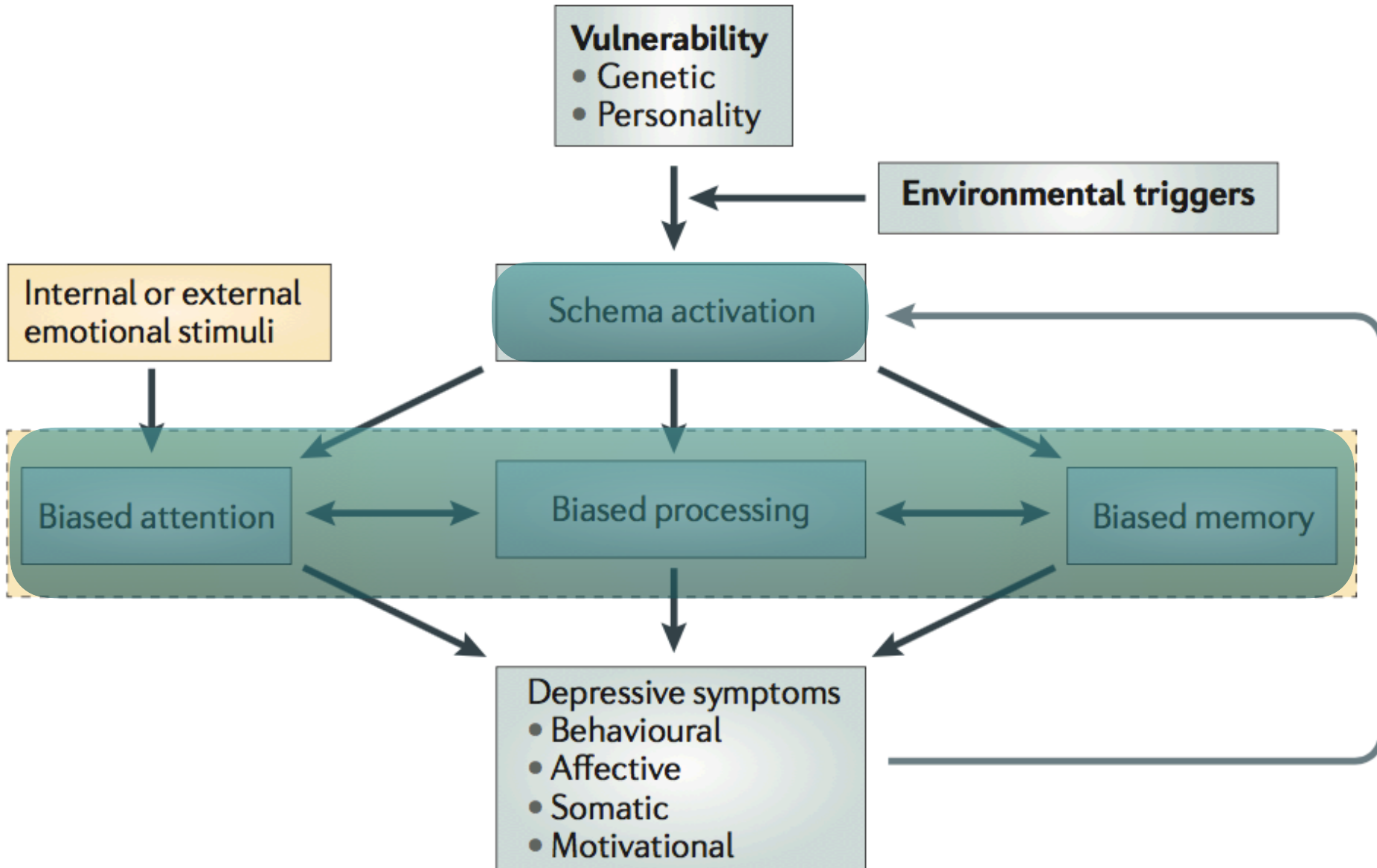


# Attentional Engagement and Self-Referent Processing in Depressed Adults

Justin Dainer-Best, Logan Trujillo, David Schnyer, & Christopher Beevers

