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Subtypes of Psychotic-Like Experiences and Their Significance for Mental Health

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Abstract

More recently, the interest in studying subclinical psychosis has increased, as it might provide critical information regarding mechanisms that are implicated in the exacerbation of subclinical symptoms and the maintenance of mental health. However, psychosis research has tended to focus on clinical outcomes and not to differentiate between subtypes of psychotic-like experiences (PLE) that might differ regarding their psychopathological significance. Importantly, this might have obscured a more accurate picture of the complex structure of psychosis and the significance of particular risk and protective factors. Notably, while studies point toward a continuity of psychotic experiences and accompanying factors across the general population, there is evidence indicating that some PLE in healthy individuals might also be associated with a weaker expression of other subclinical symptoms, increased well-being and even resilience to some degree. Importantly, such findings might have implications on strategies in psychosis prevention and therapy, early detection, as well as the construction of continuum models of psychosis. The present chapter aims at drawing together findings that necessitate a more differentiated view and assessment of PLE. It intends to provoke new questions that might offer starting points for future investigations, such as longitudinal studies investigating the interplay of subclinical symptoms.

Keywords: psychotic-like experiences, psychosis continuum, psychosis phenotype, subclinical psychosis, positive symptoms, disorganized symptoms, negative symptoms, affective symptoms, well-being, mental health, resilience, risk, specificity

1. Introduction

Psychotic disorders such as schizophrenia may feature frightening hallucinations as well as bizarre beliefs and behaviors that not only arouse anxiety in the general public and the media

but also amongst doctors [1]. But, even after more than 100 years of research, they remain some of the most mysterious and costliest mental disorders [2] that can only be detected and treated once the symptoms are manifest. More recently, psychosis research has increasingly shifted its focus to the non-clinical part of the general population.

Delusions and hallucinations are the core features of psychosis. They are also referred to as “positive symptoms,” as it appears that they have been added to the experience of affected individuals. While they are the hallmark feature of different psychotic disorders, it is their combination with other psychological difficulties as well as their relative expression that defines a specific diagnostic categorization of an affected individual [3, 4]. Research on the symptoms of schizophrenic patients has suggested the presence of two additional basic symptom clusters associated with psychosis, namely disorganized and negative symptoms [5]. Disorganized speech and disorganized behavior refer to loose associations in speech and physical actions that do not appear to be goal-directed (e.g., catatonia, which is maintaining peculiar and often uncomfortable postures) [6]. As opposed to positive and disorganized symptoms, the term “negative” symptoms refers to the impression that something has been taken away from the patient’s behavior and experience. Negative symptoms manifest in flat or blunted affect (a reduced range of expression of emotions, reduced amount or fluency of speech) and avolition (the loss of will to do things). According to a more recently suggested model, psychosis exists as a transdiagnostic phenotype including affective symptoms as additional factors, i.e. depression and mania [7, 8]. The notion of transdiagnostic associations between psychotic and affective symptoms has recently been adopted in the fifth and latest edition of the standard diagnostic manual in the United States (DSM5, see [4]) in that bipolar disorders were separated from depressive disorders and relocated between depressive disorders and schizophrenia spectrum disorders [9]. Hence, if affective difficulties are not the predominant symptoms, but positive, disorganized, and negative symptoms are prominent, an affected individual might be diagnosed with schizophrenia (or “non-affective psychosis”) [7]. In contrast, individuals with fewer negative symptoms but with a high prevalence of affective symptoms (manic and depressive symptoms) might be diagnosed with psychotic depression or bipolar disorder. Lastly, if affective and psychotic symptoms are similarly present, an individual might be diagnosed with schizoaffective disorder.

In contrast to the categorical, “Kraepelinian” approach, the Swiss psychiatrist Eugen Bleuler thought already 100 years ago that psychosis was just an extreme expression of thoughts and behaviors that could be found in varying degrees throughout the general population [10]. This was seminal for different models considering psychosis as a series of symptoms that are aligned along a continuum between clinical and non-clinical populations, such as schizotypy, psychosis proneness, subclinical psychosis, or at-risk mental states [11–14]. More recently, it has been suggested that psychosis exists as an extended *and* transdiagnostic phenotype that can be conceptualized at subclinical levels as a measurable behavioral expression of risk for psychosis [15, 16]. Psychotic experiences in the absence of a diagnosis are generally referred to as psychotic-like experiences (PLE), irrespective of their apparent severity. Research has mostly focused on them since they are the best indicators of early stages, although negative-like symptoms might present themselves earlier on the temporal trajectory leading to mental illness [17, 18]. There has been growing interest in the study of PLE, as it promises to provide new insights into factors and mechanisms involved in both the emergence of mental disorders and the maintenance of mental health [19].

