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# Letters

## COMMENT & RESPONSE

### Group-Level Symptom Networks in Depression

**In Reply** In our publication in *JAMA Psychiatry*,<sup>1</sup> we reported that the structure of symptom networks is related to the course of depression. Our findings are based on a between-patients design. Although we agree with Bos and Wanders that this has implications for the interpretation of our results, we do not think their conclusions are warranted.

Bos and Wanders correctly point out that, in theory, associations identified through group-level analyses may differ radically across individuals (Simpson's paradox). However, we think that this is not very likely for the reported associations between depression symptoms in our study. First, it is hard to imagine that some patients become less depressed as a result of feeling worthless or get alert and focused when they feel slowed down. Associations between symptoms plausibly differ in degree, but not in kind, so that radical heterogeneity should not be expected for depression symptom networks. Second, our network parameters are partial correlations, not zero-order correlations: thus, each symptom-symptom connection in the network is already controlled for individual differences in all remaining symptoms, so that Simpson's paradox is ruled out with respect to these symptoms (and strong correlates of them). Third, recent research, which used intra-individual analyses for network estimation, showed that patients with depression had a more densely connected intraindividual network of negative mood states than healthy control individuals,<sup>2</sup> which parallels our result and suggests a positive answer to Bos and Wanders' question of whether our results generalize to the individual level.

Bos and Wanders further argue that the reported associations between symptoms could be the result of a common cause instead of causal associations between symptoms; they find it "suggestive" that the difference in network connectivity largely disappeared in certain analyses. However, we think this is merely the result of a loss of power due to a decrease in sample size (after matching on severity, the overall sample de-

creases from 515 to 344) and the strong regularization penalty; both networks lose almost all of their connections and, in that trivial sense, become more alike. As shown in our article,<sup>1</sup> when using procedures that have less effect on power (like partialling out general level of functioning or weakening the regularization parameter), differences between groups become more, rather than less, pronounced.

Although we believe that it is not very likely that the associations between symptoms are substantially different for individual patients, intraindividual analyses are needed to test this. In addition, intraindividual analyses are warranted to determine whether symptoms are associated over time within patients. Therefore, we gladly reveal that the Netherlands Study of Depression and Anxiety,<sup>3</sup> from which we drew our sample, recently started a new wave of measures in which 400 of its nearly 3000 participants are studied with Ecological Momentary Assessment<sup>4</sup> over 2 weeks. The aim of this study is to provide more insight into the association between intraindividual and interindividual differences, which will lead to an increased understanding of how nomothetic and idiographic analyses are related.

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**Conflict of Interest Disclosures:** None reported.

**Additional Contributions:** We appreciate the thoughtful comments on this manuscript of Lynn Boschloo, PhD, at the University of Groningen, Groningen, the Netherlands. She did not receive compensation for her contributions.

1. van Borkulo C, Boschloo L, Borsboom D, Penninx BW, Waldorp LJ, Schoevers RA. Association of symptom network structure with the course of depression. *JAMA Psychiatry*. 2015;72(12):1219-1226.

2. Pe ML, Kircanski K, Thompson RJ, et al. Emotion-network density in major depressive disorder. *Clin Psychol Sci*. 2015;3(2):292-300. doi:10.1177/2167702614540645.

3. Penninx BWJH, Beekman ATF, Smit JH, et al; NESDA Research Consortium. The Netherlands Study of Depression and Anxiety (NESDA): rationale, objectives and methods. *Int J Methods Psychiatr Res*. 2008;17(3):121-140.

4. van der Rot M, Hogeneelst K, Schoevers RA. Mood disorders in everyday life: a systematic review of experience sampling and ecological momentary assessment studies. *Clin Psychol Rev*. 2012;32(6):510-523.

## CORRECTION

**Error in Title:** In the Original Investigation titled "Association of Symptom Network Structure With the Course of Longitudinal Depression," published online November 11, 2015, and also in the December 2015 print issue of *JAMA Psychiatry*,<sup>1</sup> there was an error in the title. The title should read as follows: "Association of Symptom Network Structure With the Course of Depression." This article was corrected online.

1. van Borkulo C, Boschloo L, Borsboom D, Penninx BWJH, Waldorp LJ, Schoevers RA. Association of symptom network structure with the course of longitudinal depression. *JAMA Psychiatry*. 2015;72(12):1219-1226.

**Error in Affiliation:** In the Original Investigation titled "Type 2 Diabetes Mellitus in Youth Exposed to Antipsychotics: A Systematic Review and Meta-analysis," published online January 20, 2016, in *JAMA Psychiatry*,<sup>1</sup> there was an error in the affiliation for Dr Arango. The affiliation CIBERSAM was inadvertently placed in the Conflict of Interest Disclosures for Dr Arango. The affiliation for Dr Arango should read as follows: "Child and Adolescent Psychiatry Department, Instituto de Investigación Sanitaria Gregorio Marañón, Hospital General Universitario Gregorio Marañón, School of Medicine, Universidad Complutense, CIBERSAM, Madrid, Spain." This article was corrected online.

1. Galling B, Roldán A, Nielsen RE, et al. Type 2 diabetes mellitus in youth exposed to antipsychotics: a systematic review and meta-analysis [published online January 20, 2016]. *JAMA Psychiatry*. doi:10.1001/jamapsychiatry.2015.2923.

**Error in Text and Table:** In the Original Investigation titled "Euthanasia and Assisted Suicide of Patients With Psychiatric Disorders in the Netherlands 2011 to 2014," published online February 10, 2016, in *JAMA Psychiatry*,<sup>1</sup> there was an error in the text and Table 2. The first sentence of the second paragraph of the Results section should read as follows: "Most patients had more than 1 condition, with 36 having at least 2 conditions, 11 having at least 3 conditions, and 4 having at least 4 conditions (Table 2)." In Table 2, the No. (%) for Bipolar depression should read 7(6). This article was corrected online.

1. Kim SYH, De Vries RG, Peteet JR. Euthanasia and assisted suicide of patients with psychiatric disorders in the Netherlands 2011 to 2014 [published online February 10, 2016]. *JAMA Psychiatry*. doi:10.1001/jamapsychiatry.2015.2887.

**Incorrect Definition in Abstract:** In the Original Investigation entitled "Heterogeneity in 10-Year Course Trajectories of Moderate to Severe Major Depressive Disorder: A Danish National Register-Based Study" published online March 2, 2016, and in this issue of *JAMA Psychiatry*,<sup>1</sup> an error occurred in the Results portion of the Abstract. In the second sentence, the parenthetical definition of brief contact, which read "(characterized by probability of contact after 2 years)," should be replaced with "(characterized by low probability of contact after 2 years)." This article was corrected online.

1. Musliner KL, Munk-Olsen T, Laursen TM, Eaton WW, Zandi PP, Mortensen PB. Heterogeneity in 10-year course trajectories of moderate to severe major depressive disorder: a Danish national register-based study [published online March 2, 2016]. *JAMA Psychiatry*. doi:10.1001/jamapsychiatry.2015.3365.