



Letter to the Editor

Anomalies of imagination in the schizophrenia-spectrum: Empirical findings



Dear Editor

Here, we report the first systematic, empirical findings regarding salient subjective experiences termed anomalies of imagination. In a cross-sectional sample, we investigated their diagnostic distribution and correlations with dimensions of schizophrenia-spectrum psychopathology.

We have described the anomalies of imagination and the conceptual background of this notion (developed in continuation of self-disorder research) in detail elsewhere (Rasmussen and Parnas, 2015b; Rasmussen et al., 2018a; Rasmussen et al., 2018b). In brief, patients describe mental images with an articulated spatial character. 'Vivid images', 'inner movies' or 'scenarios in the head' persist with stable relations between the imagined entities, frequently rich in details. The content can develop independently of the patients' intentions. However, the patients are aware that these experiences are imagination and not in any way belonging to their current perceptual surroundings. The content is often macabre, aggressive or otherwise disturbing but can also be neutral or pleasant.

We have developed an instrument, the Examination of Anomalous Fantasy and Imagination (EAFI) (Rasmussen et al., 2018b), assessing these experiential anomalies in a semi-structured, phenomenologically-oriented interview. The EAFI consists of 16 items, some further divided into subtypes, which each contains a definition of the experience being assessed and examples of patients' self-descriptions. In a research setting, we previously found inter-rater agreement of the single EAFI items ranging from 0.6 to 1.0 with an average kappa of 0.84. The internal consistency of the EAFI as measured by Cronbach's alpha was above 0.88 (Rasmussen et al., 2018a).

1. Sample and assessment

We recruited 21 inpatients from a long-term ward specialized in psychosocial rehabilitation, 42 outpatients from clinics specialized

in psychotherapy of anxiety and obsessive-compulsive disorder (OCD) and 18 healthy controls. Interviews were conducted in a semi-structured manner according to phenomenological principles (Jansson and Nordgaard, 2016) and involved a composite instrument used for several studies at our department (Nordgaard and Parnas, 2014). The research diagnoses were allocated according to DSM-5 and ICD-10 as best-estimate consensus between the interviewer (A.R) and a senior clinician (J.P). When patients fulfilled the criteria of several DSM-5 diagnoses, we applied a diagnostic hierarchy focusing on the schizophrenia-spectrum and used in our previous studies (Nordgaard and Parnas, 2014).

The analysis compares the following groups of DSM-5 main-, research-diagnoses (Table 1): (a) schizophrenia and other non-affective psychoses ($N = 32$), (b) schizotypal personality disorder ($N = 15$), (c) other mental illness (OCD and major depression) ($N = 16$) and (d) healthy controls ($N = 18$).

In this study, we rated the EAFI on a lifetime basis. We scored 0 for absent or questionably present items, whereas we scored 1 for definitely present items (the patient described a clear example of the experience having occurred more than three times). For the analysis, the main-items were explored dimensionally (summing up the items rated as present, resulting in a maximum possible score of 15).

2. Results

We found that the anomalies of imagination aggregated substantially and significantly in the schizophrenia-spectrum patients compared to the group with other mental illness and healthy controls (Table 1). The group with other mental illness had a low lifetime score on the EAFI but scored significantly higher than the group of healthy controls.

The EAFI score correlated significantly ($P < 0.0001$) with current level of positive symptoms (spearman's rho (ρ) = 0.643) and negative symptoms ($\rho = 0.610$) assessed with the PANSS (not rated in healthy controls, $N = 63$). EAFI score correlated negatively with social and occupational level of functioning ($\rho = -0.539$, $P < 0.0001$, $N = 63$) assessed with the GAF-functioning subscale.

Table 1
Descriptives of the study sample and EAFI score.

	Nonaffective psychosis		Schizotypal disorder		Other Mental illness		Healthy controls	
	Mean (SD)	Range	Mean (SD)	Range	Mean (SD)	Range	Mean (SD)	Range
N	32		15		16		18	
Gender, F/M	21/11		10/5		13/3		14/4	
Age, years	30.1 (6.8)	19–42	27.1 (5.9)	18–37	32 (7.2)	20–42	27.5 (9.2)	19–53
EAFI	8.7 (2.6)	2–13	7.9 (1.6)	5–11	2.8 (1.8)	1–6	0.4 (0.9)	0–3

Test-statistics for Examination of anomalous fantasy and imagination (EAFI) score: Kruskal-Wallis test: $\chi^2(3) = 59.48$; ($P < 0.0005$). Mann-Whitney U test: Nonaffective psychosis = Schizotypal disorder ($P = 0.16$); Nonaffective psychosis or schizotypal disorder > other mental illness > healthy controls ($P < 0.0005$).

