

# Basic Self-Disturbance Predicts Psychosis Onset in the Ultra High Risk for Psychosis “Prodromal” Population

Barnaby Nelson\*, Andrew Thompson, and Alison R. Yung

<sup>1</sup>Orygen Youth Health Research Centre, Centre for Youth Mental Health, University of Melbourne, 35 Poplar Road (Locked Bag 10), Parkville, Victoria 3052, Australia; <sup>2</sup>East Sussex Early Intervention in Psychosis Service and Department of Psychiatry, Eastbourne, UK

\*To whom correspondence should be addressed; tel: 61-3-9342-2800, fax: 61-3-9387-3003, e-mail: nelsonb@unimelb.edu.au

**Introduction:** Phenomenological research indicates that disturbance of the basic sense of self may be a core phenotypic marker of schizophrenia spectrum disorders. Basic self-disturbance refers to a disruption of the sense of ownership of experience and agency of action and is associated with a variety of anomalous subjective experiences. In this study, we investigated the presence of basic self-disturbance in an “ultra high risk” (UHR) for psychosis sample compared with a healthy control sample and whether it predicted transition to psychotic disorder. **Methods:** Forty-nine UHR patients and 52 matched healthy control participants were recruited to the study. Participants were assessed for basic self-disturbance using the Examination of Anomalous Self-Experience (EASE) instrument. UHR participants were followed for a mean of 569 days. **Results:** Levels of self-disturbance were significantly higher in the UHR sample compared with the healthy control sample ( $P < .001$ ). Cox regression indicated that total EASE score significantly predicted time to transition ( $P < .05$ ) when other significant predictors were controlled for. Exploratory analyses indicated that basic self-disturbance scores were higher in schizophrenia spectrum cases, irrespective of transition to psychosis, than nonschizophrenia spectrum cases. **Discussion:** The results indicate that identifying basic self-disturbance in the UHR population may provide a means of further “closing in” on individuals truly at high risk of psychotic disorder, particularly of schizophrenia spectrum disorders. This may be of practical value by reducing inclusion of “false positive” cases in UHR samples and of theoretical value by shedding light on core phenotypic features of schizophrenia spectrum pathology.

**Key words:** schizophrenia/psychosis/prodrome/phenomenology/self

## Introduction

The identification and treatment of individuals in the prodromal phase of schizophrenia and other psychotic

disorders has become a focus of psychosis research over the last 15 years. The aim of researching the preonset phase of psychotic disorders is to identify predictive variables and vulnerability markers for disorder as well as to develop interventions to prevent illness progression (or to delay, ameliorate, or even prevent disorder). In the mid 1990s, we introduced criteria for identifying individuals at “ultra high risk” (UHR) of psychotic disorder—that is, in the putatively prodromal phase.<sup>1</sup> Three UHR groups were determined: (1) “Attenuated Psychotic Symptoms (APS) Group”—a group with subthreshold, attenuated positive psychotic symptoms, (2) “Brief Limited Intermittent Psychotic Symptoms Group (BLIPS)” —a group who have experienced short episodes of frank psychotic symptoms that have resolved without treatment, and (3) “Trait and State Risk Factor Group (trait vulnerability)” —a group who have a first-degree relative with a psychotic disorder or who have a schizotypal personality disorder in addition to a significant decrease in functioning. In order to increase the predictive power of these criteria, we specified that the person must be aged between 15 and 30 years, the age range of highest risk for psychosis. The UHR criteria have been adopted and adapted by various groups internationally (see Olsen and Rosenbaum<sup>2</sup> for a review). A number of studies have validated the UHR (or “prodromal”) criteria, finding that help-seeking young people who meet the criteria have a risk of developing psychosis in the year following identification 200–400 times that of the general population.<sup>2</sup> A focus of the field in recent years has been to identify variables within the UHR population that contribute to prediction of transition to full threshold psychotic disorder, in an attempt to shed light on pathogenic factors in psychotic disorders and to enrich high-risk identification strategies.<sup>1,3</sup> This has increasingly become an important issue given the apparent declining rates of transition to psychosis in more recent UHR samples.<sup>4</sup>

A proposal that has attracted some interest in recent years is to incorporate insights from the phenomenological

tradition in early intervention efforts, in the areas of early identification,<sup>5</sup> prediction of outcome,<sup>5</sup> and therapeutic work.<sup>6</sup> Phenomenologically oriented researchers propose that a disturbance of the basic sense of self is a phenotypic trait marker of psychotic vulnerability, particularly of schizophrenia spectrum disorders.<sup>5,7–10</sup> This formulation is based on a combination of empirical research and philosophical considerations,<sup>7–9,11–14</sup> emerging from phenomenologically oriented clinical curiosity and exploration.<sup>12,15</sup> The type of self-disturbance proposed as being a core abnormality in schizophrenia is a “prereflective” level of selfhood. This refers to the “given” fact that all experience has a first-person quality, that there is an implicit “ownership” of experience, or awareness that this is “my” experience. This is sometimes referred to as the “minimal” self or as “ipseity” (“ipse” is Latin for “self” or “itself”), reflecting the notion that this level of selfhood is the ground or basis of various aspects of conscious experience. This is contrasted with more elaborated levels of selfhood, such as the reflective self (the self as an object of reflection) or the narrative self (social identity).<sup>8</sup>

Various disturbances of the basic self are evident in schizophrenia spectrum conditions. They include disturbed stream of consciousness, sense of presence, corporeality, self-demarcation, and existential reorientation, all of which are intimately interrelated.<sup>8,14</sup> These disturbances have been comprehensively cataloged in the Examination of Anomalous Self-Experience (EASE) instrument.<sup>14</sup>

They have been described in detail elsewhere (see refs.<sup>8,10,14,16</sup>) and will only be described in brief here.

### *Stream of Consciousness*

The early phase of schizophrenia is marked by an emerging experiential gap between the self and mental content. The sense of “mineness” of mental content is disrupted, as if thoughts were taking on an almost autonomous and anonymous identity. This may evolve into frank psychotic symptoms, such as thought insertion and thought broadcasting.

