Correspondence

Odds and Risk Ratios: When They Are Similar and When They Are Not

To the Editor:

Cullen *et al.* (1) described a systematic review and meta-analysis of the association between non-neurological autoimmune disorders and psychosis. They presented their results as odds ratios (ORs) with the observation that "psychotic and autoimmune disorders are both rare, thus, odds and risk ratios are likely comparable" (1).

There are two errors in their statement. The first error is that the rarity of psychotic and autoimmune disorders is irrelevant; however, what *is* relevant is that the co-occurrence of non-neurological autoimmune disorders with psychosis should be rare for ORs and risk ratios (RRs) to be similar. The distinction arises because Cullen *et al.* (1) examined ORs and RRs and not odds and risks (2).

The second error is that when examining differences between ORs and RRs, it is not merely how rare an event is, but (also) how similar versus dissimilar the event is in the group of interest versus in the comparison group. The difference between the OR and the RR is small when the risk of the event is similar in the two groups, regardless of whether the event is rare or common. The difference is also small when the risks (of the event) are dissimilar but the risk is small in the group of interest. The difference between the OR and the RR widens when the risks are dissimilar in the groups being compared and when the risk in the group of interest is not small. In this context, a small risk is commonly stated as 10% (2).

Cullen *et al.* (1) may now need to rethink whether combining cohort and case-control studies was appropriate.

Chittaranjan Andrade

Acknowledgments and Disclosures

The author reports no biomedical financial interests or potential conflicts of interest.

Article Information

From the Department of Psychopharmacology, National Institute of Mental Health and Neurosciences, Bangalore, India.

Address correspondence to Chittaranjan Andrade, M.D., Department of Psychopharmacology, National Institute of Mental Health and Neurosciences, Bangalore, Karnataka 560 029, India; E-mail: andradec@gmail.com.

See also associated correspondence: https://doi.org/10.1016/j.biopsych.2019.02.012.

Submitted Dec 18, 2018; accepted Feb 12, 2019.

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