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Self and world experience in non-affective first episode of psychosis

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ABSTRACT

A disturbance of "minimal self," — of the immediate sense of mine-ness inherent in experience—is hypothesized to be the core disturbance in schizophrenia. Research with the Examination of Anomalous Self Experience (EASE) has demonstrated the selective aggregation of anomalous self-experiences in the schizophrenia spectrum. Conceptual research suggests that anomalous world experiences, including changes in the experience of space, time, and other persons, occur alongside anomalous self-experiences and are an important aspect of subjectivity in schizophrenia. The Examination of Anomalous World Experience (EAWE) is a recently published interview format designed to explore changes in world experience in schizophrenia. In the current study, 24 hospital outpatients with non-affective first-episode psychosis and 24 healthy-control participants were assessed with the EAWE and the EASE. First episode psychosis patients had total EAWE and EASE scores that were both, on average, significantly higher than the healthy-control group. EAWE and EASE scores were highly correlated, even after removing overlapping items. The distribution of EAWE items and subtypes in the first-episode psychosis sample was heterogeneous. We conclude that anomalous world experiences represent a relevant aspect of first-episode psychosis, and that they may be related to the self-disturbances thought to underlie schizophrenia spectrum disorders.

1. Introduction

Anomalous world experiences, including subtle experiential changes in the lived world of space, time, other persons, and overall atmosphere, have been described in various patients with mental disorders – particularly, but not only, in the schizophrenia spectrum (Sass et al., 2017a). Analogous disturbances of subjectivity, involving anomalous self-experiences (e.g., of the sense of existing as a vital and unified, subjective center of experience or source of agency), have been systematically explored in the schizophrenia spectrum with the EASE: Examination of Anomalous Self Experience, a widely used format for semi-structured interviewing that explores several dimensions of self-experience, including anomalies in the realms of Cognition and stream of consciousness, Self-awareness and presence, Bodily experiences, Demarcation/transitivism, and Existential reorientation (Parnas et al., 2005). These experiences have some affinities with Kurt Schneider's First Rank Symptoms but are less florid and more stable. The EASE renders them available for inquiry and subjective description, which is typically missing from the more purely external observation of a person's behavior, attitude, and performance more typically found in psychiatric assessment. Examples of EASE items include 1.2, Loss of thought ipseity – a sense that one's thoughts are disconnected from or do not belong to oneself; and 2.1, Diminished sense of basic self – a pervasive feeling of inner void or lack of identity.

However, despite the value of this instrument, it generally does not include features of the lived world that are commonly found in schizophrenia, which may be important for a more comprehensive investigation of this disorder. The EAWE: Examination of Anomalous World Experience (Sass et al., 2017b) is a recently published, semi-structured interviewing format that explores anomalous experiences of Space and objects, Time and events, Other persons, Language, overall Atmospheric qualities, and Existential orientation (the latter domain overlapping with the EASE). Examples of EAWE items/subtypes include 1.8.1, Diminished perspectival orientation – a sense of seeing the world from "nowhere" or "everywhere at once"; 2.3.2, Time as disjointed or fragmented – a disruption of the continuous flow of time; and 5.1,

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Derealization of the world – a loss of the experience of immediacy, vitality, or authenticity of the world. This study uses both the EASE and the EAWE to investigate anomalous world experiences and their relation with anomalous self-experiences in non-affective first-episode psychosis. This is the first such study to explore anomalous world experiences in this population, and to provide a combined profile of disturbances of world experience together with self-experiences in patients with psychosis.

The self-disorder model offers a unifying conceptualization of schizophrenia (Raballo, 2012) that accounts for the wide range of seemingly heterogeneous symptoms found in this disorder—which include (so-called) positive, negative, and disorganized symptoms (Sass, 2003; Sass and Parnas, 2003). It also sheds new light on more subtle and early changes in this disorder by interpreting them as forms of disturbed ipseity (Nelson et al., 2014), or basic self. The model of disturbed ipseity or disturbed basic self refers to disorders of minimal or core self (ipse means self or itself in Latin), that is, of minimal self-awareness, the normal first-person quality of experience—which is to say, of the most fundamental sense of existing as a unified and vital subject of one's own experiences and agent of one's own actions.[1] Disturbed ipseity encompasses forms of a) exaggerated and self-alienating self-consciousness (hyper-reflexivity), b) diminished intensity or vitality of the subject's subjective self-presence (diminished self-presence), and c) an associated disturbed grip or hold on reality (especially disturbances of salience patterns in perception and confusion between the modalities of perception, memory, and imagination). These subjective changes (especially a and b) have been collected and organized in the EASE interview, which facilitates their systematic exploration in clinical (and non-clinical) populations. Therefore, the anomalous self-experiences described in the EASE, along with the anomalous world experiences described in the EAWE, are thought to be the relatively discrete experiential manifestations of the disturbance in basic selfhood hypothesized to underlie the form of psychopathology that is specific to schizophrenia.

Previous studies using the EASE have identified high average levels of anomalous self-experiences in persons with schizophrenia (see a review of evidence in Parnas and Henriksen, 2014) and in those with schizotypic and schizotaxic traits (see empirical evidence in Raballo and Parnas, 2011), as well as in first-episode psychosis (see empirical and theoretical support, respectively, in Møller et al., 2011; Sass, 2014) and high-risk and prodromal phases (see empirical evidence in Nelson et al., 2012; Parnas et al., 1998; Klosterkötter et al., 2001; Nelson et al., 2009a). The ipseity-disturbance hypothesis of schizophrenia is now substantiated by conceptual (Kircher and David, 2003; Sass and Parnas, 2003), clinical (Raballo et al., 2011), and neurobiological evidence (Kapur, 2014; Nelson et al., 2009a; Kircher and David, 2003; Taylor, 2011). Some studies do however demonstrate significant EASE levels (though lower than in schizophrenia spectrum) or different subsets of EASE items in certain other mental disorders than can involve dissociative states (depersonalization and derealization), including Panic Disorder (Madeira et al., 2017) and Depersonalization Disorder (Sass et al., 2013a) as well as in certain conditions including intense introspection (Sass et al., 2013b) and perhaps mysticism (Parnas and Henriksen, 2016), which raises some questions about the degree and nature of the specificity of these experiences to schizophrenia (Sass et al., 2018).

