The reciprocal relationship between depressive symptoms and loneliness among people diagnosed with psychotic disorders: a cross-lagged panel analysis

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Abstract

Aim of the study: To investigate prospective relationships between depressive symptoms and loneliness among people with psychotic disorders.

Subject and methods: A total of 147 patients were recruited at baseline, of which 100 (68%) were followed up six months later. A cross-lagged panel model was used to analyze the data.

Results: We found a reciprocal association between depressive symptoms and loneliness. The effect of initial depressive symptoms on loneliness after half a year did not differ in terms of strength from the effect of baseline loneliness on depressive symptoms at follow-up.

Discussion: Among people with psychotic disorders, depressive symptoms and feelings of loneliness reinforce each other and thus may create a vicious circle. This may impede the process of recovery. In order to break this maladaptive cycle, comprehensive interventions are needed, targeting at the same time both psychopathology and the social well-being of service users with psychosis.

Conclusions: Effective recovery-oriented interventions for people with psychosis should target both psychopathological symptoms (including depressive symptoms) and loneliness.

depressive symptoms; loneliness; psychotic disorders; cross-lagged panel analysis; longitudinal two-wave study

INTRODUCTION

Schizophrenia is a severe mental illness with complex symptomatology. According to the in-

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fluential review paper by Tandon et al. [1] it is characterized by an admixture of positive, negative, disorganized, cognitive, psychomotor and mood symptoms. A more recent meta-analysis of the Positive and Negative Syndrome Scale (PANSS), which is the most widely used standardized measure of symptom severity in schizophrenia and psychosis spectrum disorders, produced similar results [2]. This meta-analysis identified five core symptom dimensions in psychosis: positive symptoms, negative symptoms,

disorganization (often termed "cognitive" in other studies), affect (often called "depression-anxiety") and resistance (also referred to as "excitement-activity").

Depressive symptoms are common in schizophrenia and other psychotic disorders and can contribute to poor social and clinical outcomes, including impaired global functioning, difficulties with interpersonal relationships, quality of life and adherence to medication, more severe substance-related problems and greater likelihood of relapse and suicide [3–6]. A diagnosis of psychosis is also related to an elevated risk of loneliness, i.e. subjectively perceived social isolation [7]. Similarly to depression, loneliness negatively affects mental and physical health, and heightens the probability of early mortality [8]. Thus, both depressive symptoms and loneliness are psychosocial problems which are highly prevalent among people with psychosis and may increase the burden of the disease.

Research shows a moderate positive correlation between loneliness and depression [9–11], suggesting potentiallly shared causes and features [12]. However, factor analyses reveal that they are closely related yet distinct constructs [e.g., 13].

The nature of the relationship between loneliness and depressive symptoms remains under debate. Longitudinal studies exploring potential causal relationships have produced mixed results. Some of them indicate that early depression leads to later loneliness [e.g., 14], while others point to loneliness as influencing depressive symptoms [e.g., 15] or suggest a bidirectional impact [e.g., 16]. These discrepant findings may be due to the use of different populations and time lags across studies [17].

It remains unclear how depression and loneliness affect each other among people with psychosis. Longitudinal studies using methods that allow for inferences to be made about mutual relationships between loneliness and depression [e.g., cross-lagged panel model] in this specific group are lacking. Unique aspects of this relationship may arise from the presence of psychotic symptoms, which are characteristic of schizophrenia and other psychoses and are associated with both depression [18] and loneliness [19]. Additionally, factors such as social isolation, stigma, or psychiatric hospitalizations could contribute to an increased severity of the two psychosocial problems in this population [3,4,20].

We believe that determining the prospective associations between depressive symptoms and a sense of loneliness in psychotic patients may have relevant practical implications and inform therapeutic interventions. Hence, our aim in this two-wave study was to investigate the mutual relationships between depressive symptoms and loneliness in a sample of people diagnosed with schizophrenia or other psychotic disorders.

MATERIAL AND METHODS

Participants and Procedure

The study obtained ethical approval from the Bioethical Committee of the Institute of Psychiatry and Neurology (IPiN) in Warsaw (Poland). Participants were recruited from various mental health care facilities of the IPiN. The inclusion criteria were as follows: a diagnosis of non-affective psychotic disorder according to the International Classification of Diseases–10th Revision (ICD-10; categories F20–F29), age over 18 years, and a stable mental condition according to the attending psychiatrist, enabling the understanding and accurate answering of the items in the questionnaires. Prior to the research, participants signed an informed consent form. The instruments were administered by a trained clinician.

A total of 147 patients were included. The sample had a mean age of 40.8 years (SD = 13.2); 51% were males. Most of the participants were single, never married (70.1%), unemployed (68.7%), had a secondary or higher education (44.2% and 49.7%, respectively), and resided in a large city > 100,000 inhabitants (80.3%). Slightly above a quarter (26.5%) lived alone. The mean duration of illness was 16.3 years (SD = 13.1) and the mean number of psychiatric inpatient admissions was 5.3 (SD = 6.2). At the time of the research, 36.1% of the respondents were inpatients and 63.9% were treated in outpatient, community or day care settings. The distribution of psychiatric diagnoses was as follows: schizophrenia, F20 (91.2%), schizotypal disorder, F21 (0.7%), persistent delusional disorder, F22 (1.4%), acute

psychotic disorder, F23 (6.1%), and schizoaffective disorder, F25 (0.7%). Our sample was characterized by manifest, but not marked, difficulties in social functioning and a relatively low severity of depressive and other psychopathological symptoms; details are provided elsewhere [21].