### *Presence*

Normal human experience consists of being absorbed in activity among a world of (animate and inanimate) objects, and this absorption provides us with a sense of “inhabiting” our self in a prereflective, tacit, or automatic fashion. This is referred to as “presence.” Our experiences appear to us in a first-person mode of presentation—that is, we automatically or prereflectively experience them as “our” experience. This sense of “mineness” constitutes a basic form of self-awareness. Disturbed presence is often evident in the schizophrenia spectrum, with a characteristic sense that the self no longer “saturates experience”<sup>16(p125)</sup> but instead stands alienated from itself.

### *Corporeality*

A disjunction between one’s subjectivity and bodily experience can be observed in schizophrenia spectrum conditions, particularly during the preonset or prodromal phase, as represented in many of the bodily basic symptoms, such as cenesthesias and impaired bodily sensations.<sup>17</sup> An experiential distance emerges between the self and bodily experience, suggesting a tendency to experience one’s body as an object rather than an “inhabited” aspect of selfhood.

### *Self-Demarcation*

Subtle phenomena indicating a loss or permeability of self-world boundaries are apparent in schizophrenia spectrum conditions. Examples of these phenomena are a confusion of boundaries between self and others (eg, losing sense of whether thoughts, feelings, etc., originated in oneself or another person), a sense of passivity in relation to the world and others, or experiencing the physical presence and contact of others as threatening.

### *Existential Reorientation*

A common finding in studies of the early psychotic phase has been of a developing preoccupation with philosophical, supernatural, and metaphysical themes.<sup>15,18</sup> The rupture in “normal” self-experience motivates such a preoccupation; in cognitive terms, the patient is attempting to accommodate his anomalous experience to existing schemas. Feelings of centrality or solipsism may come to the fore.

Early descriptions of schizophrenia from the 19th and early 20th century included anomalous subjective experience, including profound transformations of the self, as intrinsic to the disorder. Indeed, such disturbances were thought to anchor the phenotypic validity of the schizophrenia spectrum concept.<sup>19</sup> There has been a recent resurgence of interest in this area,<sup>9,19,20</sup> with a series of empirical studies yielding data consistent with this view. In 2 recent studies, a Danish research group found that self-disturbance is specific to schizophrenia spectrum conditions compared with remitted psychotic bipolar patients and a mixed group of first-admitted patients is characteristic of preschizophrenic prodromes, and frequently occurs in hospitalized schizotypal conditions.<sup>8,21–23</sup> Self-disturbance correlated positively with the duration of preonset social dysfunction and aggregated significantly in patients with a positive family history of schizophrenia. It correlated both with negative and positive psychotic symptom scales in schizophrenia patients. Five-year follow-up data of 155 first-admission cases indicated that self-disturbance functions as a strong predictor of a future schizophrenia spectrum diagnosis in those presenting with nonpsychotic conditions (OR = 12, 95% CI 2.15–67.07<sup>24</sup>).

Genetic linkage data has indicated a similar pattern of findings. Raballo and Parnas<sup>25</sup> analyzed data from 218 unaffected members of 6 extended families assessed during the Copenhagen Schizophrenia Linkage Study. Self-disturbance was incrementally present in groupings of family members with no mental illness, no mental illness but with schizotypal traits, personality disorders other than schizotypal personality disorder (the majority of whom had comorbid schizotypal traits), and schizotypal personality disorder, independent of sociodemographics, negative symptoms, and formal thought disorder. Similar findings were evident when this data set was analyzed according to schizophrenia spectrum conditions, with self-disturbance being characteristic of schizophrenia spectrum conditions and levels of self-disturbance increasing with diagnostic severity (no mental illness, mental illness not in the schizophrenia spectrum, schizotypal personality disorder, and schizophrenia).<sup>26</sup>

Other work provides further evidence that basic self-disturbance is a central feature of the preonset phase of psychotic disorders, particularly of schizophrenia spectrum disorders. Davidsen<sup>27</sup> found that, although there was a difference in the kind and number of single features, disorders of self-experience were evident in all subjects in a clinical high-risk sample ( $N = 11$ ). In a follow-back study using objective data, Hartmann et al<sup>28</sup> found that fluidity of self-demarcation, lack of a coherent narrative-historical self-identity, and other self-disturbances were prominent features of the preschizophrenic states at school age. “Basic symptoms,” some of which reflect self-disorders (eg, varieties of depersonalization, disturbances of the stream of consciousness, distorted bodily experiences), have consistently been identified early in the preonset phase.<sup>17</sup> In a study using naturalistically oriented in-depth interviews with 20 first-onset schizophrenic patients, Møller and Husby<sup>15</sup> identified 8 domains of prodromal subjective change, of which 3 were highlighted as “core” domains: all patients had profound and alarming changes of self-experience; nearly all patients complained of the ineffability of self-alteration; and the great majority reported preoccupations with metaphysical, supernatural, or philosophical issues. Similar disturbances of self-experience were reported by Yung and McGorry<sup>18</sup> and Parnas et al<sup>12</sup> in retrospective studies of the prodrome.

In sum, these studies indicate that basic self-disturbance is particularly characteristic of schizophrenia spectrum conditions, characterizes the preonset phase of psychotic disorders, and is a phenotypic expression of schizophrenia spectrum vulnerability. The fact that first-person patient accounts of their illness are highly consistent with the self-disturbance model (in fact, have made explicit reference to the model<sup>29</sup>) is further encouragement for this approach.<sup>29,30</sup>

No study to date has prospectively investigated whether basic self-disturbance predicts psychosis onset

in the UHR population. Research into this issue is important because, given the data mentioned above, basic self-disturbance may be a predictor of onset of psychosis, and particularly schizophrenia spectrum disorders, in the UHR population and may therefore be a valuable means of not only “enriching” the level of risk in the UHR population<sup>5</sup> but also of clarifying the core phenotype of vulnerability for schizophrenia. Researching basic self-disturbance in this phase of illness may also provide a “clearer” view of its features, prior to the secondary effects of advanced illness stage (eg, isolation, stigma, unemployment and demoralization, treatment effects, and the patient’s attempts to cope and adapt).<sup>13</sup>

The aims of the current study were to:

1. Investigate the level of basic self-disturbance in a UHR sample compared to a healthy control group.
2. Investigate whether basic self-disturbance predicts onset of psychosis in a UHR sample, particularly the onset of schizophrenia spectrum disorders.