Certain changes in the lived world have been considered distinctive of schizophrenia in clinical and psychopathological descriptions, both classic and contemporary (Pienkos et al., 2017). Indeed, as with anomalous self-experiences, anomalous world experiences are described in numerous autobiographical accounts and patient reports. It seems likely that disturbances of self-experience and world-experience are closely intertwined (i.e., disturbances of thinking, selfhood, bodily existence; but also of space, time, language, other persons, and surrounding atmosphere; Sass et al., 2017a). That is, everyday world engagement and understanding, which normally operates in an implicit or tacit manner, is necessarily altered when there is a loss of a normal, first-person perspective and grip on the world (Ferri et al., 2012; Nelson et al., 2009b; Stanghellini and Ballerini, 2011). Many of these changes involving world experience are postulated to occur fairly early in life, prior to the first episode of psychosis (FEP), and may therefore be relevant to early diagnosis and intervention.

Alterations of these latter, *world* experiences, together with alterations of the subject's overall existential orientation, are explored with the EAWE. Although the EAWE is a new instrument, it has been demonstrated to have good inter-rater reliability ($\rho > 0.83$; average $\kappa \geq 0.78$, with EAWE domain-specific $\kappa \geq 0.73$), high internal consistency (Cronbach's $\alpha > 0.82$), and specificity to schizophrenia-spectrum diagnoses (maximum EAWE score of: 40 in schizophrenia spectrum participants, 10 in major depressive disorder participants, 9 in healthy controls; though trends were not significant due to small sample size; Conerty, 2013). A qualitative study using the EAWE found a unique gestalt in schizophrenia spectrum disorders, involving a profound disruption of the taken-for-granted aspects of reality and the intersubjective world alongside a predominance of internal, subjective experiences, which was distinct from changes in world experience in major depressive disorder (Pienkos et al., 2017).

The holistic or tightly intertwined nature of dimensions or aspects of subjectivity have long been recognized, as e.g. in William James's classic chapter on the Stream of Consciousness in his *Principles of Psychology* (James, 1950), while the mutually constitutive relationship between self- and world-experience is a central theme in phenomenological philosophy (Merleau-Ponty, 2013). This overall holism (as it might be called) does not, however, prevent us from recognizing that alterations of subjectivity can manifest in many different ways and in a variety of different patterns—as is obvious in any study of psychopathology. The EAWE is intended to expand the scope of our explorations beyond the self-oriented aspects already probed in the EASE, thereby to enrich our overall comprehension of altered forms of subjectivity.

The present study offers a comprehensive and detailed analysis of the frequency and forms of qualitative anomalies of the lived world in FEP, and of their relationship to changes in self-experience. We carried out both EAWE and EASE interviews to achieve a wide-ranging assessment of disturbances of subjective experience in our patients. In this study, anomalous self-experiences and world experiences were only considered if they were lifelong experiences, and were disregarded if they occurred only during the first episode; our focus, then, is on precursors or vulnerability factors, rather than on the psychotic experience itself.

Our first hypothesis was that anomalous world experiences in general would have occurred in patients with FEP at a significantly higher level than in healthy controls. Our second hypothesis was that the presence of anomalous world experiences and anomalous self-experiences would be positively correlated. The EASE and the EAWE contain both “items” (more general forms of altered experience) and “subtypes” of those items; we calculated correlations using three separate scores from the EAWE and the EASE: (1) total subtype-level scores (number of subtypes + items endorsed in EAWE/EASE); (2) total item-level scores (number of items endorsed in EAWE/EASE, not considering number of subtypes) and (3) total EASE and EAWE scores after removing all overlapping items and subtypes (see appendix B of (Sass et al., 2017b)). We also intended to explore the profile of specific *types* of anomalous world experiences in FEP by considering the qualitative patterns of individual EAWE items and subtypes. Ultimately, we aimed for a tentative representation of the subjective world of FEP patients, i.e., of *how* they

[1] Some further elaboration of “ipseity” may be helpful: William James called this the “central nucleus of the Self.” Ipseity—which is grounded in the lived body and inner time-consciousness—is experienced not as an entity in one's field of awareness, but as the unseen point of origin for experience, thought, and action; as a medium of awareness, source of activity, or general directedness toward the world. It grounds the first-person givenness or for-me-ness of subjective life (Sass et al., 2018).

experience both self and world starting prior to development of psychotic symptoms, with an eye toward implications for diagnosis and prognosis, primary prevention, and translational research.

2. Methods

2.1. Setting and sample

Our sample included 24 participants with first psychotic episode, referred from the inpatient unit of Santa Maria Hospital Psychiatric Outpatient Clinic (CHLN–North Lisbon Central Hospital) to outpatient care. Inclusion criteria included: (1) clinical stabilization: symptomatic recovery from the acute episode phase (clinician assessment of return to pre-hospitalization level of symptom severity and functioning) and (2) fluency in Portuguese. Exclusion criteria included: (1) FEP following substance abuse; (2) FEP in the context of mood disorder; (3) evidence of brain disorder (as assessed via Tomography-Scan); (4) evidence of other major psychiatric co-morbidity (symptomatology primarily due to one or more comorbid diagnoses, as indicated by case record information and use of the M.I.N.I., The Mini International Neuropsychiatric Interview); (5) recent (preceding the episode for 1 month) and regular (daily) substance use. During their time on the inpatient unit, patients underwent a multidisciplinary assessment collecting past and present psychiatric history and socio-biographical information; psychiatric diagnosis and co-morbidity was accessed with the Portuguese version of M.I.N.I. 5.0.0 (Lecrubier et al., 1998). Participants were also administered the screening instruments mentioned in the following section.

Age of FEP participants ranged from 17 to 57 years old. 66.7% engaged in social drinking and 16% used alcohol on a daily basis; none fulfilled criteria for Alcohol Use Disorder. Although 13 participants had never used drugs, 11 participants reported having used cannabis in social contexts (before the psychotic episode) and 5 and 4 (respectively) had also previously used LSD and cocaine (recent and regular use of drugs was an exclusion criterion). The psychopharmacological profile included treatment with antipsychotics (100%) while 45.8% patients were also treated with benzodiazepines.

Control participants were recruited via a local advertisement requesting matching demographic features but absence of present or past personal or family psychiatric history. Among them the use of alcohol was social in 79% and daily in 12,5%; 9 out of 24 reported using cannabis in social contexts; none reported use of other drugs. All participants were recruited between 1 January 2017 and August 2018; all signed a written voluntary informed-consent form prior to participation. The study was approved by the Hospital Ethics Committee.

2.2. Socio-demographics

The socio-demographic data included gender, age, country of birth, education, personal or family history of psychiatric disorder, and present or past psychiatric treatment. This information was gathered from the CHLN clinical file or, for control participants, before research interviews.

