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SCHIZOTYPY – CURRENT CONCEPTS AND FUTURE RESEARCH IMPLICATIONS

SHIZOTIPIJA – TRENUTNI KONCEPTI I IMPLIKACIJE ZA BUDUĆA ISTRAŽIVANJA

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Abstract

Schizotypy is a construct used to describe a group of persons with symptoms which do not fulfill criteria for schizophrenia, but have some similarities with this complex and heterogeneous psychiatric disorder. ICD-10 describes schizotypy as a state (schizotypal disorder), while DSM-5 labels it as a trait marker (schizotypal personality disorder). Considering how schizotypy encompasses through the normal, subclinical and clinical population, a thorough theoretical understanding of this concept could be helpful in developing measures of assessment. So far, most of the tools for psychometric evaluation of schizotypy have focused only on abnormal personality. The present article focuses on the evolution of the term schizotypy, its current understanding, the possibilities of psychometric assessment in relation to contemporary constructs of personality and on clinical considerations for improved detection and intervention in this field.

Keywords:
schizotypy,
personality,
disintegration,
psychosis,
classification

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Sažetak

Shizotipija je konstrukt koji se koristi kako bi se opisala grupa osoba sa simptomima koji ne ispunjavaju kriterijume za postavljanje dijagnoze shizofrenije, ali imaju sličnosti sa ovim kompleksnim i heterogenim psihiajtrijskim oboljenjem. MKB-10 opisuje shizotipiju kao privremeno stanje (shizotipalni poremećaj), dok je DSM-5 opisuje kao trajniji poremećaj (shizotipalni poremećaj ličnosti). S obzirom da se shizotipija prostire kroz normalnu, supkliničku i kliničku populaciju, temeljno teorijsko razumevanje ovog koncepta može biti od pomoći prilikom razvijanja mera procene shizotipije. Do sada, najveći deo psihometrijske evaluacije shizotipije bazirao se na varijetetima individualnih razlika (poremećaja) ličnosti. Ovaj članak se fokusira na evoluciju termina shizotipije, na razumevanje ovog fenomena, mogućnosti psihometrijske procene u skladu sa trenutnim modelima ličnosti i na klinička razmatranja koja bi dovela do poboljšane detekcije i intervencije u ovoj oblasti.

Ključne reči:
shizotipija,
ličnost,
dezintegracija,
psihoza,
klasifikacija

Introduction

Everybody who works with adult people with mental health problems could observe a group of persons with symptoms which do not fulfill criteria for schizophrenia, but have some similarities with this complex and heterogeneous psychiatric disorder. The most common term for this condition is schizotypy. However, many names have been used in order to describe similar phenomena: psychosis proneness, schizotypal personality, psychoticism, at risk mental states, attenuated psychosis syndrome, etc. Even though these names have been used to improve our understanding of etiology and psychopathology of psychosis spectrum disorders, this can also lead to lack of clarity when used interchangeably.

Two of the major international classification systems of psychiatric disorders define schizotypy differently. The ICD-10 (1) describes Schizotypal disorder in the same category with schizophrenia and other psychotic disorders. Thus, ICD – 10 is considering this condition as a state characterized by „an enduring pattern of eccentricities in behavior, appearance and speech, accompanied by cognitive and perceptual distortions, unusual beliefs, and discomfort with – and often reduced capacity for – interpersonal relationships ". It is important to note that symptoms such as delusions or hallucinations may occur, but are „not of sufficient intensity or duration to meet the diagnostic requirements for schizophrenia, schizoaffective disorder, or delusional disorder". On the other hand, DSM-5 (2) defines a similar condition as Schizotypal Personality Disorder (SPD), implying that schizotypy is more of a trait marker. It is defined through a „pervasive pattern of social and interpersonal deficits marked by acute discomfort with, and reduced capacity for, close relationships as well as by cognitive or perceptual distortions and eccentricities of behavior, beginning by early adulthood and present in a variety of contexts". DSM-5 also notes that schizotypal personality disorder may be premorbid to schizophrenia and that it cannot occur concurrently during the course of any other psychotic disorder. No significant changes to Schizotypal disorder have been made in ICD-11(3).