We hypothesized:

3. Levels of basic self-disturbance would be significantly higher in the UHR sample compared to a healthy control group.
4. Basic self-disturbance would predict onset of psychosis in the UHR sample.
5. Basic self-disturbance would predict onset of schizophrenia spectrum psychoses (schizophreniform disorder, schizoaffective disorder, and schizophrenia) in the UHR sample.

## Methods

### *Setting and Sample*

Orygen Youth Health (OYH) is a public mental health service for young people aged between 15 and 25 years living in northwestern metropolitan Melbourne, Australia. The clinical service consists of an inpatient facility, crisis support team, and 3 continuing care teams: EPPIC (the Early Psychosis Prevention and Intervention Centre) for patients with first episode psychosis, PACE (the Personal Assessment and Crisis Evaluation) for UHR patients, and Youthscape, a clinic for young people with nonpsychotic disorders. Referrals to OYH are accepted from a range of sources, including general practitioners and other primary care services, educational support services, drug and alcohol services, carers, families, and young people themselves. A central Triage service takes all referrals and refers to the appropriate clinic based on clinical judgment and semistructured clinical interviews.

**Table 1.** Ultra High-Risk Criteria: (1) Must Be Aged Between 15 and 25 Years, (2) Have Been Referred to a Specialized Service for Help, (3) Have Experienced a Drop in Functioning of At Least 1 Month Over the Last Year or Sustained Low Functioning, and (4) Meet the Criteria for One or More of the Following 3 Groups

Group 1: Attenuated positive psychotic symptoms	Presence of at least one of the following symptoms: ideas of reference, odd beliefs or magical thinking, perceptual disturbance, paranoid ideation, odd thinking and speech, odd behavior, and appearance Frequency of symptoms: at least several times a week Recency of symptoms: present within the last year Duration of symptoms: present for at least 1 week and no longer than 5 years
Group 2: Brief limited intermittent psychotic symptoms	Transient psychotic symptoms. Presence of at least one of the following: ideas of reference, magical thinking, perceptual disturbance, paranoid ideation, odd thinking, or speech Duration of episode: less than 1 week Frequency of symptoms: at least several times per week Symptoms resolve spontaneously Recency of symptoms: must have occurred within the last year
Group 3: Trait vulnerability group	Schizotypal personality disorder in the identified individual or a first-degree relative with a psychotic disorder

Note: See Yung *et al*<sup>1</sup> for the operationalized criteria.

Young people are accepted to the PACE clinic if they meet at least 1 of the 3 UHR groups: APS, BLIPS, and trait vulnerability groups (see table 1). Exclusion criteria for PACE are presence of a current or past psychotic disorder, known organic cause for presentation, or past use of neuroleptics equivalent to a total continuous haloperidol dose of >50 mg. Additional exclusion criteria for the current study were presence of an intellectual disability (IQ < 70), as documented in the individual's medical history and lack of proficiency in English.

The healthy control sample was recruited via advertisements placed in local newspapers and various public locations in the same geographical area as the OYH catchment area. Inclusion criteria were being aged between 15 and 25 years. Exclusion criteria were a current or past diagnosis with a psychotic disorder, as assessed using a demographic information questionnaire and the baseline Structured Clinical Interview for *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*, (DSM-IV) (SCID) interview.

Both samples were recruited between May 2008–July 2010. The study was approved by the local research and ethics committee.

### Measures

**Demographics.** Demographic information was collected via an interviewer-administered questionnaire. Information was collected on: age, gender, marital status, country of birth, main language spoken, employment, education, history of psychiatric treatment, and family history of psychiatric disorder.

**Self-Disturbance.** Self-disturbance was assessed using the EASE.<sup>14</sup> The EASE is a symptom checklist for semi-structured phenomenological exploration of subjective anomalies representative of basic self-disturbance. It consists of 57 items in 5 domains, which are not mutually exclusive: (1) cognition and stream of consciousness (17 items), (2) self-awareness and presence (18 items), (3) bodily experiences (9 items), (4) demarcation/transitivism (5 items), and (5) existential reorientation (8 items). Symptoms can be rated both dichotomously, ie, as present or absent, or continuously on a 5-point severity/frequency scale. The symptom pattern (present now, associated with drug intake, specific provoking factors, psychotic elaboration) is also documented. The EASE has been found to have good to excellent internal consistency (Cronbach's alpha above .87) and an overall interrater correlation above .80 (Spearman's rho,  $P < .001$ ).<sup>31</sup>

**DSM-IV Diagnoses.** DSM-IV diagnoses were established using the SCID,<sup>32</sup> a structured interview based on the DSM-IV. The full Axis I instrument was used. The schizotypal and schizoid sections of the SCID-II were administered to establish DSM Axis-II diagnoses in the schizophrenia spectrum.

**UHR Status and Transition to Psychosis.** The Comprehensive Assessment of At Risk Mental States (CAARMS)<sup>33</sup> was used to assess UHR status and transition to psychosis using previously published cutoff points.<sup>1</sup> The CAARMS was also used to record duration of symptoms prior to clinic entry. The CAARMS is a comprehensive semistructured interview designed to

**Table 2.** Sample Demographics

	UHR Sample ( <i>n</i> = 49)	Controls ( <i>n</i> = 52)	<i>P</i> Values
Mean age (y)	19.22 (SD = 2.90)	20.10 (SD = 2.84)	.13
Gender (male, female)	22 (44.9%), 27 (55.1%)	25 (48.1%), 27 (51.9%)	.84
Country of birth (Australia, Other)	44 (89.8%), 5 (10.2%)	43 (82.7%), 9 (17.3%)	.39
English as main language spoken (English, Other)	46 (93.9%), 3 (6.1%)	45 (86.5%), 7 (13.5%)	.32
Currently employed or studying	36 (73.5%)	43 (82.7%)	.34
Marital status (married, single)	0, 49 (100%)	3 (5.8%), 49 (94.2%)	.24

Note: UHR, ultra high risk.

assess a wide range of psychiatric symptoms associated with the prodromal phase of psychotic disorders. It was developed on the basis of theoretical and clinical research data. The instrument displays good to excellent concurrent, discriminant and predictive validity, and excellent interrater reliability.<sup>33</sup>

**Functioning.** Psychosocial functioning was assessed using the Social and Occupational Functioning Scale (SOFAS).<sup>34</sup>

#### Procedure

The UHR participants were assessed shortly after entry to the PACE clinic. Participants in both groups were reassessed for transition to psychosis at least 12 months after their initial assessment. Occasional contact was maintained with participants in the interim in order to keep participants engaged in the study, thus increasing the follow-up rate. Baseline interviews were audiotaped if participants consented to this.