The sample comprised 24 FEP participants with mean age of 27.58 years (SD 10.325) of which 70.8% were male. The matching sample of HC participants showed no differences on baseline demographics (see Table 1), except that educational level was higher in HC than FEP ($F = 4.090$, $p = 0.043^*$).

2.3. Procedure

Patients in our study were administered the EAWE: Examination of Anomalous World Experience and EASE: Examination of Anomalous Self Experience (two semi-structured, qualitatively rich, clinical interview formats), as well as the Social and Occupational Functioning Assessment (SOFA) and the M.I.N.I. (Mini International Neuropsychiatric Interview) to assess (and exclude) co-morbidity (Lecrubier et al., 1998).

Table 1
Socio-demographic and clinical characterization of sample.

	Total sample	HC	FEP	F or	p
	(*N* = 48)	(*N* = 24)	(N = 24)	Fisher's	
	mean ± SD	mean ± SD	mean ± SD		
	or n (%)	or n (%)	or n (%)		
Age	27.29 ± 1.44	27.58 ± 10.325	27.00 ± 9.807	0.040	p = 0.842
Country					
Portugal	44 (91.7)	22 (91.7)	22 (91.7)	1.000	p = 0.696
Other	4 (8.3)	2 (8.3)	2 (8.3)		
Gender					
Male	34 (70.8)	17 (70.8)	17 (70.8)	1.000	p = 0.624
Female	14 (29.2)	7 (29.2)	7 (29.2)		
Ethnicity					
Caucasian	43 (89.6)	22 (91.7)	21 (87.5)	1.000	p = 0.500
Other	5 (10.4)	2 (8.3)	3 (12.5)		
Education					
Prim/HSchool	25 (25.5)	9 (52.1)	16 (67.7)	4.090	p = 0.043*
Bach/Master degree	23 (74.5)	15 (47.9)	8 (33.3)		

N = number of participants or Mean ± Standard deviation. Percentages under parenthesis. *p*-values refer to ANOVA and Fisher's Exact Test between HC and FEP groups for continuous and categorical values respectively. * Significant difference (2-tailed $p < 0.05$).

The semi-structured interviews were performed by two psychiatrists (LM and CC), in the presence of residents in psychiatry (one or two of the following TF, MM, GQ and JE), all of whom were blind to clinical diagnosis and treatment status. Both interviewers had extensive training in psychopathology, a certificate in using the EASE (having attended a course led by Josef Parnas and Julie Nordgaard), and extensive experience using the EASE in research settings. Interviews (EAWE +EASE): took on average 3h30min (SD = 0 h34) in HC and 6 h41 min (SD = 0 h27) in First Episode of Psychosis participants. (Given the substantial length of the interview, many interviews were conducted in two or three sessions.) The reason for this difference in administration length is due to the number of items/subtypes reported and described by each group: the more anomalous experiences noted and described by a participant, the longer the interview.

Study participants were asked to report on experiences that occurred over the course of their lives, and to provide detailed examples of various anomalous experiences. Experiences were only considered (and scored appropriately; see below) if they were considered to be relevant and enduring by participants and interviewers, and if they occurred outside the context of acute psychosis, medication, or drug or alcohol use; experiences that occurred *only* in these contexts were not scored.

To assess inter-rater reliability, we followed the model of previous EASE studies: by scoring of audio-recorded interviews (here 10 out of the 48) and joint discussion (LM and CC; and TF or MM or GQ or JE) of difficulties and disparities. In all case where scoring proved problematic, both EASE and EAWE scores were assigned by consensus after discussion. Every attempt was made to ensure blindness to clinical diagnosis and treatment status, e.g., by avoiding inquiry into diagnosis or past life history (the rapport-building conversation that preceded administration of the EASE focused, rather, on cultural background), in order to avoid any impact on the scoring of the EASE and the EAWE. The possibility of bias can never be entirely eliminated, given the impossibility of excluding, in any interview, all sources of information potentially relevant to diagnostic judgments; however, this is no more likely than in

previous EASE studies or any study assessing psychopathology using structured or semi-structured interviews.

2.4. Clinical measures

2.4.1. Social and Occupation Functioning Assessment Scale: SOFAS ("Revising axis V for DSM-IV: a review of measures of social functioning,", 1992)

This is a version of the Global Assessment of Functioning (GAF) scale modified to measure social and occupational functioning independent of symptoms and psychological functioning. SOFAS scores were based on information obtained in clinical records and psychiatric interview, and could range from 0 to 100.

2.4.2. EAWE: Examination of Anomalous World Experience (Sass et al., 2017b)

As noted, this is a semi-structured interview for anomalous subjective experience. It includes 70 items (with 205 subtypes[2]) and a Cronbach α over 0.82, with high inter-rater reliability for both EAWE total scores (ρ > 0.83; average κ values were at least 0.78 for each study) and specific EAWE domains (κ not lower than 0.73 for any of the 6 domains). It is divided into six subscales: 1) Space and objects: 17 items (45 subtypes); 2) Time and events: 6 items (26 subtypes); 3) Other persons: 14 items (46 subtypes); 4) Language: 10 items (29 subtypes); 5) Atmosphere: 12 items (43 subtypes); and (6) Existential orientation: 11 items (16 subtypes). Each domain assesses aspects of world experience thought to occur in the schizophrenia spectrum (though they may also occur in other disorders). The EAWE can be used in various ways, and these may sometimes involve focusing on a particular domain or domains in accord with particular research targets (e.g., a study of the experience of time). However, an important way of using the EAWE (as with the EASE) is to consider it as an entire instrument, one able to offer an overall estimate of the degree of disturbance in world experience. The EAWE was cross-culturally adapted into Portuguese using the procedure of Beaton et al. (2000) and has now been published (Madeira et al., 2018).

Scores may be assigned to the more general items or to the more specific subtypes, depending on the goals of the study. Scores are dichotomous, indicating presence (score = 1) or possible presence/absence (score = 0) of items (highest possible score = 70) or subtypes (highest possible score = 205). Statistics were calculated using the following scores from the EAWE: the item score (EAWE-I), reflecting the sum of item scores *only*; the subtype score (EAWE-S), which reflects the total score of subtypes and items[3]; and a subset of items that do not overlap (either partially or totally) with EASE items (EAWE-dno).[4] We also reviewed the presence and absence of particular subtypes – not just the overall summary score reflecting the total number of items and subtypes" – because of our interest in achieving a detailed phenomenological impression of the subjective world in psychosis.