ADAA, 7 April 2017

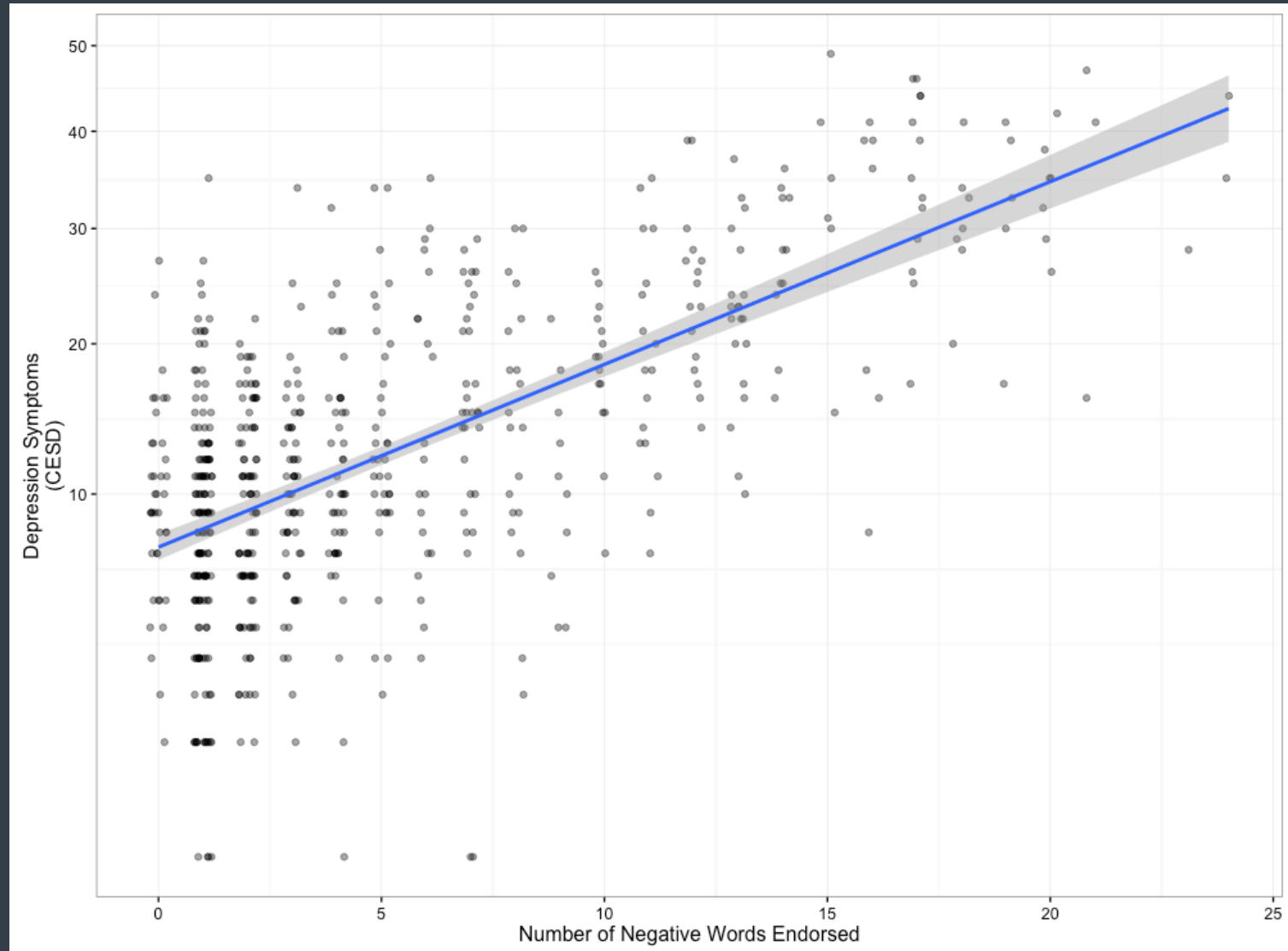
Session 303R



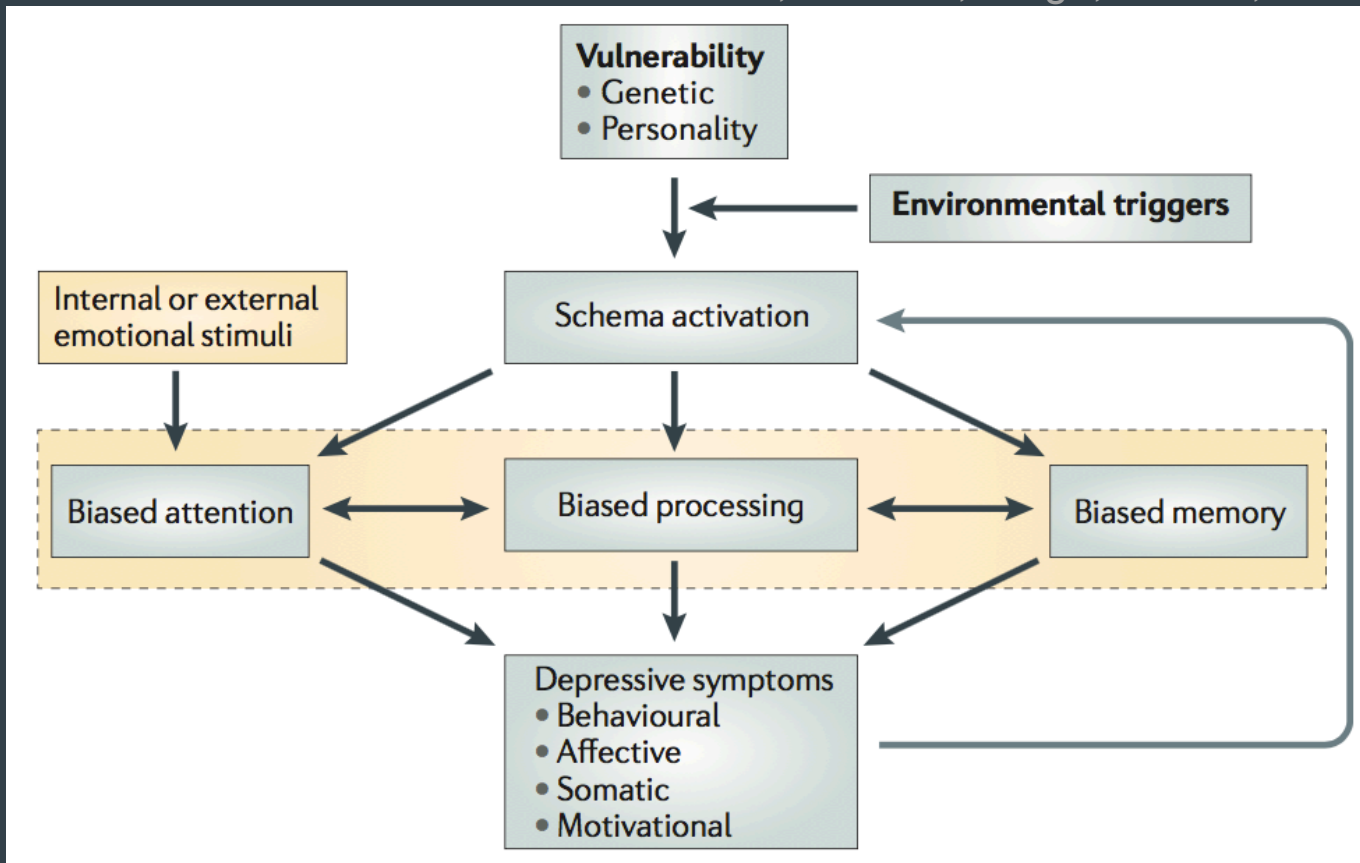
# SRET

- Measuring self-description & positive/negative self-evaluation