Importantly, it has been shown that PLE and psychotic disorders share etiological risk factors, cognitive correlates, demographic characteristics, and diminished well-being, which supports a continuum of psychotic symptoms and associated factors across the general population [20–22]. However, while it is generally agreed upon that a psychosis continuum exists, there is no consensus even on the most basic dimensions of the psychosis phenotype and involved constructs lack clear definitions [23–25]. While PLE are generally seen as indicators of psychosis proneness, studies suggest that they are frequently reported in the general population and are not necessarily associated with distress, help-seeking, or the onset of psychotic disorders [20, 26, 27]. More specifically, there is some evidence indicating they might be differentially implicated in mental health and the formation of mental disorders [28–32]. However, as psychosis research has tended not to differentiate between different PLE and to categorize them homogeneously, only little is known about their individual psychopathological significance and their role in the formation of different psychosis spectrum disorders [32, 33]. Similarly, only little attention has been given to comparing the phenotypical similarity of psychotic experiences between healthy and clinical individuals [19, 34]. Therefore, new instruments have been called for in order to allow accurate mapping out of the psychosis continuum [35]. Further complicating the study of PLE, a variety of terms and self-report instruments with different conceptualizations of psychosis and PLE are being used, which may entail inconsistent results and blur the sources of these inconsistencies [24, 34, 36]. However, these limitations are rarely addressed or regarded in the study of PLE although they might ultimately impede progress in all areas of psychosis research.

Importantly, attaining a clearer picture of PLE and associated factors might contribute to elucidating psychosis formation, improving risk screening, as well as facilitating new therapeutic approaches. Understanding the specific meaning of different subtypes of PLE for mental health might have become even more important since recent approaches aim at studying the subclinical interplay of symptoms leading to mental illness or the retention of mental health [37, 38]. In this context, an empirically established and generally agreed upon categorization of PLE regarding their psychopathological significance may be of fundamental importance. Although similar categorizations have been proposed [30, 39], it has not yet been clarified to which categories certain PLE should be assigned.

This chapter presents empirical findings that necessitate a more differentiated investigation of PLE and points out limitations in their current assessment. Further, it advocates a more differentiated view on PLE and clearer use of the associated terminology, concepts, and instruments. Aiming to stimulate further research in this area, a tentative categorization of PLE is provided, and possible future research directions are indicated.

2. Psychotic-like experiences: they are probably not all the same

Research into subclinical psychosis is marked by a rather general view on psychotic-like experiences (PLE) and the interchangeable use of various instruments and terms with different underlying conceptualizations of psychosis [24, 25, 32, 34]. This section presents evidence necessitating a more differentiated view on PLE and points to pitfalls in their assessment that need to be considered when researching subclinical psychosis.

2.1. Some psychotic-like experiences could be less worrisome than others, but might some also be beneficial?

Some of the earliest evidence raising the question if different PLE might be variably associated with disadvantage and mental health comes from research using the Wisconsin Schizotypy Scales [40–42]. It was found across several studies that PLE relating to magical thinking (MT) (and perceptual aberrations) were negatively correlated with physical anhedonia, but not other scales measuring negative-like symptoms [28, 41, 43, 44]. Notably, the negative associations were detected in samples of college students and healthy adults while the correlation was close to zero in outpatient clinic clients and schizophrenics [40, 43]. However, analyses indicated a true incompatibility of magical ideation and physical anhedonia rather than sampling effects as a cause for this pattern [43]. It was suggested that people scoring high on both magical ideation and physical anhedonia are more likely to become hospitalized, which might cancel out the otherwise negative correlation in these populations. Whereas these findings still remain to be explained, it has been speculated that magical ideation might reduce physical anhedonia by conveying meaning to (sensory) experiences or that both are linked through a third factor, e.g., extraversion and emotional stability [28, 45]. However, room for interpretation is limited, as most of the aforementioned scales for PLE may contain several different constructs rather than one. For example, the Magical Ideation Scale (MIS), (see [41]) includes paranormal beliefs, superstitious beliefs, ideas of reference, and suspicious-paranoid thoughts [46]. Hence, it is not clear which of the contained constructs are ultimately responsible for the observed associations. Nonetheless, the results indicated that it might be important to differentiate between subtypes of PLE, as they might be variably associated with other psychological (risk) factors.