All interviews were conducted by B.N. In order to assess inter-rater reliability of assessment of self-disturbance, approximately half of the EASE interviews (23/49 of the UHR interviews and 24/52 of the control interviews) were randomly selected and scored by an independent rater. This rater was blind to group allocation and all other information about the participant whose tape they were rating. The second rater had previously been trained by B.N. in the EASE, both in terms of theoretical background and details of item scoring.

#### Statistical Analysis

*T*-tests were used to compare the UHR group and the control group on baseline EASE scores. Survival analysis, in particular Cox regression, was used to examine the relationship between self-disturbance and rate of transition to psychosis. This analysis controlled for duration of symptoms prior to PACE and functioning levels (SOFAS score), as these have both previously been found to be significant predictors of transition.<sup>4</sup> *T*-tests were used

to compare baseline EASE scores between participants who transitioned to schizophrenia spectrum psychoses and those who transitioned to other psychotic disorders. Continuous EASE scores (ie, 0–4 scale) were used in analysis. The same results were obtained when the EASE was scored dichotomously.

## Results

### Demographics

Forty-nine UHR participants were recruited. The mean age of the sample was 19.22 years. The sample consisted of 44.9% males. The UHR intake groups the participants belonged to were: 37 (76%) in the APS group, 4 (8%) in the trait vulnerability group, 1 (2%) in the BLIPS group, and 7 (14%) in both the APS and trait vulnerability groups.

Fifty-two healthy control participants were recruited. The mean age of the control sample was 20.1 years. The sample consisted of 48.1% males.

Sample demographics are presented in table 2. There were no differences between the 2 groups in age, gender, marital status, country of birth, English being their main language, or being currently employed or studying.

### Clinical Characteristics

Table 3 presents SCID diagnoses, duration of symptoms prior to clinic entry and functioning at baseline interview. A substantial proportion (81.6%) of the UHR sample had a current SCID I diagnosis, whereas the majority of the control sample did not have a current SCID I diagnosis (92.3%). 14.3% of the UHR sample were diagnosed with a schizotypal personality disorder at baseline interview. None of the control sample were found to have schizotypal or schizoid personality disorders or to meet UHR criteria. The UHR group was functioning significantly worse than the control group ( $t_{99} = 25.73$ ,  $P < .001$ ). The UHR group had significantly more pronounced self-disturbance scores at baseline than the control group on all of the EASE domains and on the EASE

**Table 3.** Current Diagnoses, Duration of Symptoms Prior to Clinic Entry and Functioning at Baseline

	UHR Sample ( <i>N</i> = 49)	Healthy Control Sample ( <i>N</i> = 52)
SCID I (primary diagnosis)		
Mood disorders, <i>n</i> (%)	28 (57.1)	2 (3.8)
Anxiety disorders, <i>n</i> (%)	8 (16.3)	0 (0)
Other, number (%)	4 (8.2)	2 (3.8)
No SCID I diagnosis, <i>n</i> (%)	9 (18.4)	48 (92.3)
SCID II		
Schizotypal personality disorder, <i>n</i> (%)	7 (14.3)	0 (0)
Schizoid personality disorder, <i>n</i> (%)	0 (0)	0 (0)
No SCID II diagnosis, <i>n</i> (%)	41 (83.7)	52 (100)
SOFAS, mean (SD)	49 (7)	77 (5)
Duration of symptoms in days (mean, median, SD)	810, 540, 870	N/A

Note: UHR, ultra high risk; SCID, Structured Clinical Interview for *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*, (DSM-IV); SOFAS, Social and Occupational Functioning Scale.

total score (see table 4). There was no correlation between the EASE total score and functioning levels in either the UHR group ( $r = -.01$ ,  $P = .95$ ) or the control group ( $r = -.20$ ,  $P = .15$ ).

#### Interrater Reliability

The EASE showed an acceptable interrater correlation of the EASE total score of .78 (Spearman's coefficient,  $P < .001$ ).

#### Sample Follow-up

The mean time of follow-up of the UHR participants was 569 days (median = 676 days, SD = 345 days). The mean time of follow-up of the control group was 557 days (median = 648 days, SD = 338 days). Forty-one (84%) of the UHR subjects and 45 (87%) of the control participants could be recontacted for a follow-up interview. The psychotic status of the participants who were lost to follow-up was established using the State public psychiatric register, which records all contact with public psychiatric services in the state of Victoria. This register indicated no further transitioned cases (ie, onset of psychosis) among the participants lost to follow-up.

#### Transition to Psychotic Disorder

Of the 49 UHR subjects, 13 (26.5%) were found to have transitioned to psychotic disorder.

Using the Kaplan–Meier method, the cumulative prevalence rate  $\pm$  SE of transition to psychotic disorder was  $22.8 \pm 4\%$  at 6 months,  $24.9 \pm 3.6\%$  at 12 months, and

**Table 4.** Baseline EASE Scores

EASE Domain	UHR Sample ( <i>N</i> = 49) Mean (SD)	Healthy Control Sample ( <i>N</i> = 52) Mean (SD)	<i>P</i> Values
Cognition and stream of consciousness	17.76 (10.24)	0.94 (1.38)	<.001
Self-awareness and presence	16.96 (10.83)	0.77 (1.08)	<.001
Bodily experiences	2.65 (3.05)	0.13 (0.34)	<.001
Demarcation/transitivity	2.98 (2.30)	0.23 (0.67)	<.001
Existential reorientation	4.67 (5.30)	0.29 (0.61)	<.001
Total score	45.02 (26.23)	2.37 (2.45)	<.001

Note: UHR, ultra high risk; EASE, Examination of Anomalous Self-Experience.

$27.6 \pm 3.7\%$  at 24 months. The final transition occurred 626 days after baseline assessment. The psychotic disorder diagnoses of those who transitioned were 8 (16.3%) with a schizophrenia spectrum diagnosis (schizophrenia, schizoaffective, and schizophreniform disorder) and 5 (10.2%) with other psychotic diagnoses (mood disorder with psychotic features, psychotic disorder not otherwise specified). There was one death in the UHR group due to suicide. None of the control subjects were found to have transitioned to psychotic disorder.