- Description as accessing schema
- Strong relationship with depression

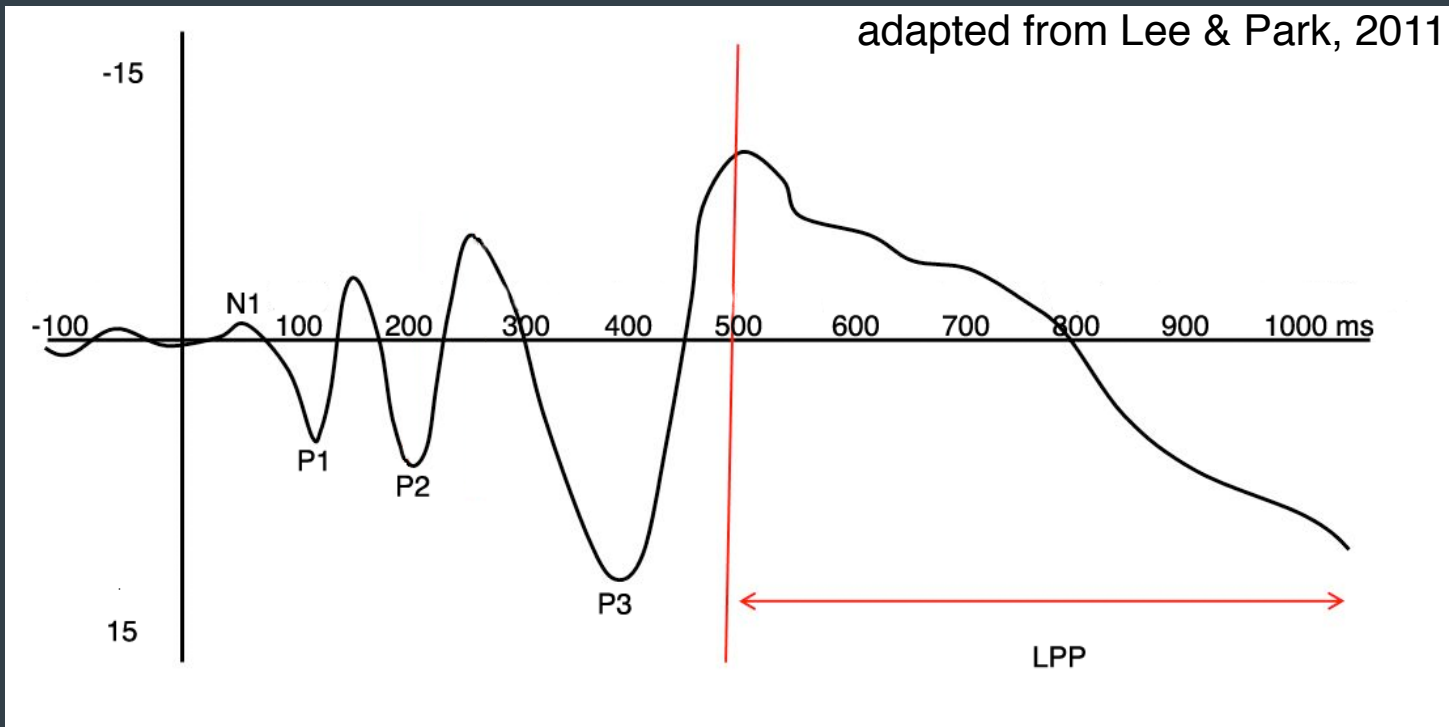
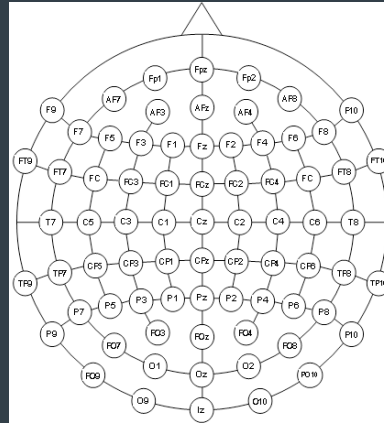
# Negative word endorsement predicts depression symptoms