Due to this overlap (sometimes partial and sometimes total) of EAWE and EASE items, experiences relevant to the EAWE item that were endorsed during the EASE interview were scored appropriately on the EAWE, and vice versa. Of course, interviewers also followed up on any items when additional details were needed in order to record an accurate score (e.g. an EAWE item that was only *partially* endorsed during the EASE interview).

2.4.3. EASE: Examination of Anomalous Self Experience checklist: EASE (Parnas et al., 2005)

This semi-structured interview is intended to investigate anomalous experiences primarily involving the "pre-reflective" sense of first-person perspective (Møller et al., 2011)—a.k.a. "minimal," "core", or "basic" self, or, more technically, "ipseity." The EASE has been translated into various languages, including into Portuguese by Nelson Goldenstein and his research group. Interrater reliability is very good and has a Cronbach α of 0,87 (Møller et al., 2011). The EASE has 57 items (94 subtypes[5]), divided into five domains: 1) Cognition and stream of consciousness: 17 items (28 subtypes); 2) Self-awareness and presence: 18 items (36 subtypes); 3) Bodily experiences: 9 items (16 subtypes); 4) Demarcation/transitivism: 5 items (6 subtypes); 5) Existential reorientation: 8 items (8 subtypes). As in previous EASE research, scoring was dichotomous, indicating presence (1) or possible presence/absence (0) of items (highest possible score = 57) or subtypes (highest possible score = 94). As with the EAWE, calculations with the EASE include the item score (EASE-I), reflecting the sum of item scores *only*, and the subtype score (EASE-S), which reflects the total score of subtypes and items.

2.5. Statistical analyses

Statistics, including ANOVA for continuous variables and Pearson chi^2 for categorical variables, were used to consider between-group differences. Non-parametric tests were employed when the assumptions for parametric null hypothesis tests were violated. As a first aim, we measured the prevalence of anomalous world experiences using the EAWE in FEP and matched HC participants, considering both overall and individual-domain scores. Since the normality- and homogeneity-of-variance assumptions for the SOFAS, EASE and EAWE were violated, we performed Mann-Whitney non-parametric tests to compare HC and FEP samples. For post-hoc analysis we used Dunn-Bonferroni's approach for multiple comparisons in non-parametric test. When not otherwise specified, two-tailed $p < 0.05$ was considered significant. Given the exploratory nature of this small-sample study, we did not control for family-wise error rate, which would have decreased statistical power. Pearson r was used to analyze the correlation between the EAWE and EASE scores in our sample. We used standard descriptive statistics to determine the anomalous world experiences percentage profile across participants. All analyses were performed using SPSS IBM 24.

3. Results

3.1. Prevalence of AWE and ASE and average EAWE and EASE scores

Anomalous world experiences, as measured by the EAWE, were present in 15 of our 24 first episode of psychosis participants, with an average EAWE-I score (average number of items endorsed; mean ± SD) of 19.96 ± 21.44, and an average EAWE-S score (average number of items and subtypes endorsed; mean ± SD) of 31.29 ± 41.86, distributed across all domains. Four FEP participants scored over 100 on the EAWE-S (respectively, 104, 106, 106 and 126) while also scoring high on the EASE-S (respectively, 69, 54, 68 and 69).

Anomalous self-experiences, as measured by the EASE, were present in 21 of our 24 first episode of psychosis participants, with an average EASE-I score of 20.00 ± 17.14. The high variability across participants, on both EASE and (especially) EAWE, is apparent from the standard deviation scores, which generally approach or exceed the mean scores.

[2] Throughout the paper, we count the number of subtypes as follows: items with multiple subtypes are counted as the total number of subtypes for that item; items with no subtypes are counted once (i.e. as though they only have one subtype).

[3] This score is included because the EAWE does not make any claims about whether items are intended to reflect experiences that are somehow more *primary* or *distinct* than subtypes; consideration of subtypes may provide more thorough and valid information about the magnitude and forms of anomalous world experiences.

[4] The overlapping EAWE-S items that were removed are the following: 1.4.3 (total)1.17 (partial) 2.2 (partial) 2.3 (partial) 3.1 (partial) 3.7 (total) 3.7.8 (partial) 3.8.2 (partial) 4.4 (partial) 4.5 (partial) 5.1 (partial) 5.1.1 (partial) 5.1.4 (total) 5.4 (partial) 5.7.1 (partial) 5.13.1 (total) 5.13.3 (total) 5.13.4 (total) 5.14.2 (total) 5.17.3 (total) 6.3 (partial) 6.5.1 (total) 6.5.3 (total) 6.9 (total) and 6.10 (total).

[5] Subtypes in the EASE are calculated as in the EAWE: items with multiple subtypes are counted as the total number of subtypes for that item; items with no subtypes are counted once (i.e. as though they only have one subtype).

Mean scores of individual EAWE domains were as follows (EAWE-I score is presented first, followed by EAWE-S score: 1) Space and objects: 3.92 ± 4.48, 6.54 ± 8.55; 2) Time and events: 2.38 ± 2.53, 3.71 ± 4.672; 3) Other persons: 4.58 ± 4.72, 8.13 ± 9.424; 4) Language: 2.54 ± 3.46, 5.17 ± 8.04; 5) Atmosphere: 4.17 ± 5.105, 7.54 ± 10.31; and 6) Existential orientation: 2.38 ± 3.268, 3.216 ± 4.472.

Mean ASE scores (number of items endorsed only) of the EASE-I individual domains were: 1) Cognition and stream of consciousness: 4.46 ± 4.34; 2) Self-awareness and presence: 9.08 ± 7.49; 3) Bodily experiences: 2.50 ± 2.74; 4) Demarcation/transitivism: 1.33 ± 1.61; and 5) Existential reorientation: 2.63 ± 2.856.

In our comparison sample of 24 healthy-control participants, anomalous world experiences occurred in only 4 participants, and with scores always below 6. The mean healthy-control EAWE-I score was 0.63 ± 1.93, and the mean EAWE-S score was 0.67 ± 1.99. Anomalous self-experiences occurred in 11 HC participants, also with scores always below 6. The mean healthy-control EASE-I score was 1.00 ± 1.445.

Table 2 presents between-group differences in EAWE, EASE and SOFAS scores, using mean rank scores. Fig. 1 offers a scatter-plot representation of EAWE-S overall score in Healthy-control and First Episode of Psychosis samples.