#### Prediction of Transition to Psychosis

Cox regression was performed with time to transition as the dependent variable and EASE total score as the predictor variable, controlling for duration of symptoms prior to PACE and functioning levels (SOFAS score). Total EASE score was found to significantly predict transition to psychotic disorder in this model ( $P = .034$ , see table 5). This was mainly due to the effect of the first 2 domains of the EASE—Cognition and Stream of Consciousness and Self Awareness and Presence, which were both found to predict transition, after controlling for the same variables (see table 5). The other 3 domains of the EASE were not found to significantly predict transition (see table 5).

#### Schizophrenia Spectrum Vs Other Psychoses

Transitioned cases were divided into those who received a schizophrenia spectrum diagnosis (schizophrenia, schizophreniform disorder, and schizoaffective disorder; UHR-P-Sc;  $n = 8$ ) and those who received other psychotic diagnoses (UHR-P-Other;  $n = 5$ ). *T*-tests were used to compare these 2 groups on baseline EASE scores. Cox regression was not performed due to the small group numbers. Although EASE scores were generally higher

**Table 5.** Cox Regression Model Showing Effect of EASE Total and EASE Domains on Transition to Psychosis, Adjusting for Duration of Symptoms Prior to Clinic Entry and Functioning (SOFAS Score) as Covariates

Variable	Beta	SE	Wald	P Value	OR	95% CI
EASE total	.018	0.009	4.510	.034	1.019	1.001–1.036
Cognition and stream of consciousness	.053	0.023	5.338	.021	1.054	1.008–1.102
Self-awareness and presence	.056	0.024	5.388	.020	1.058	1.009–1.109
Bodily experiences	.106	0.079	1.790	.181	1.111	.952–1.297
Demarcation/transitivism	.114	0.127	.801	.371	1.121	.873–1.438
Existential reorientation	.028	0.045	.402	.526	1.029	.942–1.123

Note: EASE, Examination of Anomalous Self-Experience; SOFAS, Social and Occupational Functioning Scale.

in the schizophrenia spectrum group (see table 6), the differences were not significant.

To further explore whether self-disturbance is characteristic of schizophrenia spectrum disorders, 2 further analyses were performed: (1) comparing EASE scores between UHR participants with a schizotypal/schizoid personality disorder diagnosis at baseline (UHR-Sc PD;  $n = 7$ ) vs UHR participants who did not receive these diagnoses (UHR-No Sc PD;  $n = 42$ ), irrespective of transition to psychosis and (2) comparing EASE scores between UHR participants with a schizotypal/schizoid personality disorder diagnosis at baseline plus those who transitioned to a schizophrenia spectrum psychosis (UHR-Sc;  $n = 12$ ) vs all other UHR cases (ie, those without a schizotypal/schizoid personality disorder diagnosis at baseline or who did not transition to a schizophrenia spectrum psychosis; UHR-No Sc;  $n = 37$ ). These comparisons were an attempt to assess self-disturbance in the schizophrenia spectrum (schizotypal/schizoid personality, schizophreniform disorder, and schizophrenia), cutting across the “transition to psychosis” point, which is based purely on intensity and frequency of positive psychotic symptoms. In the first of these analyses, the UHR-Sc PD group rated significantly higher than the UHR-No Sc PD group on the EASE total score, including all domains apart from domain 3, bodily experiences (see table 6). In the second analysis, the UHR-Sc group rated significantly higher than the UHR-No Sc group on the EASE total score, including on all domains apart from domain 3, bodily experiences, and domain 4, demarcation/transitivism (see table 6).

## Discussion

This study aimed to investigate the level of basic self-disturbance in a UHR sample compared to a healthy control group and whether basic self-disturbance predicts onset of psychosis in a UHR sample, particularly the onset of schizophrenia spectrum disorders. The first hypothesis that the level of basic self-disturbance would be significantly higher in the UHR sample compared to

a healthy control group was supported. This finding replicates Davidsen's<sup>27</sup> findings using the same instrument (the EASE) but is strengthened by the fact that we used a larger sample and a control group and is consistent with the literature indicating that basic self-disturbance is a characteristic feature of the preonset phase of psychotic disorders.

We hypothesized that basic self-disturbance would predict onset of psychosis in the UHR sample. This hypothesis was supported. After controlling for other factors that have been found to predict psychosis onset in our recent UHR samples (low functioning and long duration of symptoms prior to clinic entry), basic self-disturbance significantly predicted onset of psychosis over a mean follow-up period of 1.5 years.

Our final hypothesis was that basic self-disturbance would predict onset of schizophrenia spectrum psychotic diagnoses in particular. There was not sufficient statistical power to test this hypothesis directly, with only 8/49 (16%) cases developing a schizophrenia spectrum psychosis. However, a series of exploratory analyses were conducted to investigate the issue of the specificity of basic self-disturbance to schizophrenia spectrum conditions. Baseline self-disturbance scores were compared between UHR participants who transitioned to a schizophrenia spectrum psychosis vs those who transitioned to other psychoses. Although self-disturbance scores were higher in the former than the latter group, the difference was not statistically significant. Given the small sample size in each group, this may well have been a type II error. Two further comparisons were performed: a comparison of UHR participants with a schizotypal or schizoid personality disorder at baseline vs those without these diagnoses and comparison of UHR participants with a schizotypal or schizoid personality disorder at baseline plus those who transitioned to a schizophrenia spectrum psychosis vs all other UHR cases. Both of these analyses indicated significantly higher basic self-disturbance scores in the schizophrenia spectrum category.