Participants were assessed twice, at baseline (T1) and six months later (T2). Of the initial group of 147 patients, 100 took part at follow-up, which means that the attrition rate from T1 to T2 was 32%. Before conducting the main analyses, we checked whether participant retention at T2 was a function of sex, age, place of residence, level of education, marital status, living situation, employment status, type of psychiatric facility, number of psychiatric inpatient hospitalizations, and overall severity of psychopathological symptoms. The only statistically significant difference between patients who dropped out from T1 to T2 and those who participated in both waves regarded psychiatric setting: $\chi^2(1, N = 147) = 8.801$, $p = 0.03$; those who dropped out were more likely to be inpatients at T1 (47.2% vs 23.4%). The two groups did not differ on any other demographic or illness-related characteristics, nor on the main study variables, i.e., the intensity of depressive symptoms and loneliness (all $p > 0.05$).

MEASURES

Depressive symptoms

The Center for Epidemiologic Studies Depression Scale-Revised (CESD-R) [22] is a self-report questionnaire that contains 20 items referring to various symptoms of depression. Response options range from 0 (not at all or less than 1 day) to 4 (nearly every day for 2 weeks). The higher the total score, the more severe the depressive symptoms. In our study, the value of Cronbach's α was 0.93 at T1 and 0.92 at T2.

Loneliness

The De Jong Gierveld Loneliness Scale (DJGLS) [23] is composed of 11 items, to which interviewees respond using a five-point scale ranging from 1 (yes!) to 5 (no!). A higher total score indicates a more intense global sense of loneliness. In our data, Cronbach's α for this measure was 0.90 at T1 and 0.92 at T2.

Psychopathological symptoms (control variable)

The overall severity of psychopathological symptoms was measured with the standard version of the Brief Psychiatric Rating Scale (BPRS) [24]. This consists of 18 items scored by a clinician on a scale ranging from 1 (symptom not present) to 7 (symptom extremely severe). To create a global score, the sum of the item scores is divided by the number of valid items. The higher the score, the more severe the individual's psychopathology. Cronbach's alpha of the BPRS was found to be 0.84 at T1 and 0.80 at T2.

Statistical Analysis

To examine bidirectional relations between loneliness and depressive symptoms, accounting for the stability of depressive symptoms and loneliness over time, we used the cross-lagged panel model (CLPM) [25]. The CLPM allows for the examination of the ways in which reciprocal relationships between constructs play out over time by controlling for prior levels of each construct.

The models were analyzed with the robust maximum likelihood estimator (MLR) in Mplus version 8.3. Little's MCAR test suggested that the data should be considered missing completely at random: χ^2 (12, N = 147) = 18.29; $p = 0.11$. Therefore, missing data were handled with full information maximum-likelihood (FIML) estimation.

In the analyses, socio-demographic and clinical background characteristics – such as sex, age, place of residence, education level, marital status, living situation, employment status, type of psychiatric facility, number of psychiatric inpatient hospitalizations, and severity of psychopathological symptoms – were included as covariates.

RESULTS

After accounting for socio-demographic and clinical factors, the autoregressive regression

weights were positive and significant, showing moderate stability for depressive symptoms ($\beta = 0.55$; SE = 0.07; $p < 0.01$) and loneliness ($\beta = 0.60$; SE = 0.08; $p < 0.01$). To examine the differences between both autoregressive paths, a Wald test was used. This test revealed that model fit did not degrade significantly when these paths (autoregressive effects for depressive symptoms and loneliness) were constrained to be equal, $\chi^2_{Wald} = 1.14$; df = 1; $p = 0.28$. Loneliness and depressive symptoms were also significantly concurrently correlated at T1 (r = 0.19;

SE = 0.08; $p < 0.05$), and at T2 (r = 0.18; SE = 0.10; $p < 0.05$).