Less ambiguous evidence for differences in the psychopathological significance of PLE comes from more recent research using the Community Assessment of Psychic Experiences Questionnaire (CAPE), (see [47]). The CAPE was constructed to investigate the extended psychosis phenotype [15] and has become one of the most frequently used self-report instruments for PLE [34]. A few studies have investigated which categories underlie PLE in the CAPE and how they are related to factors indicating risk for transition to psychotic disorder, i.e. distress, depression, and impairment [48]. Using exploratory factor analyses, one study identified bizarre experiences (BE), persecutory ideas (PI), and magical thinking (MT) to underlie the CAPE positive dimension in a sample of non-psychotic help-seekers [31]. Interestingly, only BE and PI were found to be associated with distress, depression, and poor functioning while MT was not. Notably, reminiscent of the aforementioned studies implementing the MIS, the researchers also found that MT was not correlated with anhedonic depression, unless accompanied by distress. Further, MT even turned out to be a negative predictor of anhedonic depression when adjusted for BE and PI. The apparent lack of associations of MT with any maladaptive feature such as depression and poor functioning lead the researchers to suggest that MT might be benign. Similarly, in a community sample of high school students, four types of PLE were found, namely BE, perceptual abnormalities (PA), PI, and MT [30]. Again, only BE, PI, and PA but not MT were strongly associated with distress, depression, and poor functioning. It was thought that the lacking association of MT with indicators of disadvantage could be explained with the finding that two items referring to paranormal beliefs were more closely associated with age and cultural background than psychopathology

[30, 31]. Therefore, two corresponding items were dropped from the analyses in a subsequent study [29]. This time, PLE clustered into four classes, i.e. BE, PI, PA, and grandiosity while all subtypes were associated with one or more indicators of disadvantage. The authors speculated that PI and BE might lead to more evident symptoms than PA and GR, as they are more invasive experiences and more disruptive of the self-structure. Importantly, the studies showed that all forms of PLE were associated with disadvantage, once items specifically related to paranormal beliefs (but not grandiosity) were removed. At the same time, however, they indicated that PLE might be maladaptive in different ways and it was speculated that they may confer varying levels of risk for psychosis and other mental disorders [29].

The latter studies inspired a more extensive investigation of the specific relationships between different subtypes of PLE and “co-morbid” subclinical symptoms in healthy adults [28]. The study aimed at gaining first information about possible symptom-level mechanisms implicated in the emergence of mental disorders featuring psychotic symptoms and a meaningful categorization of PLE. Importantly, the researchers not only included experiences that are relevant regarding the specific extended psychosis phenotype (i.e., including positive-, negative-, and disorganized-like symptoms) but also those that are associated with the more recent notion of a transdiagnostic extended psychosis phenotype (i.e., also including affective symptoms). PLE were operationalized using the positive scales of the Schizotypal Personality Questionnaire (SPQ), (see [49]). Further extending the description of PLE, a novel questionnaire was included whose items were not derived from clinical symptom presentations (the revised Questionnaire for Assessing the Phenomenology of Exceptional Experiences (PAGE-R), see [50]) and that had just recently been introduced into psychosis research [44]. Whereas most subclinical symptoms were correlated, the researchers found unique associations between certain PLE and subclinical symptoms that were consistent across the numerous applied scales when co-occurring PLE were controlled for: paranoia-like experiences (suspiciousness) were uniquely associated with various scales measuring negative-like experiences. In contrast, different hallucination-like experiences (including dissociation) exclusively predicted different anxiety-related experiences while ideas of reference appeared to be specifically implicated with affective symptoms (anxiety and depression). Importantly, numerous negative associations between PLE and other subclinical difficulties were detected, namely between ideas of reference and physical anhedonia, magical thinking and constricted affect, PAGE-R odd beliefs (e.g., seeing meaning in coincidences) and depression, emotional instability, as well as unspecific symptoms (e.g., difficulties falling asleep). Notably, unlike suspiciousness and ideas of reference, magical thinking and PAGE-R odd beliefs did not positively predict any subclinical symptoms. While these results pointed to possible symptom-level interactions implicated in the development of psychosis spectrum disorders [37, 38], they also contributed to an empirically founded and much-needed categorization of PLE [30, 39]. Furthermore, the findings suggested that negative associations between PLE and other subclinical symptoms might be more extensive than previously thought and indicated that some delusion-like PLE *per se* might be associated with less psychological difficulties while being indicative of increased psychological burden at the same time (as indicated by their positive correlations with diverse psychological difficulties). Interestingly, there are complementary findings suggesting that some PLE might not only go along with less co-occurring subclinical symptoms but also with well-being. In a sample of university students, it was found that ideas of reference positively predicted subjective well-being, (e.g., standard of living, community-connectedness), when