3.2. Correlation between EAWE and EASE scores

We confirmed our prediction of a significant correlation between EAWE-S scores and EASE-S scores (see Fig. 2), (Pearson $r = 0.927$, 95% CI 0.510–0.650, $p = 0.000$). After removing the 25 (complete or partial) overlapping EASE-S items and subtypes present in the EAWE (EAWE-dno), we found virtually the same correlation (Pearson r = 0.927, 95% CI 0.596–0.759 p = 0.000). Correlations between EAWE-I and EASE-I scores are similar (Pearson $r = 0.918$, 95% CI 0.686–0.888, p = 0.000).

3.3. Distribution (percentages) of individual EAWE subtypes in the FEP sample

Especially common: As shown in Table 3, certain EAWE items or subtypes were especially common in our first-episode sample. The most frequent items (i.e., reported by ≥40% of First Episode of Psychosis participants) were: Déjà vu (5.5), Heightened awareness of background auditory sensations (1.9.3), Sense of remoteness from others (3.2); Internal time seems slower than world time (2.2.1) and Loss of social common sense (3.1.1).

Absent: By contrast, none of the First Episode of Psychosis participants (nor Healthy-Control participants) reported the following items: Dysmegalopsia (1.6.3), Past disappears or seems nonexistent (2.6.3), Past seems accelerated (2.6.4), Past seems slower (2.6.5), People seem dead (3.9.1), Social disinhibition (3.14.3), Echolalia (4.7.2), Abstract rendered in unusually concrete terminology (4.8.2), Proliferation of meanings from the subject (5.8.3) and Mystic union with the world (5.15.2).

The distribution of other items and subtypes is presented in Table 3.

Table 2
Between groups differences in EASE, EAWE and SOFAS scores.

	HC (N = 24) median 9 ((range) Mean rank	FEP (N = 24) median (range) Mean rank	U	p
EAWE-S (item + subtype) score	0.00 (0–9) 17.79	20.00 (0–126) 31.21	127.000	p < 0.000
EAWE-I (item) score	0.00 (0–9) 17.79	14.00 (0–59) 31.21	127.000	p < 0.000
EAWE-S (do not overlap) score	0.00 (0–7) 17.83	17.00 (0–106) 31.17	128.000	p < 0.000
EASE-S (item + subtype) score	0.00 (0–6) 15.92	20.50 (0–69) 33.08	82.000	p < 0.000
EASE-I (item only) score	0.00 (0–6) 15.92	18.00 (0–51) 33.08	82.000	p < 0.000
EASE-I (item only) score	0.00 (0–2)	2.50 (0−12)	118.500	p < 0.000
Cognition and Consciousness score	17.44	31.56		
EASE-I (item only) score	0.00 (0–4)	7.00 (0−22)	86.500	p < 0.000
Self-awareness and presence domain	16.10	32.90		
EASE-I (item only) score	0.00 (0–0)	1.50 (0–8)	96.000	p <
Bodily experiences domain	16.50	32.50		0.000
EASE-I (item only) score	0.00 (0–0)	1.00 (0–5)	132.000	p <
Demarcation/transitivism domain	18.00	31.00		0.000
EASE-I (item only) score	0.00 (0–0)	1.50 (0–8)	120.000	p <
Existential reorientation score	17.50	31.50		0.000
EAWE-I (item only) score	0.00 (0–0)	1.50 (0–12)	120.000	p <
Space and objects	17.50	31.50		0.000
EAWE-I (item only) score	0.00 (0–3)	1.50 (0–6)	140.500	p <
Time and events	18.35	30.65		0.000
EAWE-I (item only) score	0.00 (0–3)	4.5 (0−13)	126.500	p <
Other persons	17.77	31.23		0.000
EAWE-I (item only) score	0.00 (0–0)	1.00 (0–9)	132.000	p <
Language	18.00	31.00		0.000
EAWE-I (item only) score	0.00 (0–2)	1.50 (0–15)	128.000	p <
Atmosphere	17.83	31.17		0.000
EAWE-I (item only) score	0.00 (0–2)	0.00 (0–9)	175.000	p <
Existential orientation score	19.81	29.19		0.000
SOFAS score	95 (90–100) 36.25	60.00 (30–90) 12.75	119.500	p = 0.002

Two groups were compared and considering the non-normal distribution of data and heterogeneity of variance, we adopted the Mann-Whitney non-parametric test. Median (with range) and mean rank for each group are reported. *P* values correspond to differences between the two groups. Abbreviations: HC: Healthy controls; FEP: first episode of psychosis.

4. Discussion

Anomalous world experiences are classically described in many clinical and theoretical accounts of the lived world of patients in the schizophrenia-spectrum or with other forms of severe or psychotic disorder. This is the first empirical investigation of anomalous world experiences in a sample of non-affective FEP. The first aim of this study was to determine whether anomalous world experiences were significantly present in FEP participants compared to matched healthy controls. The second aim was to determine the correlation between the AWE and ASE scores, to clarify the relationship of these aspects of experience. The third aim was to explore the distribution of specific anomalous world experiences in FEP patients.

As predicted, we found total EAWE subtype and item scores to be much higher in the FEP group than in the normal (HC) sample, with a significant difference also for each of the six EAWE domains. The EAWE scores in the FEP sample were, however, very heterogeneous, as reflected in the high standard deviations (for discussion see below). Both of these are consistent with the only previously published study with the EAWE comparing schizophrenia-spectrum patients to major depressive disorder patients and healthy controls, using an early version of the EAWE, which found non-significant trends of higher average EAWE scores in schizophrenia-spectrum patients than in either of the other groups (Conerty, 2013).

The lack of anomalous world experiences in HC participants was striking: 20 HC participants had no EAWE items whatsoever; average EAWE-S score was 0.67 ± 1.99: this is consistent with findings, in previous healthy samples, of very low levels of other experiential