A study done by Pulay et al. (4) found that the lifetime prevalence of schizotypal personality disorder - SPD (according to DSM criteria) was 3.9%, with significantly greater prevalence rates in men (4.2%) than women (3.7%), and that this disorder was substantially associated with mental disability. However, an earlier Swedish study(5) found that the prevalence of SPD according to DSM criteria was 5.2% and of schizotypal disorder according to ICD criteria was slightly higher – 7.5%. When evaluating the stability and prevalence of symptoms needed to fulfill criteria for SPD, some of the symptoms were found to be less changeable two years after baseline than others – the least changeable were paranoid ideation and unusual experiences, compared to constricted affect and odd behavior which were more prone to change (6).

Schizotypy is a dynamic, multidimensional model, not limited by diagnostic criteria. For example, a single symptom, perceptual abnormality, may express itself in otherwise healthy persons, persons at risk of psychosis, schizotypal personality disorders, and patients with schizophrenia in varying intensity. Even though schizotypy by itself represents a risk of developing schizophrenia, it does not necessary lead to clinical level of symptoms and Axis I condition.

In recent years, it has become clear that At-Risk Mental State (ARMS) presents a state of high, but not inevitable risk of developing a psychotic disorder (7). These symptoms are best characterized as being attenuated (whether in duration or intensity) when compared to symptoms typical to clinically proven psychotic disorders. Despite being at risk of developing illness, only around 15% of the affected individuals develop full-blown psychosis (8). A recent study of Lam et al. (9) found that some individuals at ultra-high risk (UHR) for developing psychosis who never transit into full-blown psychosis still exhibit a certain degree of cognitive and functional disability. Moreover, this disability was most consistent with the DSM-5 definition of schizotypal personality disorder. Certain studies, such as one done by Seidman et al.(10), have determined that meeting criteria for schizotypal personality disorder should be one of the inclusion criteria for ARMS category. A meta-analysis of Boldrini et al. (11) found that 13.4% of at-risk patients also fulfilled the criteria for diagnosis of schizotypal personality disorder.

Brief history of schizotypy

Even though the term schizotypy first gained traction during the 1950s, thus broadening the phenomenology of the psychosis spectrum disorders, the roots of this term stem from descriptions of Bleuler in 1911 (12) and Kraepelin in 1913 (13). Both of these renowned scientists described behavioral symptoms of similar, but lesser intensity and duration than those in patients with schizophrenia. Bleuler described these symptoms that preceded illness as „completely insane actions in midst of normal behavior". On the other hand, Kraepelin noticed certain symptoms of lesser intensity in close relatives on schizophrenia patients. Furthermore, literature of psychopathology also contains descriptions of mild, stable forms of schizophrenia which do not progress into full blown illness and which were often present in relatives of patients suffering from schizophrenia (14).

The first description of schizotypy appeared in scientific literature in year 1953 (15) when Hungarian psychoanalytic psychotherapist, Sandor Rado, coined the term schizotype (as an abbreviation of schizophrenic phenotype) for persons who are on the same continuum of behavioral disorder as those with schizophrenia. This description offered an outlook in which patients may have different intensities of the disorder – ranging from mild to full-blown, providing a new viewpoint to schizophrenia psychopathology. Rado also hypothesized that schizophrenia proneness was genetically determined and that this proneness led to reduced everyday functionality, ranging from mild to serious (16).