3. Discussion

It is an important limitation, that the group with other mental illness is small and diagnostically heterogenous. It should be mentioned, that the same interviewer rated the EAFI and other instruments and took part in the allocation of research diagnoses.

We find it unlikely that the moderate correlations with positive and negative symptoms reflect that anomalies of imagination are secondary to these dimensions. Rather, we suggest that these subjective disturbances belong to a more basic layer of psychopathology in the schizophrenia spectrum. The equal life-time presence of anomalies of imagination in the groups with schizotypal disorder and schizophrenia supports that view. They seem to occur in all phases of schizophrenia (we found no significant correlations between EAFI score and age, duration of illness or duration of psychosis). Furthermore, approximately 80% of the spectrum-patients retrospectively estimated their onset to childhood or adolescence.

4. Conclusion

In this cross-sectional study, anomalies of imagination aggregated selectively in schizophrenia-spectrum disorders and correlated with positive and negative symptom dimensions. We believe that these notions may assist differential diagnostic considerations in patients with unspecific complaints related to the modality of imagination such as obsessions, ruminations and various disturbing ideations. Our hypothesis, that these disturbances belong to a fundamental, early-onset level of schizophrenia-spectrum psychopathology reflecting a structural disorder of subjectivity (Rasmussen and Parnas, 2015a), requires prospective studies of their temporal stability and potential predictive value in regard of transition to schizophrenia-spectrum disorders.

Acknowledgments

We thank Dr. Mette Øllgaard Pedersen for recruitment of patients.

Conflict of interest

The authors have no conflict of interests to declare in relation to this study.

Role of the funding source

The work was supported by The Faculty of Health Sciences, University of Copenhagen (grant to A.R.R.). No funding agency influenced any aspect of the current work.

Contributors

ARR and JP designed the study. ARR managed the data acquisition. ARR and DS conducted the statistical analysis, and ARR wrote the first draft of the manuscript. All authors contributed to and have approved the final manuscript.

References

- Jansson, L., Nordgaard, J., 2016. *The Psychiatric Interview for Differential Diagnosis*. Springer.
- Nordgaard, J., Parnas, J., 2014. Self-disorders and the schizophrenia spectrum: a study of 100 first hospital admissions. *Schizophr. Bull.* 40 (6), 1300–1307.
- Rasmussen, A.R., Parnas, J., 2015a. Anomalies of imagination and disordered self in schizophrenia spectrum disorders. *Psychopathology* 48 (5), 317–323.
- Rasmussen, A.R., Parnas, J., 2015b. Pathologies of imagination in schizophrenia spectrum disorders. *Acta Psychiatr. Scand.* 131 (3), 157–161.
- Rasmussen, A.R., Stephensen, H., Nordgaard, J., Parnas, J., 2018a. A phenomenological approach to psychopathology of imagination: development of a descriptive instrument - examination of anomalous fantasy and imagination. *Psychopathology* 51 (3), 210–215.
- Rasmussen, A.R., Stephensen, H., Parnas, J., 2018b. EAFI: examination of anomalous fantasy and imagination. *Psychopathology* 51 (3), 216–226.

Andreas Rosén Rasmussen

*Mental Health Center Glostrup, University of Copenhagen,
Broendbyostervej 160, 2605 Broendby, Denmark*

*Psychotherapeutic Center Stolpegård, University of Copenhagen,
Stolpegårdsvej 20, 2820 Gentofte, Denmark*

Corresponding author at: Mental Health Center Glostrup, University of Copenhagen, Broendbyostervej 160, 2605 Broendby, Denmark.

E-mail address: Arr@dadlnet.dk.

Ditte Sæbye

Center for Clinical Research and Prevention, Bispebjerg and Frederiksberg Hospital, Capital Region, Nordre Fasanvej 57, 2000 Frederiksberg, Denmark

Josef Parnas

*Mental Health Center Glostrup, University of Copenhagen,
Broendbyostervej 160, 2605 Broendby, Denmark*

Center for Subjectivity Research, University of Copenhagen, Karen Blixens Plads 8, 2300 Copenhagen S, Denmark

20 June 2018