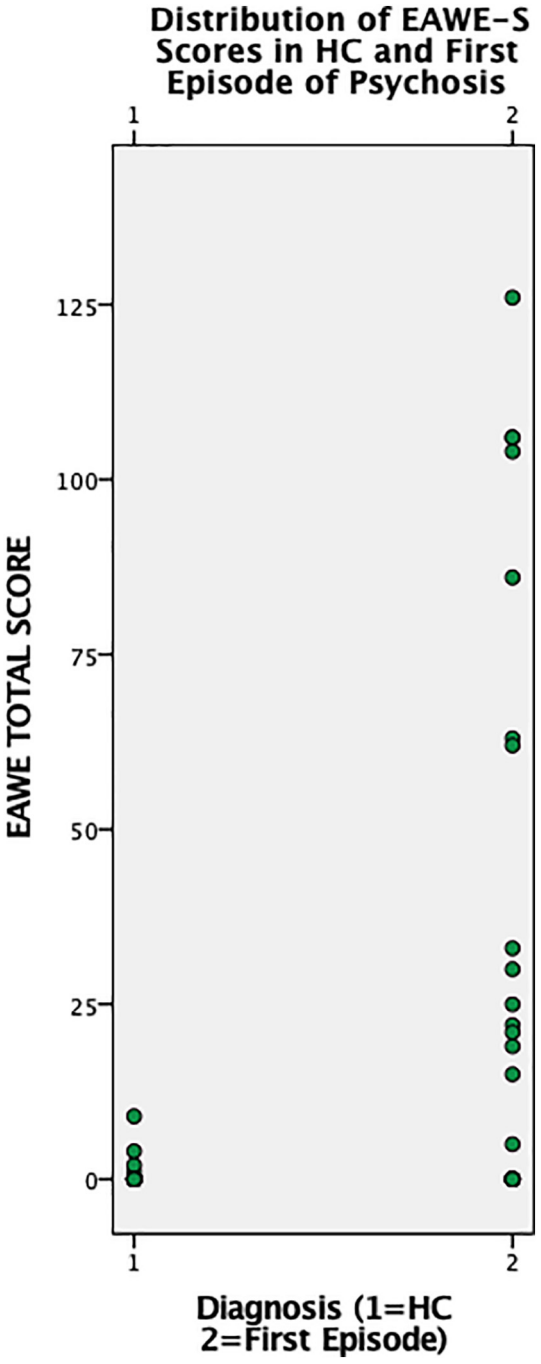

Fig. 1. Distribution of EAWE-S Scores in HC and First Episode of Psychosis samples. The two groups differed for total EAWE-S score ($N = 94$, $H(2) = 63.846$, $p < 0.001$).

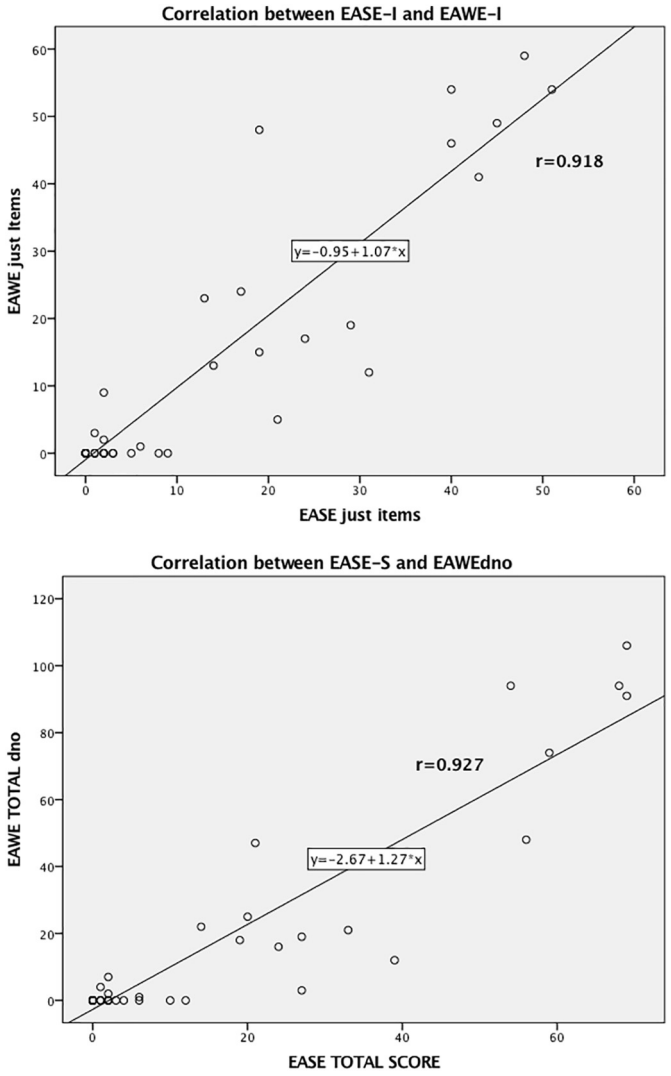

Fig. 2. Correlation between EASE-I and EAWE-I and between EASE-S and EASEdno score. (respectively, Pearson r = 0.918, 95% CI 0.686–0.888, p = 0.000 and Pearson r = 0.927, 95% CI 0.596–0.759 p = 0.000, bootstrap method applied).

anomalies, particularly ASE (Nelson et al., 2013a, 2013b; Raballo et al., 2011; Sass, 2014). The fact that so few items were endorsed by HC participants also contributed to the shorter length of interview compared to FEP participants (HC interviews lasted approximately one-half the length of FEP interviews). Also, as expected, SOFA score was significantly higher in the HC sample (vs FEP) consistent with the impact of FEP in overall functioning.

A significant subset of FEP participants (9 participants) did not endorse any items in the EAWE (see below discussion on "rare items"). The higher prevalence and lower SD of ASE (only 3 participants did not report EASE items) in our sample suggests that the EASE does a somewhat better job discriminating FEP from HC participants. (It should be noted that the average EASE-I score of 20.00 ± 17.14 closely resembles previous EASE studies of schizophrenia-spectrum samples—where average scores were 25.3, 21.4, and 19.6 (Haug et al., 2012; Raballo and Parnas, 2012; Nordgaard and Parnas, 2014, respectively)—with nonclinical, bipolar, and heterogeneous (nonaffective, non-schizophrenia spectrum) patient samples showing very low EASE scores.) Yet the question of specificity-to-schizophrenia-spectrum of anomalous self and world experience is far from being settled: further studies will be crucial for understanding the role of AWE and ASE in other clinical populations.

We also confirmed our hypothesis that the EASE and EAWE scores would be highly correlated in the FEP sample (both total subtype (EASE-S and EAWE-S) and total item (EASE-I and EAWE-I) scores), and that this correlation would be present even when both totally and partially overlapping features had been eliminated (EASE-S and EAWE-dno scores). Our correlation does indicate that disturbances in world experience are related to disturbances in self-experience. These results may be due to the fact that (1) ASE and AWE are different and correlated or that (2) ASE and AWE reflect similar or identical constructs, which will not be addressed by eliminating overlapping items based on item content.

Phenomenological theory postulates that ipseity or basic-self experience and experience of the world are highly interlinked, even complementary facets of subjective life—in accord with philosopher Merleau-

Table 3
Distribution of EAWE items and subtypes according to their percentage across FEP sample (24 participants).