The domains of the EASE that were particularly predictive of transition to full-threshold psychosis were the

**Table 6.** Means and *T*-Tests Comparing EASE Scores Between UHR Participants Based on Schizophrenia Spectrum Groupings

	UHR-P-Sc <i>N</i> = 8 Mean (SD)	UHR-P-Other <i>N</i> = 5 Mean (SD)	<i>P</i>	UHR-Sc PD <i>N</i> = 7 Mean (SD)	UHR-No Sc PD <i>N</i> = 42 Mean (SD)	<i>P</i>	UHR-Sc <i>N</i> = 12 Mean (SD)	UHR-No Sc <i>N</i> = 37 Mean (SD)	<i>P</i>
EASE total	62.63 (30.10)	47.60 (14.91)	.33	83.29 (30.77)	38.64 (19.37)	.00**	69.92 (29.28)	36.95 (19.53)	.00**
1. Cognition and stream of consciousness	26.38 (12.08)	17.60 (6.39)	.17	32 (12.34)	15.38 (7.75)	.00**	27.58 (11.74)	14.57 (7.43)	.00**
2. Self-awareness and presence	23.38 (13.10)	18.40 (10.09)	.49	31.57 (10.64)	14.52 (8.84)	.00**	26.25 (11.56)	13.95 (8.80)	.00**
3. Bodily experiences	2.75 (2.92)	4.40 (2.61)	.33	4 (4.80)	2.43 (2.68)	.21	3.42 (4.10)	2.41 (2.65)	.32
4. Demarcation/transitivity	3.25 (2.55)	3.40 (2.07)	.91	4.71 (2.63)	2.69 (2.14)	.03*	4.08 (2.61)	2.62 (2.10)	.05
5. Existential reorientation	6.88 (6.03)	3.80 (2.59)	.31	11 (7.83)	3.62 (3.99)	.00**	8.58 (6.82)	3.41 (4.07)	.002**

*Note:* UHR, ultra high risk; EASE, Examination of Anomalous Self-Experience; UHR-P-Sc, Transitioned cases who received a schizophrenia spectrum diagnosis; UHR-P-Other, Transitioned cases who received a nonschizophrenia spectrum diagnosis; UHR-Sc PD, UHR cases with a schizotypal/schizoid personality disorder diagnosis at baseline; UHR-No Sc PD, UHR cases without a schizotypal/schizoid personality disorder diagnosis at baseline; UHR-Sc, UHR participants with a schizotypal/schizoid personality disorder diagnosis at baseline plus UHR participants who transitioned to a schizophrenia spectrum psychosis; UHR-No Sc, UHR participants without a schizotypal/schizoid personality disorder diagnosis at baseline plus UHR participants who did not transition to a schizophrenia spectrum psychosis.  
\**P* < .05, \*\**P* < .01

cognition and stream of consciousness domain and the self-awareness and presence domain. The former refers to disturbances in the sense of consciousness as transparent and continuous over time, flowing, and inhabited by a single subject, represented in anomalous experiences such as thought interference, loss of “ownership” of thoughts, perceptualization of inner speech or thought, and so on. The self-awareness and presence domain refers to disturbances in the automatic prereflective immersion in the world and the implicit self-awareness implicated in this “embeddedness” in the world. Such disturbances may manifest in a number of ways, including feelings of anonymity or difference from others, distorted first-person perspective (eg, distance between the self and experience), and depersonalization and derealization experiences. It is possible that these aspects of basic self-disturbance are particularly prominent during the prodromal phase of disorder, with other aspects of self-disturbance coming to the fore at other points in the psychotic process, such as after the first episode. The fact that subjective cognitive disturbances were predictive of transition is consistent with basic symptom research, which has found that the basic symptoms most predictive of schizophrenia in a clinical sample included the inability to divide attention, thought interference, thought pressure, thought blockages, disturbance of receptive speech, disturbance of expressive speech, disturbances of abstract thinking, unstable ideas of reference, and captivation of attention by details of the visual field.<sup>31</sup> These 9 symptoms have led to the develop-

ment of the Schizophrenia Proneness Instrument, Adult version (SPI-A). Another possibility that emerges from this finding, as well as the schizophrenia spectrum vs nonschizophrenia spectrum analyses, is that some aspects of the EASE (and, by extension, self-disturbance) are more characteristic of psychotic disorder and the schizophrenia spectrum than other aspects of the EASE, ie, it is not so much an issue of “stage” of disorder as how “distinctive” some aspects of self-disturbance are to psychosis/the schizophrenia spectrum.

Studies indicate that basic self-disturbance distinguishes schizophrenia spectrum conditions from other psychoses,<sup>23</sup> characterizes the schizophrenia prodrome in retrospective studies,<sup>7,12,15,16</sup> predicts onset of schizophrenia spectrum disorders in those who present with nonpsychotic conditions,<sup>24</sup> and now (in the current data) that it is characteristic of clinical “high-risk” status and predicts future onset of psychotic disorder in UHR patients, possibly specifically schizophrenia spectrum disorders. This amounts to a convincing body of empirical data to support the view of basic self-disturbance as a “core” feature of schizophrenia.<sup>19</sup> We have previously posited that attenuated positive psychotic symptoms might either be: (a) an expression of an underlying disturbance that reflects the “morbid process” of schizophrenia; (b) clinical “noise” around a nonpsychotic syndrome and not necessarily associated with distress, disability, or risk of schizophrenia; these have been referred to as “incidental” psychotic-like experiences (PLEs); and (c) present in nonclinical normal individuals and not associated with

distress or disability or increased vulnerability to psychotic disorder.<sup>35</sup> When APS are associated with basic self-disturbance, they may indicate individuals in category ‘a’. They may therefore be of the greatest clinical concern and may also be the strongest predictors of schizophrenia spectrum outcomes, including clinical, neurocognitive, and neurobiological features of schizophrenia spectrum conditions.

Apart from being a useful clinical “marker,” the core status of basic self-disturbance also provides insight into pathogenic psychological processes associated with schizophrenia spectrum conditions. The processes that are thought to underlie basic self-disturbance are the complementary distortions of hyper-reflexivity and diminished self-affection.<sup>9,10</sup> Hyper-reflexivity is a form of exaggerated self-consciousness and heightened awareness of aspects of one’s experience. This style of awareness objectifies aspects of oneself that are normally tacit (eg, awareness of the act of breathing or sensations while walking), thereby forcing them to be experienced as if they were external objects. It is important to note that hyper-reflexivity is a concept that includes hyper-reflectivity (or “reflective hyper-reflexivity” —that is, an exaggerated intellectual or reflective process) but is not limited to this: it also refers to acts of awareness that are not intellectual in nature and that may not occur voluntarily, as in the case of kinesthetic experiences “popping” into awareness; these latter, which are probably more basic in a pathogenic sense, are termed “operative hyper-reflexivity.”<sup>11</sup>