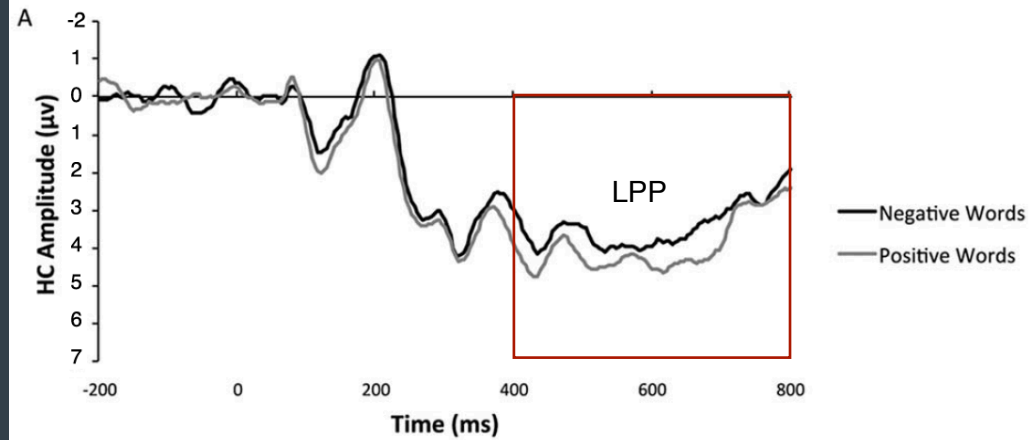
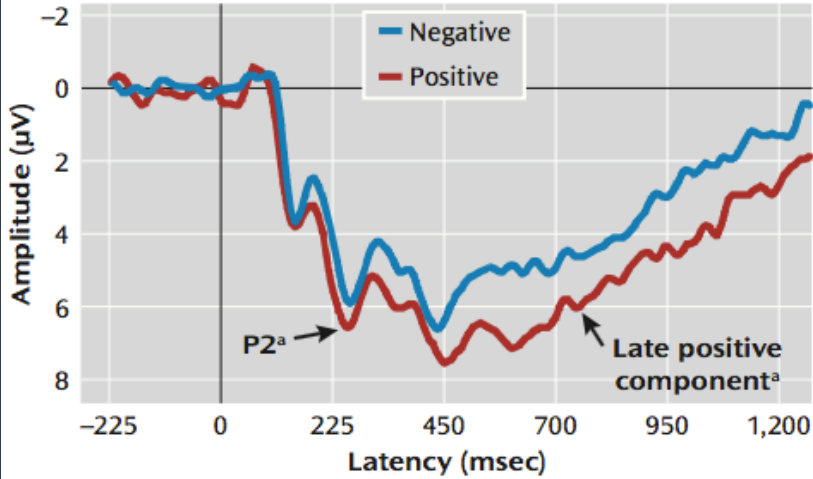
Disner, Beevers, Haigh, & Beck, 2011



This model is *descriptive* of clinical symptoms  
— how can we get at the mechanisms?



A) Comparison Group (N=17)



# ... therefore, the current study

- Need to identify specific brain patterns connected to biases in self-reference
- Replication + expansion
- Adult participants healthy or diagnosed as depressed
- Whole-scalp analytic techniques
- Question of *time course*
- Mechanisms to target for intervention