>50%		40-50%			30-40%			20-30%			10-20%			0-10%			No experiences		
5.5	3.2	1.9.3	2.2.1	3.1.1	1.4.3	1.1.1	3.1.3	1.10.2	1.13.1	1.2.1	1.1.2	1.10.1	1.10.3	1.1.3	1.11	1.13.3	1.6.3	2.6.3	2.6.4
					3.12.1	3.4.1	3.7.7	1.3.1	1.3.3	1.5.2	1.12	1.13.2	1.3.1	1.14	1.15	1.16	2.6.5	3.9.1	3.14.3
					4.2	4.5.1	5.17.1	1.6.1	1.8.7	1.9.1	1.4.1	1.4.2	1.5.1	1.17	1.2.2	1.2.3	4.7.2	4.8.2	5.8.3
					5.17.2	6.9		1.9.4	2.1	2.2.2	1.6.2	1.7.1	1.7.3	1.6.4	1.6.5	1.7.2	5.15.2		
								2.3.2	2.4.1	2.5.4	1.8.5	1.8.6	2.1.2	1.8.1	1.8.2	1.8.3			
								2.6.6	3.1.2	3.10	2.1.3	2.3.1	2.3.3	1.8.4	1.9.2	2.26.2			
								3.11	3.14.1	3.14.4	2.3.4	2.4.2	2.5.3	2.3.5	2.4.3	2.4.4			
								3.3.1	3.3.2	3.4.2	2.6.1	3.12.2	3.12.4	2.5.1	2.5.2	2.6.7			
								3.4.3	3.5	3.7.2	3.13.1	3.14.2	3.14.6	2.6.8	3.12.3	3.12.5			
								3.7.4	3.7.9	3.8.2	3.6	3.7.1	3.7.3	3.13.2	3.13.3	3.13.4			
								3.9.2	4.1.3	4.1.4	3.7.5	3.8.1	3.8.6	3.14.5	3.7.6	3.7.8			
								4.3.1	4.3.2	4.3.3	4.1.1	4.1.2	4.10	3.8.3	3.8.4	3.8.5			
								4.3.4	4.3.5	4.5.2	4.4.1	4.4.2	4.4.3	3.9.3	4.8.1	4.8.3			
								4.5.3	4.6.1	4.7.1	4.4.4	4.6.2	4.7.3	4.8.4	5.1.3	5.13.3			
								4.9.2	5.1.5	5.10	4.9.1	5.1.1	5.1.2	5.7.1	5.8.1	5.9.1			
								5.11.1	5.11.2	5.14.1	5.1.4	5.1.6	5.1.7	5.9.2	6.6				
								5.17.4	5.17.5	5.17.6	5.12	5.13.1	5.13.2						
								5.17.7	5.17.8	5.2	5.13.4	5.14.2	5.14.3						
								5.3	5.4	6.1.1	5.15.1	5.16	5.17.3						
								6.10	6.2.2	6.5.1	5.6	5.7.2	5.8.2						
								6.5.2	6.5.3	6.8	6.1.2	6.1.3	6.11						
											6.2.1	6.3	6.4						
											6.7								

Ponty's (2013) statement: "subject and object [are] two abstract 'moments' of a unique structure, namely, presence." Indeed, such an assumption is already enshrined in the ipseity-disturbance hypothesis—which refers to a "disturbed hold or grip" on the world that is assumed to co-occur with "hyperreflexivity" and "disturbed self-presence" (Sass and Parnas, 2003). The EAWE does, however, allow for far more detailed exploration of this world-dimension, and raises the possibility (already suggested by Sass et al., 2018; Sass, 2014) that the core or underlying disturbance in schizophrenia should perhaps be conceived as a disturbance of what might be termed "*overall presence*"—a notion that incorporates both self and world, according them equal status. Future studies will be needed to determine whether assessment of anomalous world experiences provides incremental validity compared to anomalous self-experiences.

4.1. Anomalous world experiences especially common in FEP sample

In order to explore the qualitative aspects of the lived world of persons who developed FEP, the prevalence of individual EAWE items and subtypes was also considered. Five anomalous world experiences (item or subtype) were reported by >40% of FEP participants. One of these, 5.5, *Déjà vu* experiences, was also quite common in the HC sample, and may not, therefore, be very relevant to an understanding of psychosis (or perhaps of the schizophrenia-spectrum in particular). The other four anomalous world experiences common in FEP were, however, very rare in HC: 1.9.3, Heightened awareness of background auditory sensations, 2.2.1, Internal time seems slower than world time, 3.1.1, Loss of social common sense, and 3.2, Sense of remoteness from others. Taken together, these latter suggest the well-known difficulty in filtering out normally irrelevant auditory input (Allen et al., 2009; Thomas et al., 2017), together with feelings of disconnection from other persons and a diminished sense of existing in a shared, immediate, and mutually comprehensible ongoing reality (Haug et al., 2014; Lysaker and Dimaggio, 2014; Schenkel and Silverstein, 2004; Selten et al., 2013).

These four items could, incidentally, be considered in light of a recent, two-factor model of the pathogenesis of schizophrenia (a "bio-pheno-social," or perhaps *neuro*-bio-pheno-social model (Sass et al., 2018)). Two of these items—namely, "heightened awareness of background auditory sensations" and "loss of social common sense"—seem suggestive of some kind of neuro-biologically grounded dysfunction (perhaps involving aberrant salience and source monitoring abnormalities, or perhaps a disturbance of cross-modal perceptual integration, which would likely interfere with complex social understanding). The other two—"sense of remoteness from others" and "internal time slower than world time"—suggest possible dissociative processes. In this sense, they might develop in a more secondary or defensive manner, perhaps akin to the derealization or depersonalization found in conditions, such as depersonalization disorder, PTSD, or panic disorder, in which dissociative defenses are elicited by trauma or stress.

Next we consider the anomalous world experiences that were *absent* or especially *rare* in the FEP sample.

4.2. Anomalous world experiences absent or rare in First-Episode participants

A considerable number of the anomalous world experiences listed in the EAWE were not found or else were found only rarely in the FEP sample (0% or <10% of cases reported the item/subtype). There are several possible explanations for this.

First these absent and rare items may indicate a type 2 error, as discussed in the limitation section. Problems with rapport or voluntarily withholding information could account for why some items were not reported. In addition, because "possibly present" items were collapsed into the "absent" category, it is possible that additional detail may have led to some of them being coded as "definitely present". However, it is not expected that all items/subtypes will be equally common in schizophrenia: some may indeed be quite rare (though still, perhaps, highly *specific* to the condition), and therefore would be infrequently reported, even in a large sample.

