



# THE IMPACT OF OBSESSIONS, COMPULSIONS, WORRY, AND ANXIETY ON THE FEEDBACK-RELATED NEGATIVITY



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## Background

- Some research shows the FRN is increased among those with OCD.
- Recent work shows an enhanced ERN in subjects with high levels of worry relative to healthy controls.
- The purpose is to confirm an enhanced FRN in subjects with high OC symptomatology, and also examine whether the correlated features of worry and anxiety may be responsible for an increased FRN.
- Hypothesis: Based on the results of Zambrano-Vazquez and Allen (2012), we expect high levels of OC and worry symptoms to be related to a larger FRN.

## Method

### Participants

- 132 students (84 females) from introductory psychology participated
- Screened through survey and checked for score consistency. Inclusion criteria for groups is indicated in table below:

	OCI-R	TAI	PSWQ
OC Typical (38)	Above clinical cutoff	Above median	Above median
OC Specific (17)	Above clinical cutoff	Below median	Below median
Worry (21)	Below clinical cutoff	Below clinical cutoff	Above clinical cutoff
Anxiety (23)	Below clinical cutoff	Above clinical cutoff	Below clinical cutoff
Control (29)	Below median	Below median	Below median

### Electrophysiological Recording and Processing

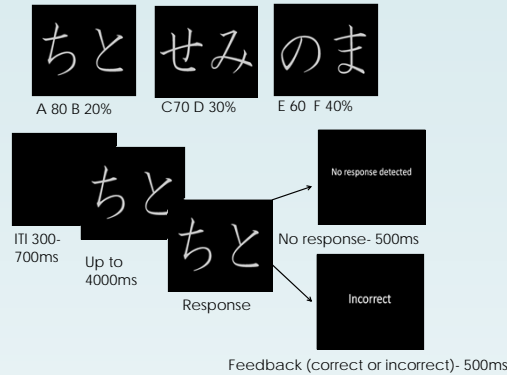
- The trough peak measure: most negative value in the window 190-350 msec following the feedback, and the preceding positive peak within a 100 msec window.

### References

- Aarts, K., & Pourtois, G. (2012). Anxiety disrupts the evaluative component of performance monitoring: An ERP study. *Neuropsychologia*
- Gehring, W.J., Himle, J., & Nisenson, L.G. (2000). Action-monitoring in obsessive-compulsive disorder. *Psych Science*
- Grundler, T.O.J., Cavanagh, J.F., Figueroa, C.M., Frank, M.J., & Allen, J.J.B. (2009). Task-related dissociation in ERN amplitude as a function of obsessive-compulsive symptoms. *Neuropsychologia*
- Luu, P., Collins, P., & Tucker, D.M. (2000). Mood, personality, and self-monitoring: Negative affect and emotionality in relation to frontal lobe mechanisms of error monitoring. *Journal of Experimental Psychology*
- Moser, J.S., Moran, T., & Jendrusina, A. (2011). Parsing relationships between anxiety and action monitoring brain potentials in female undergraduates. *Psychophysiology*
- Mueller, E.M., Nguyen, J., Ray, W.J., & Borkovec, T.D. (2010). Future-oriented decision making in Generalized Anxiety Disorder is evident across different versions of the Iowa gambling task. *J. Behav. Ther. & Exp. Psychol.*
- Zambrano-Vazquez, L. & Allen, J.B.B. (2012). The role of obsessive-compulsive, worry, and anxiety symptoms in performance monitoring. SPR poster.

## Method (Cont'd)

- Probabilistic Learning Task



## Discussion

### FRN relation to ERN

- Pattern of results mostly matched Zambrano-Vazquez & Allen (2012)
- Groups with worry → increased sensitivity to negative feedback
- Compared to controls, experimental groups showed increased sensitivity to all FB
- Any anxious trait affects sensitivity to feedback
- Internal monitoring (past work) appears to show worry has a higher influence on internal processing

### Conclusion

- Supports notion that FRN and ERN measure a related performance/error monitoring system
- Suggests that worry may be driving OCD effects in the FRN literature

## Results

Figure 1. PL task FRNs by group at FCz (negative and positive feedback)

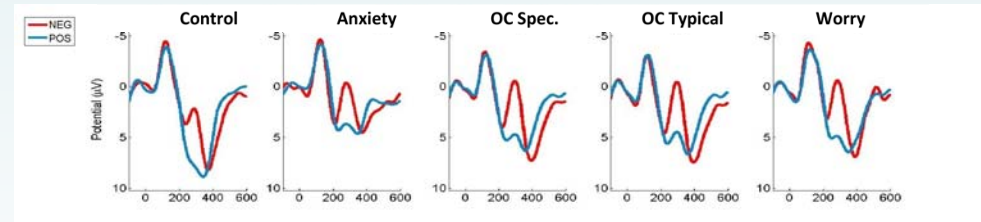
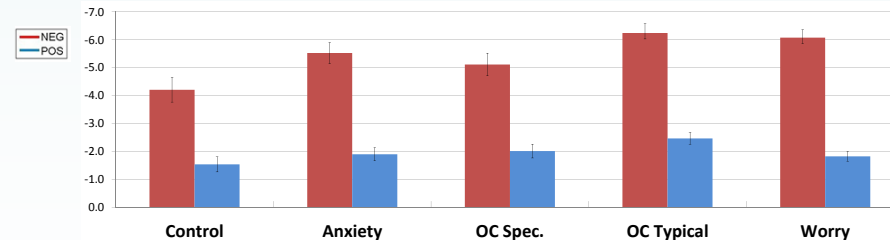


Figure 2. PL task bar graphs at peaks (negative and positive feedback)



- Condition effect  $F = 319.57, p < .001$
- Group effect  $F = 8.6, p < .001$
- Site effect  $F = 2.91, p < .001$
- Condition \* Site interaction,  $F = 2.91, p = .02$  (larger difference at FCZ and FZ than other frontocentral sites)
- OC typical most negative to all feedback (pos and neg), except for worry
- All groups more negative than controls

Handouts available at: [www.psychofizz.org](http://www.psychofizz.org)  
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