An important step towards further expanding on this concept was provided by Paul Meehl. During the 1960s, he hypothesized that a dominant „schizogene", together with environmental factors, caused a state called schizotaxy which was responsible for, but not by itself sufficient to develop schizotypy and, on the end of the continuum - schizophrenia (17,18). It is important to mention that Meehl described schizotypy as personality organization caused by schizotaxy, one which represented vulnerability for development of schizophrenia. At this point, he also provided a manual and a checklist for schizotypal symptoms such as magical ideation, cognitive deficit and anhedonia (19). Meehl attempted to explain the prevalence of schizophrenia (around 1%) by explaining that out of the 10% of the total population which can be considered schizotypal, another 10% decompensate and become patients with schizophrenia. Even though he assumed that a single gene was responsible for the development of schizophrenia (taxonic nature of schizophrenia), he paved the road for modern conceptualizations of this illness, which is now considered a complex, heterogeneous, polygenic disorder (20). Many scientists, including Lenzenweger (21), were great proponents of the taxonic theory which considers schizotypy as a latent personality organization representing psychosis proneness. Widiger criticized the taxonic theory, mainly due to the multifactorial genetic and nongenetic origins of mental disorders (22).

In 1997, Claridge and his colleagues published a book – Schizotypy: Implications for illness and health (23), and for the first time described schizotypy as a fully dimensional concept – one that also includes adaptive manifestations. The idea of adaptive nature of schizotypy was new, as prior schizotypy concepts only presented this condition as an illness precursor. This was the first time that schizotypy was conceptualized through individual, personal differences which can be found throughout the continuum – from general population, to subclinical and clinical population. Therefore, other than the pathological (quasidimensional) components, schizotypy also entails healthy, adaptive manifestations (creative thinking, daydreaming, rejection of usual norms for innovation sake, etc.) (**figure 1**).

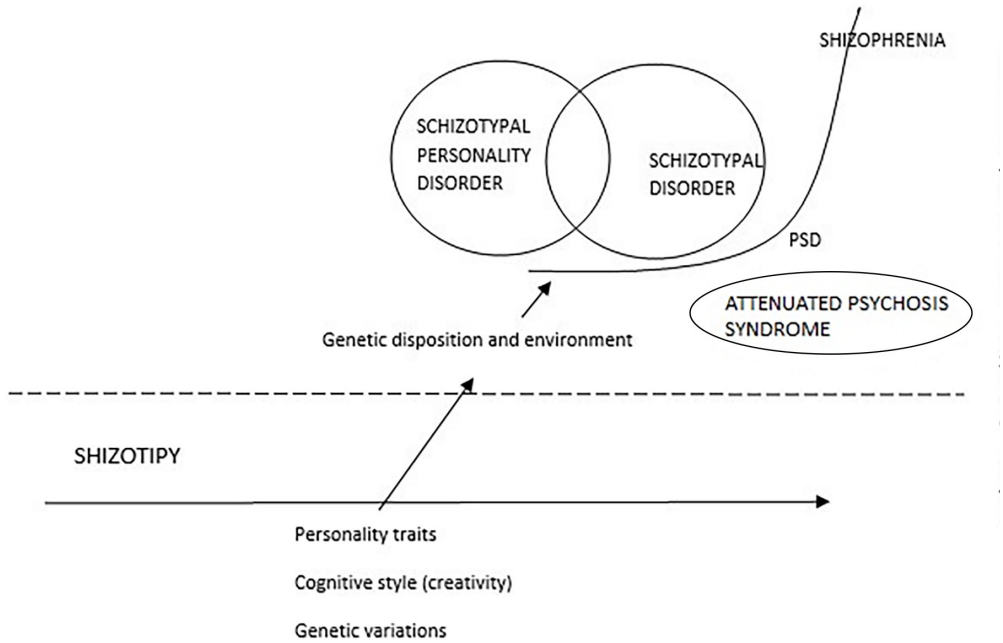

Figure 1. Fully dimensional model of schizotypy – modified from Claridge et al. (1997). *PSD – psychosis spectrum disorders.

Multidimensionality, heterogeneity and heritability

Both schizotypy and schizophrenia are manifested through similar dimensions. Most factor analyses revealed structures of schizotypy (24) and schizophrenia (25) which were widely similar, consisted of: positive symptoms (from odd beliefs and magical ideation to full blown delusions), negative symptoms (lack of social contacts, social isolation) and disorganization (from mild cognitive deficits to complete formal thought content deficits). Viewing schizotypy through the prism of heterogeneity is also significant due to the connection of particular dimensions of schizotypy with certain outcomes – for example, lower social adjustability has been linked only with negative schizotypy, while substance abuse was linked only with positive schizotypy (26).