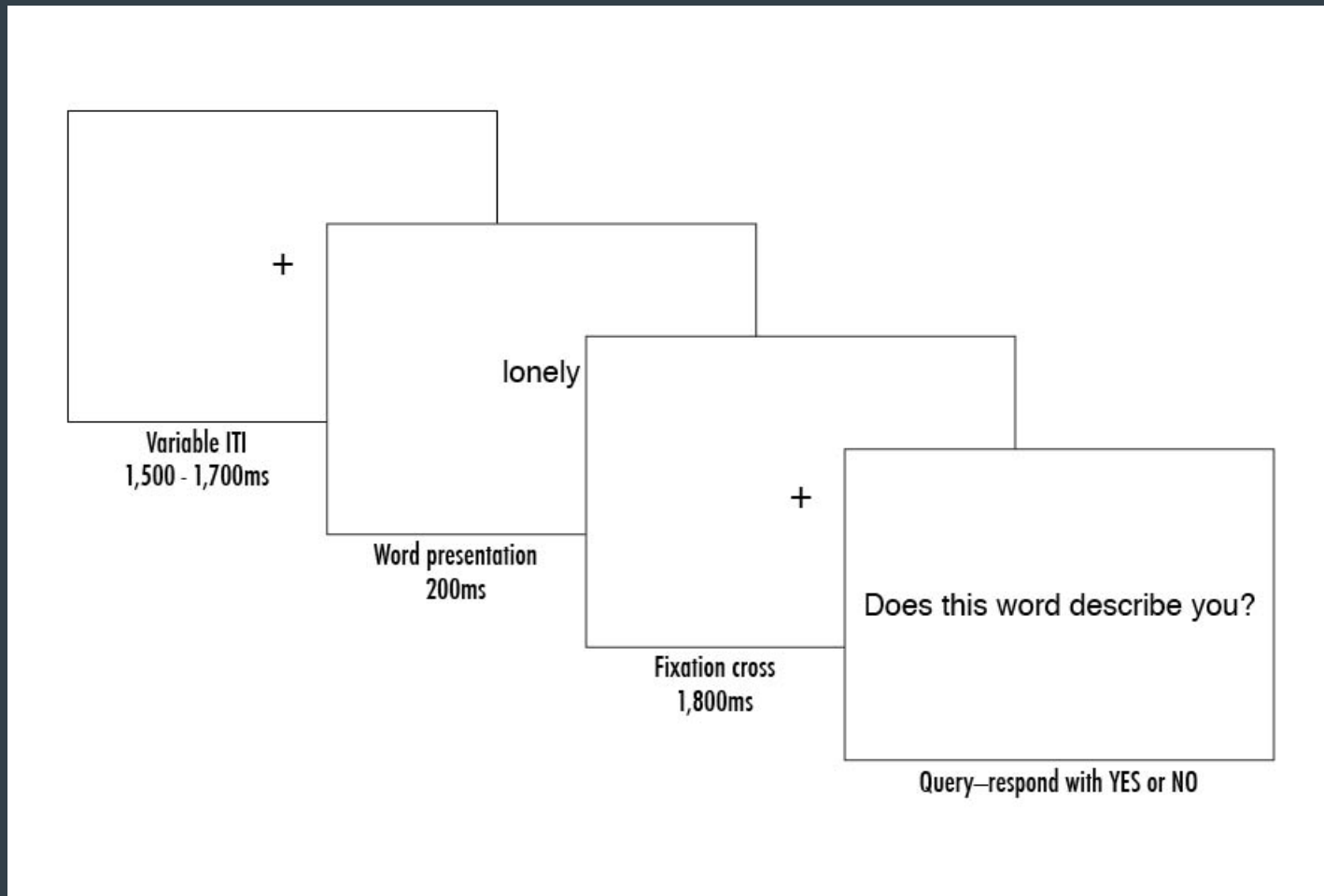


# METHODS & SAMPLE

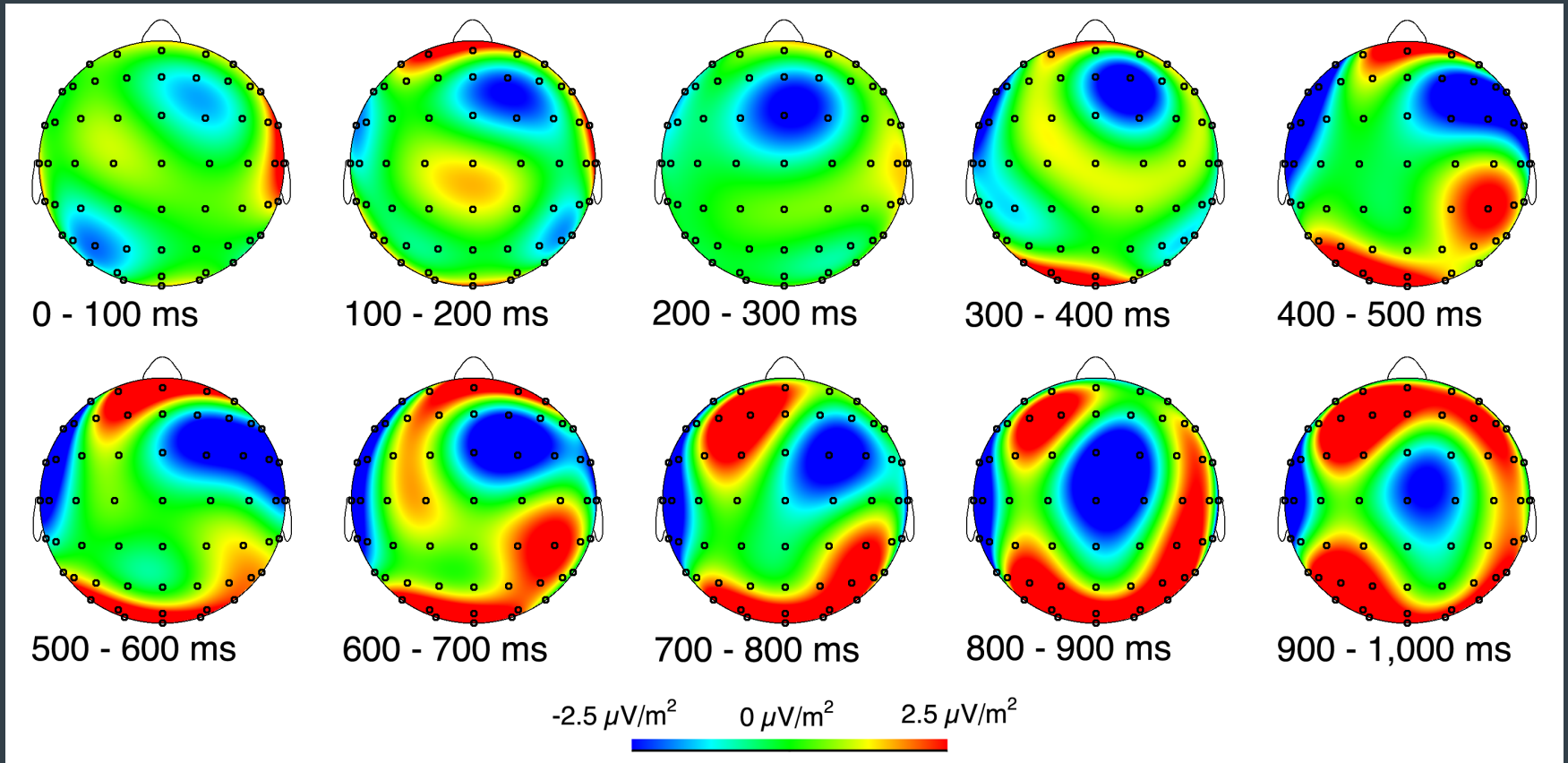
# Participants

	HC (N = 23)	MDD (N = 21)
Age, mean (SD)	25.3 (7.9)	24.6 (6.7)
Female	15 (65%)	16 (76%)
White	13 (57%)	10 (48%)
Hispanic	6 (26%)	10 (48%)
Psychiatric Medication		
None	22	15
Current medication usage	1	6
Current SSRI, for > 10 weeks	1	4
Other antidepressant	0	2
Anti-anxiety medication	0	1
CESD, mean (SD)	4.9 (5.2)	34.7 (7.93)
MASQ, Anxious Arousal subscale	11.3 (2.0)	19.6 (6.1)
MASQ, General Distress subscale	13.9 (4.2)	32.3 (8.3)
MASQ, Anhedonic Depression subscale	24.2 (6.4)	40.5 (5.6)

