The Participant and Clinician Reported Circumplex Model of Depression

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SUBMISSION DETAILS

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Methodological Issue Being Addressed Clinician-reported outcomes using the HAM-D must necessarily consider the participant's perception of their own condition. In this respect, accounting for participant-reported depressive symptoms may provide an avenue for improving robust prediction of ADT response in MDD clinical trials.

Recent trends have many clinical and scientific advances being powered by data-driven machine learning and artificial intelligence models. To this end, the discovery and exploration biomarkers capable of predicting the antidepressant treatment (ADT) response (e.g., Malik et al., 2021) has been a primary focus of recent research. So far, these explorations have resulted in varying success. Perhaps, taking a more straightforward and holistic view of available data by mapping participant-reported and clinician-reported depression on a circumplex can provide a foundation for more robust predictions of ADT response in MDD clinical trials.

Reference
Malik, S., Singh, R., Arora, G., Dangol, A., & Goyal, S. (2021). Biomarkers of major depressive disorder: knowing is half the battle. Clinical Psychopharmacology and Neuroscience, 19(1), 12.

Introduction The present work aims to introduce the Participant and Clinician reported (PCR) Circumplex Model of Depression by mapping PHQ-9 (participant-reported) and HAM-D (clinician-reported) scores in a quadratic plot. Circumplex models have been utilized in Psychology and Neuroscience to map separate constructs onto the same dimensional space, allowing for more robust explanation and categorization of complex relationships (e.g., affect and arousal; Russell, 1980). The PHQ-9 is plotted on the x-axis, and HAM-D is plotted on the y-axis, with the intercepts for each axis corresponding with the threshold indicating moderate depression that would benefit from medication.

Reference
Russell, J. A. (1980). A circumplex model of affect. Journal of personality and social psychology, 39(6), 1161.

Methods A sample of 167 MDD trial participants were prescribed an FDA approved ADT and assessed at baseline and six weeks later using the PHQ-9 and HAM-D. PCR circumplex models were developed for baseline, end of treatment (EOT), and change scores (baseline - EOT). Baseline and EOT scores were categorized by PCR quadrant (1: Depressed, 2: Minimizer, 3: Euthymic, 4:

Exaggerator), change score quadrants were labeled as (1: Non-responder, 2: Discrepant Responder, 3: Responder, 4: Placebo Responder).

Results $\chi 2$ analyses did not reveal any differences in the demographic makeup of participants who scored in different PCR quadrants at baseline, EOT, or for the change scores.

Baseline PCR Category alone did not predict ADT response. When accounting for demographic differences (age, sex, race, BMI), participants who had previously failed an ADT trial scored 7.31 points higher on the HAM-D at EOT than participants who were ADT naive ($t(139) = 2.392$, $p = .018$). Additionally, participants in the Depressed PCR category at baseline who had previously failed an ADT trial scored 7.40 points higher on the HAM-D at EOT than participants in the Exaggerator category ($t(139) = 2.283$, $p = .024$).

Conclusion The PCR categories did not appear to be comprised of any clear demographic sub-populations, but did appear to be a potential indicator of post-treatment HAM-D score. The current results indicate that participants in the PCR Depressed category at baseline who have failed to respond to a previous ADT are likely to be experiencing more depressive symptoms at EOT than participants in the PCR Exaggerator category at baseline. These findings raise the possibility that PCR category information could provide valuable insight at baseline to indicate how someone may respond in a MDD medication trial. This work has set the stage for more in-depth future analyses that may consider factors that have the potential to influence a participant's perception of their MDD symptoms (e.g., therapy), or the underlying factor structure for the HAM-D and PHQ-9 questionnaires. Future work may also address questions related to recruitment and retention for MDD clinical trials.

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Keywords

Keywords
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Depression
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Guidelines I have read and understand the Poster Guidelines

Disclosures The authors report no conflicts of interest for this work.

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