Diminished self-affection refers to a weakened sense of existing as a vital “subject” of awareness. Sass and Parnas<sup>9</sup> consider hyper-reflexivity and diminished self-affection to be complementary aspects of self-disturbance. They write: “... Whereas the notion of hyper-reflexivity emphasizes the way in which something normally tacit becomes focal and explicit, the notion of diminished self-affection emphasizes a complementary aspect of this very same process—the fact that what once was tacit is no longer being inhabited as a medium of taken-for-granted self-hood”<sup>(p430)</sup>. These 2 aspects underlying self-disturbance are in direct accord with the core dimensions that were originally identified in patient reports in qualitative pilot studies.<sup>12,15</sup>

These complementary distortions are necessarily accompanied by certain alterations or disturbances of a person’s “grip” or “hold” on the conceptual or perceptual field of awareness, ie, of the sharpness or stability with which figures or meanings emerge from and against a background context, thus leading to the sense of perplexity so common in schizophrenia. We have previously written<sup>36</sup> that normal basic self-experience is in this sense a matter of “mattering”—of constituting a point of orientation directed by needs and desires and the correlated pattern of meanings that make for a coherent and significant world. A weakening in being a vital subject of awareness and the concomitant disturbance of the usual

tacit/focal structuring will disrupt the organized nature of the cognitive and perceptual domains.

### *Implications*

The current data indicate that basic self-disturbance could be a useful means of identifying UHR patients who are most at risk of psychotic disorder, particularly of schizophrenia spectrum disorders. As mentioned above, when APS are present in the context of basic self-disturbance, the APS may represent an emerging schizophrenia spectrum condition as opposed to being “incidental” PLE’s or normal variations in experience. In practical terms, a self-disturbance measure such as the EASE could be a useful supplement to the UHR identification strategy in “narrowing down” on those at highest risk, in line with the “close in” strategy used to initially formulate the UHR approach.<sup>1</sup> This approach has previously been used with basic symptoms with the effect of defining a more narrow and homogenous clinical group.<sup>37</sup>

The accumulating literature regarding the significance of basic self-disturbance has implications for intervention in the UHR population. First, greater resources may be put into treatment of those who display the vulnerability factor of basic self-disturbance. Second, psychological intervention may be tailored so that basic self-disturbance, including the underlying processes described above, is incorporated as a treatment target. Some preliminary work has been conducted in this area, emphasizing the goal of developing a more robust prereflective self-awareness (first-person perspective) and second-person perspective and the roles of empathic attunement and strategies that encourage a form of immersion or absorption in present activity rather than a hyper-reflective stance (eg, mindfulness and “flow” activities rather than primarily cognitive work).<sup>6,36</sup> However, further theoretical work and empirical trials are required.

### *Limitations*

The lack of a clinical control group in the current study limits conclusions regarding the specificity of basic self-disturbance. That is, it is possible that young people presenting to a mental health service with mood, anxiety, or personality disorders but without APS may also display basic self-disturbance. While previous research indicates that this is unlikely<sup>21,23</sup>, further empirical data would be helpful. A further methodological limitation is that the second rater of the EASE may have been able to discern from details of the tape-recorded interview whether the participant was a patient or not. This may have biased their ratings toward higher self-disturbance scores among patients compared with healthy controls.

### *Future Research*

Future research will attempt to replicate the current findings with a larger UHR sample and using a clinical

control group. It would also be useful to investigate the relative prominence of different aspects of basic self-disturbance in the evolution of the psychotic prodrome and after onset of psychosis itself and whether basic self-disturbance has an impact on outcome in first-episode psychosis samples. Recently, there have been some tentative models proposed regarding the neurobiological underpinnings of basic self-disturbance, drawing on abnormalities in the right cerebral hemisphere,<sup>38</sup> mid-line cortical structures,<sup>39</sup> and neural networks.<sup>40</sup> A relationship between basic self-disturbance and social cognition disturbances has also been proposed.<sup>41</sup> Given the current findings and the accumulating phenomenological literature, it is important to investigate these models in empirical studies.

### Conclusions

The current study indicates that basic self-disturbance is characteristic of UHR samples and predicts transition to psychosis. The aspects of basic self-disturbance that are especially predictive are disturbances in cognition and stream of consciousness and self-awareness and presence. There were indications in the data that basic self-disturbance may be particularly characteristic of schizophrenia spectrum disorders, although conclusions regarding this are limited by sample size. The data are consistent with the view that basic self-disturbance is a vulnerability marker for psychosis and may be usefully employed to enhance prediction strategies.

### Funding

Ronald Philip Griffith Fellowship; National Alliance for Research on Schizophrenia and Depression (NARSAD) Young Investigator Award (to B.N.); National Health and Medical Research Council (NHMRC) Senior Research Fellowship ID 566593; Colonial Foundation (to A.Y.).

### Acknowledgments

The authors wish to acknowledge the contributions of Louis Sass, Josef Parnas, Peter Handest, Andrea Raballo, Marija Strmota, Annie Bruxner, and Hok Pan Yuen. The authors have declared that there are no conflicts of interest in relation to the subject of this study.