Controlling for the stability and synchronous effects, the cross-lagged paths were significant in both directions. Antecedent loneliness predicted later depressive symptoms ($\beta = 0.20$; SE = 0.08; $p < 0.01$), and antecedent depressive symptoms predicted later loneliness ($\beta = 0.21$; SE = 0.07; $p < 0.01$). The statistically nonsignificant p value of the Wald test ($\chi^2_{Wald} = 0.08$, df = 1; $p = 0.78$) indicated that these two cross-lagged effects were not significantly different from each other.
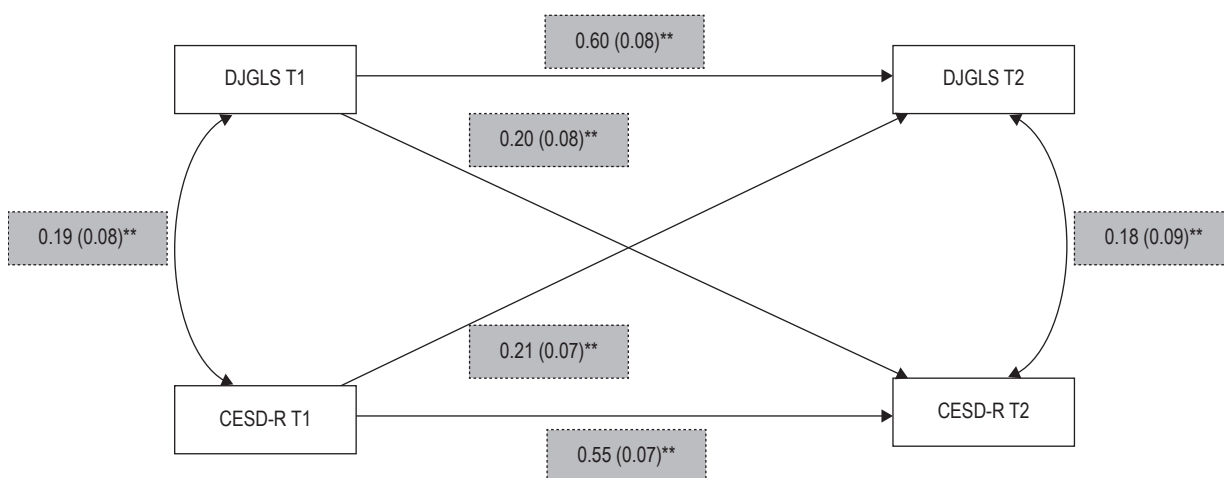
Note. The DJGLS indicates loneliness. The CESD-R indicates depressive symptoms. T1 refers to Time 1 and T2 refers to Time 2. Standardized estimates β are presented. * denotes $p < 0.05$. ** denotes $p < 0.01$. For clarity, effects of covariates are not displayed.

Figure 1. Cross-lagged panel analysis of the relations between depressive symptoms and loneliness over time.

DISCUSSION

To the best of our knowledge, this is the first study to examine the prospective relationship between loneliness and depression among people with psychotic disorders. Our cross-path analysis revealed that in this group loneliness and depressive symptoms influence each other bidirectionally over time. Furthermore, we demonstrated that the effect of loneliness on depressive symptoms and that of depressive symptoms on loneliness are similar in strength. Therefore, our findings point to the possibility that there may be a cyclical process between loneliness and depressive symptoms that maintains and reinforces both of these psychosocial problems among psychotic patients [26].

This suggests that among people with psychotic disorders – similarly as among older

adults [27] – interventions focused on reducing depressive symptoms are likely to result in a decrease in loneliness. In this context, the case for the use of cognitive behavioral therapy (CBT) in the treatment of depression becomes strong; it targets the cognitive biases and behaviors that maintain emotional distress and is therefore an effective way to counteract loneliness [27,28].

On the other hand, reducing risk factors for loneliness should contribute to lowering the levels of depressive symptoms. In accordance with this assumption, Lee et al. [29] have estimated that if loneliness were eradicated, it could potentially prevent between 11% to 18% of cases of depression. Meta-analyses show that for loneliness the quality of social networks is more important than their quantity, and that contact with friends and neighbors is more predictive of loneliness than interactions with family [30]. Hence, im-

proving the quality of relationships with friends and neighbors (or beliefs about their quality) should likely lead to a lesser severity of depressive symptoms.

Therefore, healthcare professionals should be alert to loneliness as a possible precursor of depression in psychotic individuals and think about ways of mitigating this feeling. Such interventions as "Groups 4 Health" (G4H), the main objective of which is to provide individuals with the skills and understanding necessary to better manage their social lives, particularly by building and maintaining social connections, seem to be particularly promising, contributing to a reduction in the intensity of both loneliness and depression [31].

However, it needs to be strongly emphasized that, contrary to social isolation, loneliness is basically a subjective experience and that lonely individuals display a negative bias in processing social information [32]. This is probably the reason why the interventions focusing on cognitive restructuring, i.e. challenging maladaptive social cognitions offer the best chance for alleviating loneliness [28,33].

Limitations of this research need to be considered. Our study included only two time points, which precludes the use of more complex methods for analyzing longitudinal data, such as for example a random-intercept cross-lagged panel model [34]. Second, because depressive symptoms were self-reported, the results may be influenced by acquiescence and social desirability bias. Future studies could aim to replicate the current findings by using clinician-rated measures of depression. Also, the respondents were recruited at a single, big-city-based mental health facility. Therefore, the sample may not be representative of the whole population of people with psychotic disorders. Finally, we did not control for the potential confounding effects of the type of medication or other psychiatric treatments the patients received during the study period.

In conclusion, among people with psychotic disorders depressive symptoms and feelings of loneliness reinforce each other and thus may create a vicious circle. This may impede the process of recovery. In order to break this maladaptive cycle, comprehensive interventions are needed that simultaneously target both psychopathology and the social well-being of service users with psychosis. Current research suggests that interventions like cognitive behavioral therapy (CBT) and the "Groups 4 Health" (G4H) program could be especially useful.

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