Heritability of schizotypy has been shown through various types of studies. A study done by Battaglia et al. (27) found that SPD was more common among relatives of schizotypal probands, in comparison to those of relatives of persons with other personality disorders. Several twin studies have found that genetic factors increased risk for SPD (28,29). According to Battaglia et al (27), it has been found that only certain traits such as constricted affect-aloofness and oddness had pronounced genetic contributors.

Psychopathology and personality

There are three ways in which personality and psychopathology can interrelate (30). They can:

1. Influence one another (pathoplastic relationship), i.e. high Neuroticism influences higher reporting of depressive symptoms, and patients suffering from depression score differently on Neuroticism depending on their current affective status (31);

2. Share a common etiology (spectrum relationships), i.e. obsessive-compulsive personality traits and obsessive-compulsive disorder have similar genetic underlying factors (32);

3. Have a causal role in the development of one another, i.e. high Extraversion and low Conscientiousness are linked to symptoms of alcohol abuse, while low Extraversion and high Openness to Experience were linked with symptoms of marijuana abuse (33).

To illustrate the complexity of these intercorrelations - a recent Chinese network analysis study (34) found a significant overlap between schizotypal personality traits and subclinical features of different psychiatric disorders – autistic traits, disorganization features, depressive symptoms and obsessive-compulsive traits.

Schizotypal personality traits and the five-factor model of personality (FFM)

It is also important to assess schizotypy as a personality dimension within established personality models. Currently, the most established and widely-used model for personality assessment is the NEO-PI-R inventory (or Five Factor Model - FFM) (35) consisting of five basic personality dimensions: Neuroticism (N), Extraversion (E), Openness to Experience (O), Agreeableness (A), and Conscientiousness (C).

If Claridge's (23) explanation of a fully dimensional concept of schizotypal personality is correct, the question remains of whether or not schizotypy could be described by personality theories applied to the general, and not clinical population. Several studies exist in which the relationship between schizotypy and FFM were analyzed (36–38). Most of those studies found that N and O were positively, and E and A negatively related to schizotypy scores and suggested a linear relationship between FFM and schizotypy (39). This means that persons who exhibited more schizotypal characteristics were more likely to have higher Neuroticism and Openness to Experience, but also lower Extraversion and Agreeableness.

A push to describe symptoms of personality disorders has forced a consensus concerning mapping of disordered personality symptoms into the Big Five. However, only four of the five personality dimensions are included into this consensus, excluding Openness/Intellect (O). Studies analyzing the position of schizotypy within the Big Five have primarily found loadings on the O personality domain (37,40). However, De Young and colleagues (41) consider that only apophenia (perception of patterns of causal connections where none exist), which can be ascribed partially to positive schizotypy, may have a relation to the O personality domain. Furthermore, the results are contradictory, and certain studies have reached a conclusion that apophenia is subsumed within O (42), while others have found apophenia distinct from O (43). The most commonly used psychometric tools for evaluation of schizotipy and similar constructs are listed in **table 1**.

Knezevic et al. have recently proposed a reconceptualization of a personality trait which would describe psychosis disposition (schizotypy) called Disintegration (53). This name was chosen because all subdimensions examined were postulated to stem from some level of disintegration of the information processing systems responsible for reality testing, which results in peculiar, incoherent and distorted cognitions, emotions, and behavior. Results of several investigations show a normal distribution of Disintegration in the general population, suggesting that individual differences in underlying mechanisms of Disintegration are probably similar to those operating in other personality traits.