adjusted for co-occurring PLE, negative- and disorganized-like symptoms [51]. Notably, this finding was in line with suggestions that ideas of reference (in contrast with paranoia) must not necessarily be burdensome [52, 53].

Odd beliefs as measured by the PAGE-R were prominently represented in the detected negative associations. Importantly, odd beliefs refer not to beliefs in a strict sense, but to experiences characterized by “seeing” patterns in noise (e.g., meaningful linking of separate events, correctly anticipating future events). Importantly, this sets odd beliefs apart from scales assessing e.g., magical thinking that often contain paranormal beliefs rather than experiences, which might be less relevant for the study of subclinical psychosis [54]. Further, in contrast to most studied forms of delusion-like experiences (e.g., suspiciousness), odd beliefs in healthy individuals were particularly enriching and positively-valenced experiences. Nonetheless, odd beliefs are conceptually similar to other delusion-like experiences and may be associated with indicators of psychosis proneness, such as biases in probabilistic reasoning and a tendency to jump to conclusions [55, 56], alterations in attributional styles [57, 58], differences in theory of mind [59], and magical ideation [60]. Importantly, experiences similar to odd beliefs have been suggested to reduce distress in perceptually ambiguous or stressful situations [61, 62] and to facilitate (perceived) control as well as to confer confidence and agency under lack of control [63]. Before this background, it was speculated that odd beliefs in healthy individuals might represent a psychologically stabilizing cognitive response to burdensome experiences [28]. Hence, despite their delusion-like quality, odd beliefs might paradoxically exert a positive effect on psychological well-being. Intriguingly, a new study investigating specificities between PLE and forms of childhood trauma found for the first time that odd beliefs in healthy adults were associated with stronger self-concept of own competences (SC), when adverse childhood experiences were held constant [64]. In contrast, paranoid-like experiences remained negatively associated with SC once adjusted for childhood adversities. SC is the fourth dimension of locus of control according to Rotter’s social learning theory [65, 66] and refers to the self-perceived capability to act in new, difficult or ambiguous situations [67]. Notably, addressing SC might also strengthen self-esteem, which has been identified by individuals with schizophrenia to be the most important treatment target [68]. Moreover, strengthening SC in therapy might help to alleviate psychotic symptoms SC [66]. Due to their positive association with SC the question was raised if odd beliefs might contribute to resilience toward mental illness, despite conferring an inaccurate perception of the world [64]. Further, as an individual’s inability to give meaning to an adverse experience is important in determining its long-term effect [69], the tendency to have positive delusion-like experiences might perhaps be exploited for therapeutic purposes.