### References

1. Yung AR, Phillips LJ, Yuen HP, et al. Psychosis prediction: 12-month follow up of a high-risk ("prodromal") group. *Schizophr Res*. 2003;60:21–32.
2. Olsen KA, Rosenbaum B. Prospective investigations of the prodromal state of schizophrenia: review of studies. *Acta Psychiatr Scand*. 2006;113:247–272.
3. Cannon TD, Cadenhead K, Cornblatt B, et al. Prediction of psychosis in youth at high clinical risk: a multisite longitudinal study in North America. *Arch Gen Psychiatry*. 2008;65:28–37.
4. Yung AR, Yuen HP, Berger G, et al. Declining transition rate in ultra high risk (prodromal) services: dilution or reduction of risk? *Schizophr Bull*. 2007;33:673–681.
5. Nelson B, Yung AR, Bechdolf A, McGorry PD. The phenomenological critique and self-disturbance: implications for ultra-high risk ("prodrome") research. *Schizophr Bull*. 2008;34:381–392.
6. Nelson B, Sass LA, Skodlar B. The phenomenological model of psychotic vulnerability and its possible implications for psychological interventions in the ultra-high risk ('prodromal') population. *Psychopathology*. 2009;49:283–292.
7. Parnas J, Handest P, Jansson L, Saebye D. Anomalous subjective experience among first-admitted schizophrenia spectrum patients: empirical investigation. *Psychopathology*. 2005;38:259–267.
8. Parnas J. Self and schizophrenia: a phenomenological perspective. In: Kircher T, David A, eds. *The Self in Neuroscience and Psychiatry*. Cambridge, UK: Cambridge University Press; 2003:127–141.
9. Sass LA, Parnas J. Schizophrenia, consciousness, and the self. *Schizophr Bull*. 2003;29:427–444.
10. Sass LA. *Madness and Modernism: Insanity in the Light of Modern Art, Literature, and Thought*. Cambridge, MA: Harvard University Press; 1992.
11. Sass LA, Parnas J. Explaining schizophrenia: the relevance of phenomenology. In: Chung MC, Fulford KWM, Graham G, eds. *Reconceiving Schizophrenia*. New York, NY: Oxford University Press; 2007:63–96.
12. Parnas J, Jansson L, Sass LA, Handest P. Self-experience in the prodromal phases of schizophrenia: a pilot study of first-admissions. *Neurol Psychiatry Brain Res*. 1998;6:97–106.
13. Parnas J. The self and intentionality in the pre-psychotic stages of schizophrenia: a phenomenological study. In: Zahavi D, ed. *Exploring the Self: Philosophical and Psychopathological Perspectives on Self-Experience*. Amsterdam, The Netherlands: John Benjamins; 2000:115–148.
14. Parnas J, Møller P, Kircher T, et al. EASE: examination of anomalous self-experience. *Psychopathology*. 2005;38:236–258.
15. Møller P, Husby R. The initial prodrome in schizophrenia: searching for naturalistic core dimensions of experience and behavior. *Schizophr Bull*. 2000;26:217–232.
16. Parnas J, Handest P. Phenomenology of anomalous self-experience in early schizophrenia. *Compr Psychiatry*. 2003;44:121–134.
17. Klosterkötter J, Hellmich M, Steinmeyer EM, Schultze-Lutter F. Diagnosing schizophrenia in the initial prodromal phase. *Arch Gen Psychiatry*. 2001;58:158–164.
18. Yung AR, McGorry PD. The initial prodrome in psychosis: descriptive and qualitative aspects. *Aust N Z J Psychiatry*. 1996;30:587–599.
19. Parnas JA. Disappearing heritage: the clinical core of schizophrenia. *Schizophr Bull*. 2011;37:1121–1130.
20. Andreasen NC. DSM and the death of phenomenology in america: an example of unintended consequences. *Schizophr Bull*. 2007;33:108–112.
21. Handest P. *The Prodromes of Schizophrenia*. [Doctoral Thesis]. Copenhagen, Denmark: University of Copenhagen; 2003.
22. Handest P, Parnas J. Clinical characteristics of first-admitted patients with ICD-10 schizotypal disorder. *Br J Psychiatry Suppl*. 2005;48:s49–s54.

23. Parnas J, Handest P, Saebye D, Jansson L. Anomalies of subjective experience in schizophrenia and psychotic bipolar illness. *Acta Psychiatr Scand*. 2003;108:126–133.
24. Parnas J, Raballo A, Handest P, Vollmer-Larsen A, Saebye D. Self-experience in the early phases of schizophrenia: 5 years follow-up of the Copenhagen Prodromal Study. *World Psychiatry*. 2011;10:200–204.
25. Raballo A, Parnas J. The silent side of the spectrum: schizotypy and the schizotaxic self. *Schizophr Bull*. 2011;37:1017–1126.
26. Raballo A, Saebye D, Parnas J. Looking at the schizophrenia spectrum through the prism of self-disorders: an empirical study. *Schizophr Bull*. 2011;37:344–351.
27. Davidsen KA. Anomalous self-experience in adolescents at risk of psychosis. Clinical and conceptual elucidation. *Psychopathology*. 2009;42:361–369.
28. Hartmann E, Milofsky E, Vaillant G, Oldfield M, Falke R, Ducey C. Vulnerability to schizophrenia. Prediction of adult schizophrenia using childhood information. *Arch Gen Psychiatry*. 1984;41:1050–1056.
29. Kean C. Silencing the self: schizophrenia as a self-disturbance. *Schizophr Bull*. 2009;35:1034–1036.
30. Saks ER. *The Center Cannot Hold: My Journey Through Madness*. New York, NY: Hyperion; 2007.
31. Møller P, Haug E, Raballo A, Parnas J, Melle I. Examination of anomalous self-experience in first-episode psychosis: interrater reliability. *Psychopathology*. 2011;44:386–390.
32. Spitzer L. Development and reliability of the Structured Clinical Interview for DSM-IV Axis I diagnosis. *Am J Psychiatry*. 1992;119:624–629.
33. Yung AR, Yuen HP, McGorry PD, et al. Mapping the onset of psychosis: the Comprehensive Assessment of At-Risk Mental States. *Aust N Z J Psychiatry*. 2005;39:964–971.
34. Goldman H, Skodol A, Lave T. Revising axis V for DSM-IV: a review of measures of social functioning. *Am J Psychiatry*. 1992;149:1148–1156.
35. Yung AR, Nelson B, Baker K, Buckby JA, Baksheev G, Cosgrave EM. Psychotic-like experiences in a community sample of adolescents: implications for the continuum model of psychosis and prediction of schizophrenia. *Aust N Z J Psychiatry*. 2009;43:118–128.
36. Nelson B, Sass LA. Medusa's stare: a case study of working with self-disturbance in the early phase of schizophrenia. *Clin Case Stud*. 2009;8:489–504.
37. Simon AE, Dvorsky DN, Boesch J, et al. Defining subjects at risk for psychosis: a comparison of two approaches. *Schizophr Res*. 2006;81:83–90.
38. Hecht D. Schizophrenia, the sense of 'self' and the right cerebral hemisphere. *Med Hypotheses*. 2010;74:186–188.
39. Nelson B, Fornito A, Harrison BJ, et al. A disturbed sense of self in the psychosis prodrome: linking phenomenology and neurobiology. *Neurosci Biobehav Rev*. 2009;33:807–817.
40. Taylor JG. A neural model of the loss of self in schizophrenia. *Schizophr Bull*. 2011;37:1229–1247.
41. Nelson B, Sass LA, Thompson A, et al. Does disturbance of self underlie social cognition deficits in schizophrenia and other psychotic disorders? *Early Interv Psychiatry*. 2009;3:83–93.