# SRET Task for ERP collection



# RESULTS



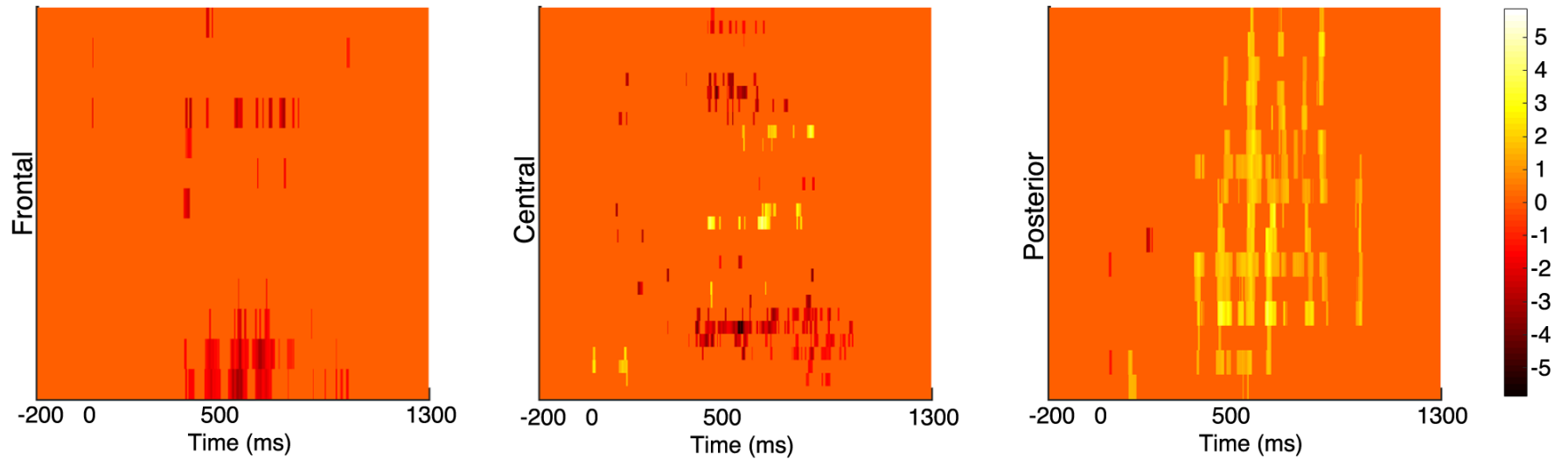
negative – positive,  
HC – MDD

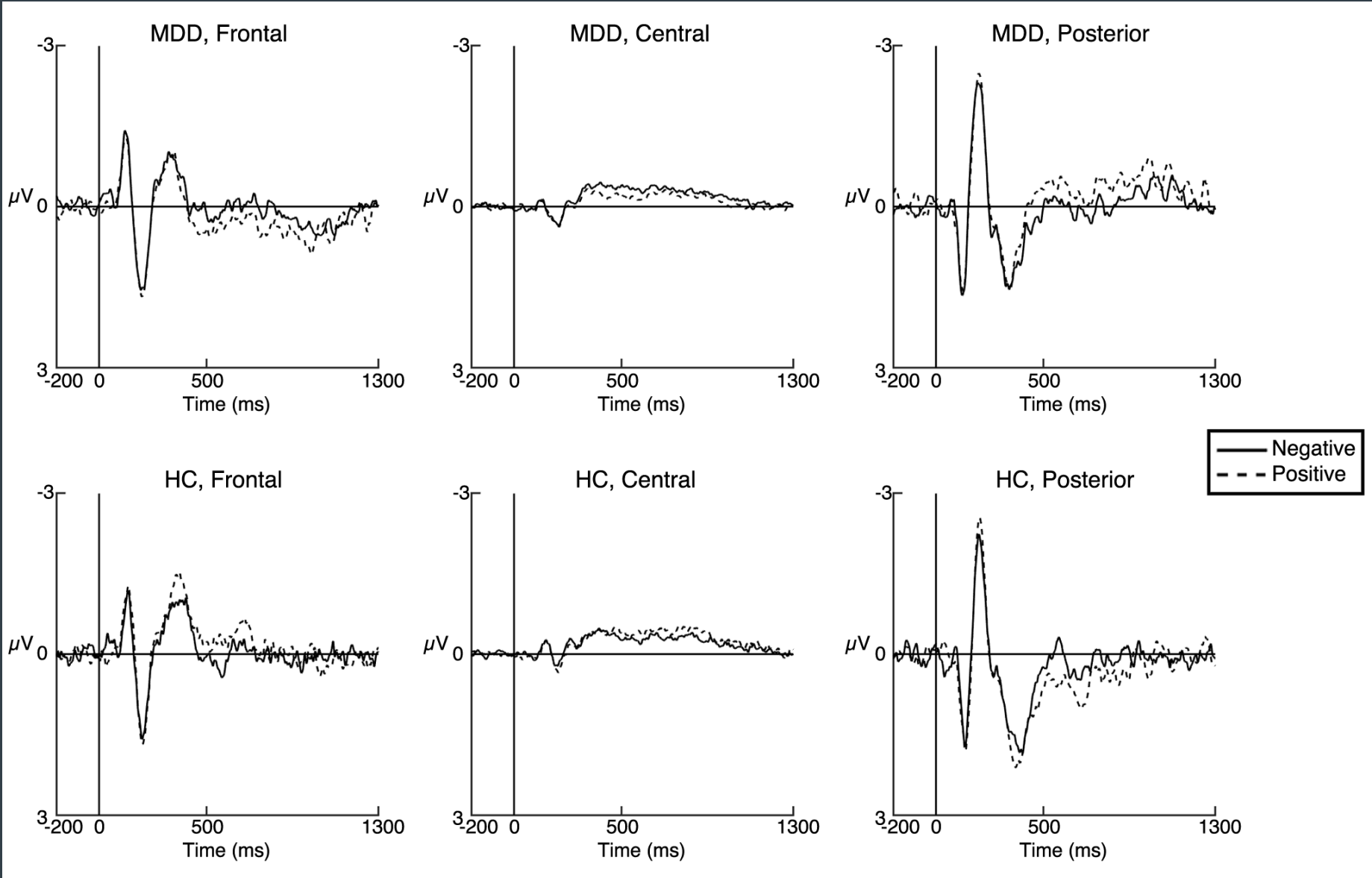
Whole scalp topographies.

Red shading indicates where the HC group showed a greater difference between negative and positive adjectives in a given spatiotemporal area; blue shading indicates where the MDD group showed a greater difference.