The presented findings suggest that despite their tendency to co-occur, PLE may be variably implicated in mental illness and mental health. These results are in line with earlier suggestions that a co-occurrence of characteristics seen in pathological and non-pathological conditions must not necessarily mean that they are indicators of psychopathology [70]. More specifically, some characteristics could simply be by-products of the psychosis dimension but not be clinically relevant *per se*. However, it is cautioned to jump to premature conclusions and these symptom-level insights require further investigation, as there are several limitations to be considered. For example, all studies applied cross-sectional study designs,

preventing any causal conclusions to be drawn. Further, the samples were not representative of the non-clinical part of the general population (e.g., consisting of high school students), which puts the representativeness of the results into question. Further, it is not clear if e.g., odd beliefs are similarly associated with indicators of well-being and disadvantage across the psychosis continuum and across other instruments assessing PLE. It might well be that the tendency to have odd beliefs might worsen outcomes in some cases by acting as an accelerant among other PLE. Nonetheless, the reported results might serve as starting points for the creation of theoretical models and longitudinal investigations into the interplay of subclinical symptoms leading to the exacerbation of subclinical symptoms or the maintenance of mental health, respectively [28].

2.2. The heterogeneous conceptualization and assessment of psychotic-like experiences

Self-report instruments for psychotic-like experiences (PLE) are a central source of information in epidemiological research on subclinical psychosis. However, it is mostly not regarded that these instruments are tied to certain conceptualizations of (subclinical) psychosis and originally served a specific purpose [24, 25, 34]. Notably, many instruments used to assess PLE stem from schizotypy research and are fundamentally influenced by the underlying schizotypy model and the assumed link between schizotypal personality features and schizophrenia. For example, one of the earliest and most frequently used schizotypy scales is the Magical Ideation Scale (MIS, see [41]) [34]. It bases on Meehl's [11] quasi-dimensional schizotypy model and as a screening tool for psychosis proneness (and vulnerability to schizophrenia in particular) its scope is restricted to illness and schizophrenia risk [25]. Accordingly, the MIS conceptualizes "psychotic-like symptoms" as attenuated or milder forms of Schneiderian first-rank symptoms of schizophrenia that manifest in the acceptance of unconventional forms of causality. Hence, the items in the MIS might have a distinct bias toward schizophrenia-related PLE. Furthermore, the selection of items might not be reflective of different forms of PLE in the general population, as items with extremely high and low difficulties were chosen to attain normality of the scale score. In comparison, the popular Schizotypal Personality Questionnaire (SPQ, see [49]) was constructed to screen for schizotypal personality *disorder* according to DSM-III-R criteria and not to assess schizotypal personality organization [25]. Hence, its categorization of PLE into paranormal beliefs/magical thinking, ideas of reference, suspiciousness, and unusual perceptual experiences is entirely derived from a theoretical diagnostic profile. Notably, item-level factor analyses have repeatedly produced incongruent categorizations of the experiences [71]. One of the most widely used self-report instrument to assess PLE not founded on schizotypy research is the Community Assessment of Psychic Experiences Questionnaire (CAPE, see [47]). The CAPE was created against the theoretical background of the extended subclinical psychosis phenotype [15] and is an attractive tool for clinical and research use, as it is comprehensive and measures not only the frequency of PLE but also distress associated with them [48]. In contrast to questionnaires assessing attenuated versions of clinical symptoms, the CAPE inquires symptoms seen in patients with psychotic disorders (albeit toned down by adding "as if" to the questions). Hence, existing instruments assessing PLE may differ regarding the constructs they cover, the qualitative expression of

PLE (“symptoms” vs. attenuated versions thereof), as well as their rating format. Importantly, choosing one instrument over the other may profoundly affect the ensuing results [25]. For example, although similar sex differences have been found in non-clinical samples as in schizophrenic patients [72, 73], the non-detection of sex differences in a community sample has led researchers to conclude that they only present themselves in full-blown psychosis but not in sub-threshold states [74]. Interestingly, using a sample of healthy individuals, a study could replicate the detection and non-detection of sex differences in the latter studies, depending on the scales for PLE that were being analyzed [44]. It was suggested that scales including fewer and more severe or difficult items (e.g., someone has power over your thoughts [75]) might not be able to detect sex differences in healthy individuals, whereas scales inquiring more and attenuated experiences might do so (e.g., I have sometimes felt that strangers were reading my mind [41]). Importantly, different populations across the psychosis continuum ranging from non-disordered schizotypes, to prodromal patients, to patients with a schizotypal personality disorder, and to psychotic patients might all experience positive(-like) symptoms such as odd beliefs. However, these groups might differ regarding the relative prevalence of increasingly severe forms of experiences ranging from magical thinking to full-blown delusions [24]. Hence, depending on the sample, the research question, as well as the theoretical model of psychosis, some surveys might be more adequate to be used than others.

