) + 0.50(B) + 0.75(C) + 1.00(D)}{\text{Total number of Rorschach}} \times 100$$

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