THE ROLE OF OBSESSIVE-COMPULSIVE, WORRY, AND ANXIETY SYMPTOMS IN PERFORMANCE MONITORING
Laura Zambrano-Vazquez, & John J.B. Allen
University of Arizona

Abstract
The role of worry and anxiety changes the ERN effect.
Recent research supports role of worry in the enhanced ERN effect.
Probabilistic Learning
However, worry has been described as probabilistic.
High worry → increased sensitivity to probabilistic errors.
Group Composition
What is the anxiety group measuring? Anxious arousal? Not likely.
OC specific: Not characteristic of OC groups in literature.
OC typical: More representative of typical OC groups used in literature.
Control: Below median scores and not extremely low scores like some control groups in literature.
Conclusion
Anxiety, worry, and OC symptoms are related to error-monitoring processes differently as a function of task.
The results underscore importance of worry in both flankers and PL tasks.
These findings challenge the idea that OC symptoms per se underlie enhanced ERNs in flanker tasks.

Discussion
Tasks
Modified Flankers Erikson Task
Probabilistic Learning Task
Training Phase
Testing Phase
Participants
Electrophysiological Recording and Processing

Background
ERN is increased among those with OCD in choice response task.
This effect has not been observed in probabilistic learning (PL) tasks.

Purpose
To explore the extent to which anxiety or worry may underlie this pattern of error-monitoring effects, or if it is specific to OC symptoms.

Methods
EEG data recorded while participants completed flankers and PL task.

Results
No clear support of specific symptoms as responsible ERN pattern.
Worry symptoms had clear effects in both tasks.
Flankers: only Worry dERN > Control.
PL: Anxiety, OC typical, and Worry dERN > Control.

Conclusion
The results highlight the role of worry in performance monitoring.
The findings challenge the idea that OC symptoms per se underlie enhanced ERNs in flanker tasks.
First evidence of enhanced ERN for high OC symptoms in a PL task.

Figure 1. Flankers task: ERP amplitudes of correct and error trials, and dERN by group at Cz, with headmaps depicting the topography at maximal negativity.

Figure 2. PL task: ERP amplitudes of optimal and suboptimal trials during testing phase, and dERN by group at Cz, with headmaps depicting the topography at maximal negativity.

Figure 3. Flankers task: Bar graph of mean dERN by group.

Figure 4. PL task: Bar graph of mean dERN by group.

Participants

<table>
<thead>
<tr>
<th>Anxiety (23)</th>
<th>Worry (21)</th>
<th>OC Specific (17)</th>
<th>OC Typical (36)</th>
<th>Control (29)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Low</td>
<td>High</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>TAQ</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>PSWQ</td>
<td>Low</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
</tr>
</tbody>
</table>

Electrophysiological Recording and Processing
Tough peak measure: most negative value in from -120 msec following the response, and preceding positive peak within 100 msec.
Difference wave forms (dERN): Suboptimal-Optimal, Error-Correct.

References

Acknowledgements: This work was supported in part by a National Science Foundation Graduate Research Fellowship. Research conducted at University of Arizona with support from Worth Publishing.

Contact: Laura Zambrano-Vazquez at lzambran@email.arizona.edu