In addition to the mostly non-transparent choice of instruments [34] and their heterogeneous designs, unclear content validity of scales may additionally entail mixed results across studies and contribute to a blurred picture of psychosis [25]. Studies investigating symptom-level associations have applied multiple regression modeling to account for overlapping variance between different PLE scales in order to gain insight into their specific psychopathological significance [29, 30]. Whereas these results are meaningfully interpretable, the reliability of the interpretations ultimately depends on the choice of instruments and the (content) validity of the applied scales. Notably, scales measuring certain PLE may often conflate different constructs impeding a reliable interpretation of results, as exemplified by the MIS [24, 46]. Additionally, the emergence of ever-new concepts and terms as well as the interchangeable use of different terms for PLE with overlapping but not necessarily identical meanings has resulted in a “near Babylonian speech confusion” that hinders clarity in the nomenclature, blurs sources of inconsistencies between findings and constricts their interpretation [24, 32, 36]. Hence, to successfully elucidate the complex structure of psychosis, researchers should have detailed knowledge of existing constructs and be familiar with the limitations of their operationalizations.

3. Future research directions

3.1. Toward differentiated and empirically founded categorizations of PLE

A generally agreed upon and empirically substantiated categorization of PLE would be a helpful tool for clinicians as well as researchers. For example, it might help to provide more accurate screening procedures, predict risk for certain disorders featuring psychotic

symptoms, facilitate more adequate treatment, and counteract stigmatization [29]. Further, it might also help to integrate findings across studies implementing different psychometric instruments and conceptualizations of PLE.

More recently, similar categorizations of three basic types of PLE have been proposed, suggesting that: (1) some indicate a specific vulnerability toward psychosis while (2) others might be non-specific and also be implicated in the development of affective disorders, and (3) some might not be associated with any clinical disorder at all [30, 39]. It has been speculated that some PLE such as paranormal beliefs are benign and might explain why they are mostly not associated with mental illness [32]. In contrast, it has been suggested that PLE specifically associated with distress and poor functioning might be more likely to indicate vulnerability to psychotic disorders [30]. However, it yet remains to be clarified to which category certain PLE should be assigned [32].

Recently, to shed light onto possible categorizations of PLE, a study investigated unique associations of certain PLE with subclinical symptoms relevant for psychosis spectrum disorders [76], i.e. negative-like symptoms, affective symptoms (anxiety, depression), and other psychological difficulties in a sample of healthy adults [28]. Referring to the model introduced above, following categorizations are suggested: Paranoid-like experiences in healthy individuals might specifically indicate vulnerability to psychosis (category 1), as they were the only significant predictor of schizophrenia-like negative symptoms (physical anhedonia, no close friends, and constricted affect) but were not associated with any type of affective symptoms. In contrast, hallucination-like experiences were uniquely associated with experiences from the anxiety spectrum (e.g., phobic anxiety, obsessive-compulsive symptoms) but not with negative-like symptoms. Further, ideas of reference were a positive predictor of anxiety symptoms and depressive symptoms. Therefore, the latter PLE might belong to the category of non-specific PLE, hence, predisposing toward affective and psychosis spectrum disorders (category 2). Lastly, paranormal beliefs and PAGE-R odd beliefs did not positively predict any of the subclinical difficulties, which might reflect that they are not associated with any clinical disorder at all (category 3). The latter categorization was underlined by the observation that paranormal beliefs and odd beliefs were negatively associated with various psychological difficulties. Notably, these findings raise the question if more categories for PLE might be needed that account for associations of PLE with well-being and stronger resilience [51, 64] and lower load of negative-like symptoms. However, it remains to be determined if these findings can be accommodated within a framework encompassing three classes of PLE.

The tentative categorization of PLE presented above requires more data and replications in samples representative of the healthy general population. Ultimately, longitudinal studies are needed to determine if specific PLE predict certain psychosis spectrum disorders more likely than other diagnoses and how they are implicated in the maintenance of mental health. Notably, other symptom factors that are relevant for determining the psychopathological significance of PLE were not regarded. Amongst other factors, these include intrusiveness, distress, and frequency of experiences as well as the associated development of functional impairment [47]. Furthermore, similar analyses are needed including other subclinical difficulties that might be part of the psychosis phenotype [16], such as disorganized symptoms and mania [51].

