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Letter to the editor

Depression, hostility, attributional biases, and paranoia in schizophrenia and healthy controls: intercorrelations and associations with self-assessment of social functioning

Dear editor

We recently reported that the correlation between depression and self-assessment of everyday social functioning was very similar in people with schizophrenia and healthy individuals, despite considerable differences in the severity of both depression and interpersonal functioning (Oliveri et al., 2020). Melo et al. (2009) reported that individuals with schizophrenia who had elevated depression scores reported increases in feelings that they were being persecuted, a characteristic shared with college undergraduates. Attributional style variables have also been found to correlate with paranoia in people with schizophrenia (Pinkham et al., 2016), although manifesting minimal correlations with other aspects of social cognition or everyday functioning (Pinkham et al., 2018). Tendencies toward believing that others are mistreating them is known to also correlate with expressions of hostility and with interpersonal difficulties in healthy populations as well as people with schizophrenia (Hadjuk et al., 2019). However, the linkage between depression symptoms and attributional biases has not been examined in the broader context of all other correlates of depression.

1. Our study

In this study, we examined correlations between depression, the attributional style of blaming others, hostility, and self-reported paranoia in people with schizophrenia and healthy controls. We related all of these variables to self-reported interpersonal functioning, because of our previous findings that depression predicted self- reports of greater impairments. We hypothesized that paranoia, hostility, and a blaming attributional style would be correlated with depression in both samples. We also hypothesized that these variables would add to the prediction of self-reports of interpersonal functioning, in that people with this constellation of characteristics would also perceive that their social functioning was adversely impacted.

Data collection occurred at The University of Texas at Dallas (UTD), The University of Miami Miller School of Medicine (UM), and The University of North Carolina at Chapel Hill (UNC). Participants were stable outpatients with diagnoses of schizophrenia or schizoaffective disorder ($n = 218$) and healthy controls ($n = 154$). To be eligible, patients required a DSM-IV diagnosis of schizophrenia or schizoaffective disorder. Patients could not have been hospitalized within the prior two months and had to be on a stable medication regimen for a minimum of six weeks with no dose changes for a minimum of two weeks. Healthy controls were recruited at all sites via advertisements and screened for psychopathology.

Self-reported depression was assessed with the Beck Depression Inventory second edition (BDI-2). Attributional style/bias was assessed with the Intentional Bias Task (IBT) and paranoia was assessed with the Persecution and Deservedness scale (PADS). Hostility was assessed with the Hostility Scale of the Personality Inventory for DSM-5 (PID-5-HS). Self-reported everyday functioning was assessed with the Specific Levels of Functioning Scale (SLOF).

2. Findings

We compared depression, hostility, intentionality bias, paranoia (persecution and deservedness), and self-reported interpersonal functioning across the two samples with t-tests. SCZ patients were significantly more depressed ($t = 8.8$, $p < .001$) and had significantly higher PADS persecution scores ($t = 9.48$, $p < .001$), with no differences in PADS deservedness scores ($t = 1.58$, $p = .12$). Patients had higher intentionality bias scores than the healthy controls as well as significantly higher PIDS hostility scores ($t = 5.55$, $p < .001$). Finally, patients reported significantly worse interpersonal functioning than the HC sample ($t = 5.35$, $p < .001$).

We computed Pearson correlations between BDI, PADS Persecution, and PADS Deservedness scores, PIDS scores, IBT scores, and self-reported social functioning in the two groups separately. In both samples, higher BDI scores were associated with greater paranoia as indexed by the impression that others were mistreating them (PADS persecution), all $r > .57$, all $p < .001$. In neither sample was PADS Deservedness scores correlated with depression, both $r < .07$. PIDS hostility scores were positively correlated with BDI scores and PADS paranoia scores in both samples all $r > > .53$, all $p < .001$. Poorer self-reported social functioning was correlated with higher scores on the BDI, PADS Persecution, and IBT hostility in both samples, all $r > .28$, all $p < .01$. Intentionality bias was minimally correlated with the other self-reported variables, including social functioning.

In order to see if depression was driving group differences in hostility and paranoia, we recomputed the group comparisons for PID hostility and PADS paranoia with analysis of covariance, controlling for depression scores. For hostility, despite the considerably large group difference, the effect of diagnostic group became nonsignificant when adjusting for BDI scores, $F(1,369) = .31$, $p = .58$. In contrast, the group differences in PADS paranoia were still significant when adjusting for depression, $F(1,369) = 22.68$, $p < .001$.

In our final analyses, we computed regression analyses with self-reported everyday functioning as the dependent variable and BDI scores, PIDS hostility, and PADS paranoia as predictors. This analysis was aimed at determining whether depression was the major driver of self-reported interpersonal functioning or whether the other variables had an incremental contribution. Both regression analyses were statistically significant overall. For the healthy controls, the only significant predictor of self-reported everyday functioning was hostility on the PIDS, with an R^2 of .12, $t = 4,42$, $p < .001$. In contrast, both depression, $R^2 = .19$, $t = 6.17$, $p < .001$, and feelings of paranoia, $R^2 = .02$, $t = 2.15$, $p = .03$, independently predicted self-reported real world social

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functioning in patients with schizophrenia with a total R^2 of .21.

3. Take-aways

Depressed mood is correlated with hostility and paranoia to a very significant extent in both healthy controls and people with schizophrenia. Interpersonal attribution biases, although more substantial in patients with schizophrenia, were minimally correlated with other variables and did not relate to the self-reported social functioning of either sample. Differences in hostility between the groups were eliminated when depression was considered, but schizophrenia-related increases in paranoia were preserved. Both depression and paranoia correlate with self-reported everyday functioning in people with schizophrenia, suggesting that feelings of reduced social competence and lack of engagement in social activities are related to mood and interpersonal sensitivity variables. Further, in healthy individuals those who report greater feelings of hostility also report reduced social functioning, which is likely part of an overall constellation of depression, interpersonal sensitivity, and irritability.

Tendencies to be interpersonally suspicious to the point of paranoia may be exacerbated in individuals with evidence of depression, including healthy people and patients with schizophrenia. This provides support for the view that paranoia may exist on a continuum from healthy to pathological, and that similar influences may affect paranoia across this continuum.

Sincerely,

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Declaration of Competing Interest

In the past year, Dr. Harvey has served as a consultant to: Alkermes, Bioexcel Therapies, Boehringer-Ingelheim, Intracellular Therapies, Otsuka Digital Health, Roche, Sanofi, Sunovion, and Takeda Pharma. He is Chief Scientific Officer of iFunction, Inc. He also has other research support from The Stanley Medical Research Foundation and Takeda.The other authors report no commercial interests related to the presented research.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.psychres.2020.113388.

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