Of course, some of these items/subtypes may, in fact, *not* frequently occur as precursors to non-affective FEP or schizophrenia. Consideration of these absences may provide hypotheses about the nature of world experience in schizophrenia.

4.2.1. Absent items

Some of the absent or at least wholly unreported items (listed in the Results section above) might be rare phenomena that *might* have been reported if the FEP sample had been larger than 24, or that *may* occur only once psychosis is present. Of these unreported experiences, 4 pertain either to linguistic or to social phenomena that, though often described behaviourally in the clinical literature, might be inherently difficult for participants to recognize in themselves (i.e., may involve "lack of insight" into themselves), namely: Echolalia (4.7.2), Abstract rendered in unusually concrete terminology (4.8.2), Proliferation of meanings from the subject (5.8.3); also Social disinhibition (3.14.3).

Three of the unreported experiences involve distorted memories of the past that might become prominent only during or after the first-episode of psychosis: Past disappears or seems nonexistent (2.6.3), Past seems accelerated (2.6.4), Past seems slower (2.6.5). The experience of People seem[ing] dead (3.9.1) and also of Mystic union with the world (5.15.2) may also be later developments. Dysmegalopsia (1.6.3)—the final absent item (adapted from the Bonn Scale of "basic symptoms")—is simply very rare in this population.

4.2.2. Rare items

It is difficult to generalize, even speculatively, about the rare (<10%) items—which are listed in Table 3 — since they appear to constitute a heterogeneous mixture. Several of these *rare* items have been behaviorally described, but might (like several *absent* items mentioned just above) be difficult for participants to recognize in themselves (Association, 2013; Tandon, 2012); these include: Difficulty with or dislike of abstract or general concepts

(4.8.1), Specific or concrete meanings rendered in unusually Abstract or general terminology (4.8.3), Hyperabstract or vague discourse (4.8.4), Extreme compliance (3.14.5), Confusion of realms (5.7.1), Physical or literalist instantiation of abstract meaning (5.9.1), Anomalous classification (5.9.2), and Conceptual freedom/anything goes (6.2). (It is also possible that some of these items may be more likely to be present only during or after episodes of psychosis.)

The remaining rare (<10%) items seem to be a heterogeneous mix. They are difficult to account for without engaging in hypothesizing that would be excessively speculative.

5. Limitations

The sample was selected from a single psychiatric clinic (CHLN); all of the FEP patients were previously hospitalized and treated with antipsychotics. This, together with the small sample size, limits our ability to generalize our results to all first psychotic episodes (including those not treated with medication). Three other limitations are: (1) we did not include a fully standardized assessment of participant symptomatology at time of interview (and instead relied on clinician judgments regarding clinical stabilization); (2) no clinical control group was included in the study (e.g. the inclusion of an affective-psychosis group might further support the specificity of anomalous world experiences to non-affective psychosis); (3) participant diagnoses were not able to be differentiated beyond excluding affective disorders and other significant comorbidity (e.g. we were unable to differentiate responses between participants who may later be diagnosed with delusional disorder from those with a later diagnosis of schizophrenia). We also note that any discussion of self and world experiences is limited to the cultural context in which these experiences are assessed; it would be hazardous to generalize these results beyond western European and American cultures. Indeed some of the experiences explored in the EAWE and EASE may (1) manifest differently in distinct cultural contexts, or (2) represent experiences that, in certain cultures, are commonplace and non-pathological. Future research is required to explore these questions further.

The absence of personality disorder diagnoses in the clinical records and M.I.N.I. (1999 Portuguese version of (Lecrubier et al., 1998)) should also be considered, for this prevents us from considering personality features (such as those of schizoid and schizotypal personality) that might be correlated with anomalous self-experiences or anomalous world experiences. Another limitation concerns the significant differences in level of education across the HC and FEP samples (though this may well be an artifact, given that FEP is a condition generally associated with a lower level of functioning). Lastly, our small sample size did not allow for determining the effect of medication or drug and alcohol use in the overall scores. Although patients were asked about lifelong experiences (not only during FEP, or during periods of drug or alcohol use), it is not impossible that present or recent "state" experiences (related to psychosis, medication, or drug or alcohol use) could be confused with past experiences (e.g. paramnesia). However, this is no more likely in this sample than in previous EASE studies, which were also conducted with patients taking medication and which also did not exclude patients with histories of drug or alcohol use. In addition, because patients are asked to provide details about specific examples when each experience occurred, interviewers are able to assess with greater certainty that they occurred outside of the context of psychosis, medication, or drug or alcohol use. This requirement also improves the accuracy of scoring, and reduces the likelihood of recall or response bias, as interviewers/raters can more fully assess the veracity of these detailed descriptions (Morrison and Hunt, 1996).

Finally, the FEP sample average age was older than what would be expected for a category of early psychosis. Inspection of our data shows that this is the result of including two cases of late-onset psychosis who were in their first episode of psychosis. Examination of the data shows, however, that these two cases do not appear to differ from the rest of the FEP sample in any consistent way: they had previous good overall functioning levels and were not under psychological or psychiatric care or help seeking.

6. Conclusions

To our knowledge, this is the first study to explore prevalence and implications of anomalous world experiences in participants with first-episode psychosis or FEP. EASE scores in the FEP sample were similar to those found in previous schizophrenia-spectrum samples; also, FEP participants reported the presence of anomalous world

experiences. In addition, we observed a significant correlation between EAWE and EASE scores. These findings suggest that anomalous world experiences reflect an additional dimension of an overall disturbance of presence in schizophrenia, and that this dimension can be empirically assessed. Our detailed analysis of anomalous world experiences revealed both "frequent" and "rare" items and subtypes in the FEP sample profile, implying a potentially heterogeneous distribution of anomalous world experiences across FEP participants.

We speculate that anomalous world experiences, together with anomalous self-experiences, might eventually be useful for diagnostic and prognostic purpose, either by identifying specific profiles in some clusters of patients and/or by helping to construct models of pathogenetic pathways to psychosis in general or schizophrenia in particular. Although the identification of anomalous world experiences may not significantly enhance diagnostic prediction when added to anomalous self-experiences, exploration of anomalous world experiences using the EAWE could meaningfully identify *other* aspects of experience that are expected to be related to self-disorders. We aim to follow up the participants in our sample to find their transition to specific diagnosis (e.g. schizophrenia) and we note that future large-sample studies are necessary to confirm these initial findings.

Declaration of Competing Interest

All authors declare no conflict of interests.

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