3.2. Toward a comprehensive assessment of psychotic-like experiences

A comprehensive and phenomenological differentiated description of psychotic-like experiences (PLE) might be the prerequisite for attaining reliable classifications of PLE and new insights regarding their individual roles in the exacerbation of subclinical symptoms and the maintenance of mental health [34, 35].

The clinical perception that psychosis presents itself as “cases” in need of treatment has profoundly shaped the way the psychosis phenotype is conceptualized in the current classification systems [15]. Consequently, this has also influenced the way PLE are operationalized across various psychometric instruments (e.g., be it as psychotic “symptoms” or their attenuated equivalents) [25]. However, there is evidence indicating that the phenomenological quality of psychotic experiences may differ between healthy and clinical individuals [28, 77]. Further, it might be argued that there are experiences belonging to the PLE spectrum that may not have been sufficiently regarded in research. In this context, the novel PAGE-R questionnaire assessing “exceptional experiences” is worth mentioning, as its items are not derived from clinical symptoms but are based on reports from individuals from the general population seeking advice due to their experiences [50]. Indeed, a recent study suggested that EE in healthy individuals can be meaningfully integrated into positive-like symptomatology while potentially expanding the existing description of PLE [44]. Importantly, the PAGE-R might capture more subtle PLE that are often not considered in psychosis research, such as sleep-related perceptions [4, 20] or enriching delusion-like experiences [45, 78]. At the same time, it focuses on experiences and does not include beliefs in the paranormal that might be less relevant for the study of subclinical psychosis [31, 54]. Interestingly, factor analyses suggested the presence of three types of experiences that paralleled the basic structure of the CAPE positive dimension [48], encompassing odd beliefs (*cf.*, delusional ideations), dissociative anomalous perceptions (*cf.*, bizarre experiences) and hallucinatory anomalous perceptions (*cf.*, perceptual anomalies). Importantly, this finding indicated that PLE basing on clinical observations and PLE basing on reports of unusual experiences by the general population might represent overlapping and complementary facets of positive psychotic symptomatology. Indeed, current research suggests that the PAGE-R might provide a more differentiated picture of PLE and new information on their associations with indicators of disadvantage and well-being as well as etiological risk factors [28, 64].

However, the PAGE-R was originally not created to study PLE, but a construct referred to as “exceptional experiences” (EE, see [50]). More specifically, its representativeness for PLE in healthy states might be questioned, as individuals reporting EE are characterized by diverse psychological problems [79] and the selection and design of items are substantially influenced by the underlying concept of EE. However, the PAGE-R is currently under further development (Fach, pers. comm.). Nonetheless, its use in psychosis research might be a first step in the right direction regarding a more comprehensive assessment of PLE, as the PAGE-R is not restricted to experiences derived from clinical symptoms and inquires comfort that the experiences may confer and the context in which they occurred (e.g., during meditation). Both might be important but mostly neglected factors for evaluating the clinical relevance of certain PLE. However, pursuing this “non-clinical” approach, psychosis research might tap into supposed indicators of subclinical psychopathology that might as well measure healthy and socially desired abilities.

For example, the PAGE-R item referring to perceiving thoughts and feelings of others might not only capture an attenuated version of a Schneiderian first-rank symptom of schizophrenia (thought transmission) but just as well an individual's ability to empathize with others.

4. Conclusions

Psychosis research has tended not to differentiate between subtypes of psychotic-like experiences (PLE) and to hold a predominantly deficit-oriented perspective on them. However, studies indicate that PLE might fundamentally differ regarding their individual psychopathological significance and risk for psychosis spectrum disorders. These results require further (longitudinal) investigations aiming at the creation of an empirically founded and accurate categorization of PLE. Importantly, new instruments featuring PLE not derived from clinical symptoms including positive valence ratings might contribute to a more accurate and comprehensive description of subclinical psychosis. Ultimately, these steps might help to advance psychosis research in explaining why some individuals with PLE become ill while others do not and could contribute to more precise risk screenings and more effective therapeutic strategies in the long run.

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Conflict of interest

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