The hierarchical structure of this trait was shown to consist of nine lower-level traits witch a high convergence to the higher-order Disintegration factor. In the Disintegration model, the positive symptoms are represented by Perceptual Distortions, Paranoia, Somatoform Dysregulations, Magical Thinking, and Enhanced Awareness, and the negative symptoms are roughly represented by Flattened Affect (Social Anhedonia has been discarded). The remaining three structures are Depression, Mania (Excitement), and General Executive

Table 1. Psychometric tools for evaluation of schizotypy

Assessment tool	Authors	Year	Short overview
Wisconsin Schizotypy Scales (40)	Chapman, Chapman & Raulin	1976	Separate scales evaluating Magical Ideation, Perceptual Aberrations, Physical Anhedonia and Revised Social Anehdonia
Openness (44)	Wiggins & Pincus	1989	Openness was marked as one of the domains describing schizotipy within a 5-factor model describing abnormal personality
Cognitive and Perceptual Aberrations (45)	Siever & Davis	1991	Part of a psychobiological model for the evaluation of personality disorders
Schizotypal Personality Questionnaire (46)	Raine	1991	A self-report scale made for the assessment of schizotypal personality disorder according to DSM-III
Psychoticism (47)	Harkness, McNulty, & Ben-Porath	1995	Psychoticism assessed as part of the Personality Psychopathology Five (PSY-5)
Oxford-Liverpool Inventory of Feelings and Experiences (O-LIFE) (48	Mason et al.	1995	First questionnaire that reflected the fully dimensional model (including „healthy schizotypy“ into the model)
Structured Interview for Schizotypy – Revised (SIS-R) (49)	Vollema, Ormel	2000	Interview-based measure assessing 20 symptoms and 11 signs, evaluating 7 positive and 8 negative schizotypy items
Unconventionality (50)	Tellegen & Waller	2008	Unconventionality as one domain of a Big Seven (instead of the Big Five) model reflecting odd behavior and flattened affect traits
Peculiarity(51)	Tackett, Silberschmidt, Krueger, & Sponheim	2008	Peculiarity was used to assess symptoms of Cluster A personality disorders according to DSM-IV
Desintegration (DELTA)(52)	Knezevic et al.	2016	Personality trait with a hierarchical structure of the following subdimensions: General Executive Impairment, Mania, Depression, Social Anhedonia, Paranoia, Perceptual Distortions, Enhanced Awareness, Flattened Affect, Somatoform Dysregulations, Magical Thinking

Impairment. These traits form a factor separate from the FFM, replicated across informants, samples, and units of analyses, and supported through meta-analytic findings (54).

This model seeks to explain Disintegration as a trait-like characteristic, which is more in line with the aforementioned DSM-5 description of schizotypy. Knezevic et al. (2017) see individual differences on Disintegration as a consequence of the core tendency to see pattern in randomness, or tendency to false positive errors. Adaptive potential of this tendency to irrationally assign causation lies in the fact that occasionally correct responses can carry a large fitness benefit in specific circumstances(55).

Studies which will explore stability of Disintegration using longitudinal design and longer follow up periods in general population samples will be important to further elucidate this condition. Moreover, studies based on clinical samples (psychosis spectrum patients) will be of great importance to analyze if and how the Disintegration is modified by illness (and vice versa). The first study of this kind has been conducted and the results will be presented in near future (personal communication).

Conclusion

Considering how commonly used the term schizotypy is in psychology and psychiatry, it is important to distinguish it between the other terms that are often used interchangeably. Most of these other terms describe only parts of the schizotypy continuum which is in itself a broader term.

Schizotypy is a useful and integrative construct which may encompass normal, subclinical and pathological variations throughout the continuum. A better theoretical understanding of this construct may help us formulate more adequate measures for psychometric evaluation of schizotypy in order to have a clearer understanding of etiology and targeted therapy for the condition (if necessary).

As was noted in a recent systematic review of treatment in schizotypal personality disorder, there is currently only limited evidence on which to base treatment decisions in this condition(56). Therefore, it is important to better define and operationalize schizotypy in order to prevent further confusion and its misuse in the description of psychopathology, as well as for the improvement of current clinical practice.

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