# Permutations tests

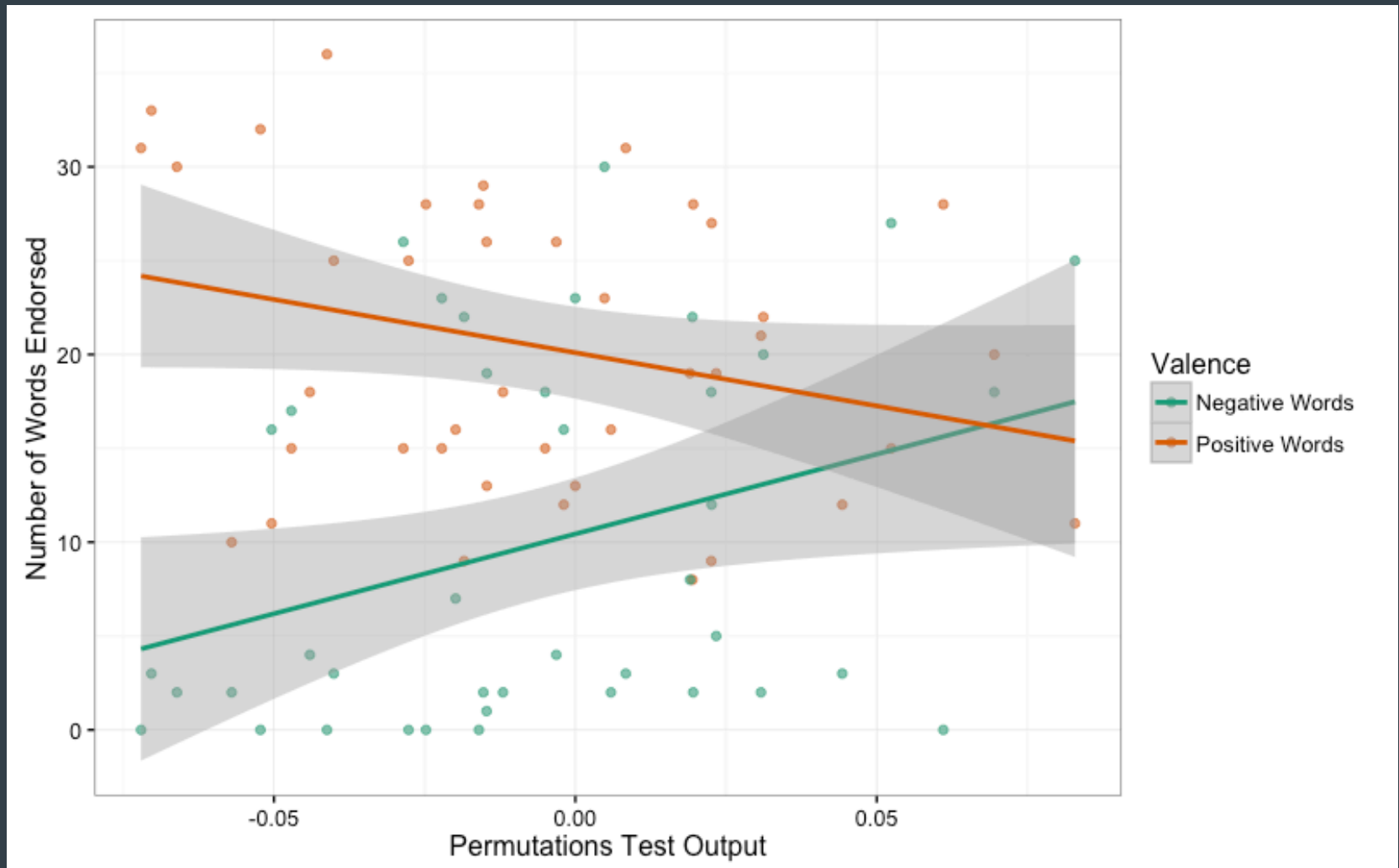
- Whole-scalp approach
- Performed on difference scores (negative – positive)
- Resampling methodology using independent significance thresholds per data point
- 20,000 random between-subject permutations of data across conditions under the null hypothesis
- Used to determine significant temporospatial clusters
- Holm-Bonferroni step-down correction







# Behavioral Correlations with the ERP Outcome



# DISCUSSION

- Evidence of increased LPP to negative words in the MDD group
  - ▶ Extended elaboration
  - ▶ Importantly, little early activation in either group – differences appear to be in processing

- Strong correlation between ERPs and behavior
- Evidence of mechanism: cognitive evaluation of negative stimuli results in differential behavior

# Limitations

- Cannot break the trials down by self-referent *only*
- Sample size is not huge

# Future Directions

- Identifying targets for a cognitive training
- Longitudinal study comparing behavior and neural correlations
- Exploring the time-course of biased self-referent processing in MDD
  - Is SR a symptom or maintaining factor?

# Conclusions

- Negative adjectives capture the attention of MDD participants (but not HC)
- This is a mechanism, linking ERP to behavior

# Disclosures & Acknowledgements

- Disclosures: None
- This work was supported by awards from the National Institute on Drug Abuse (4R01-DA03245705) and the National Institute of Mental Health (1R56-MH10865001A1) to Dr. Beevers.
- This research was conducted in the Mood Disorders Laboratory, at UT-Austin.
- Contact Justin with questions: [dainerbest@utexas.edu](mailto:dainerbest@utexas.edu)

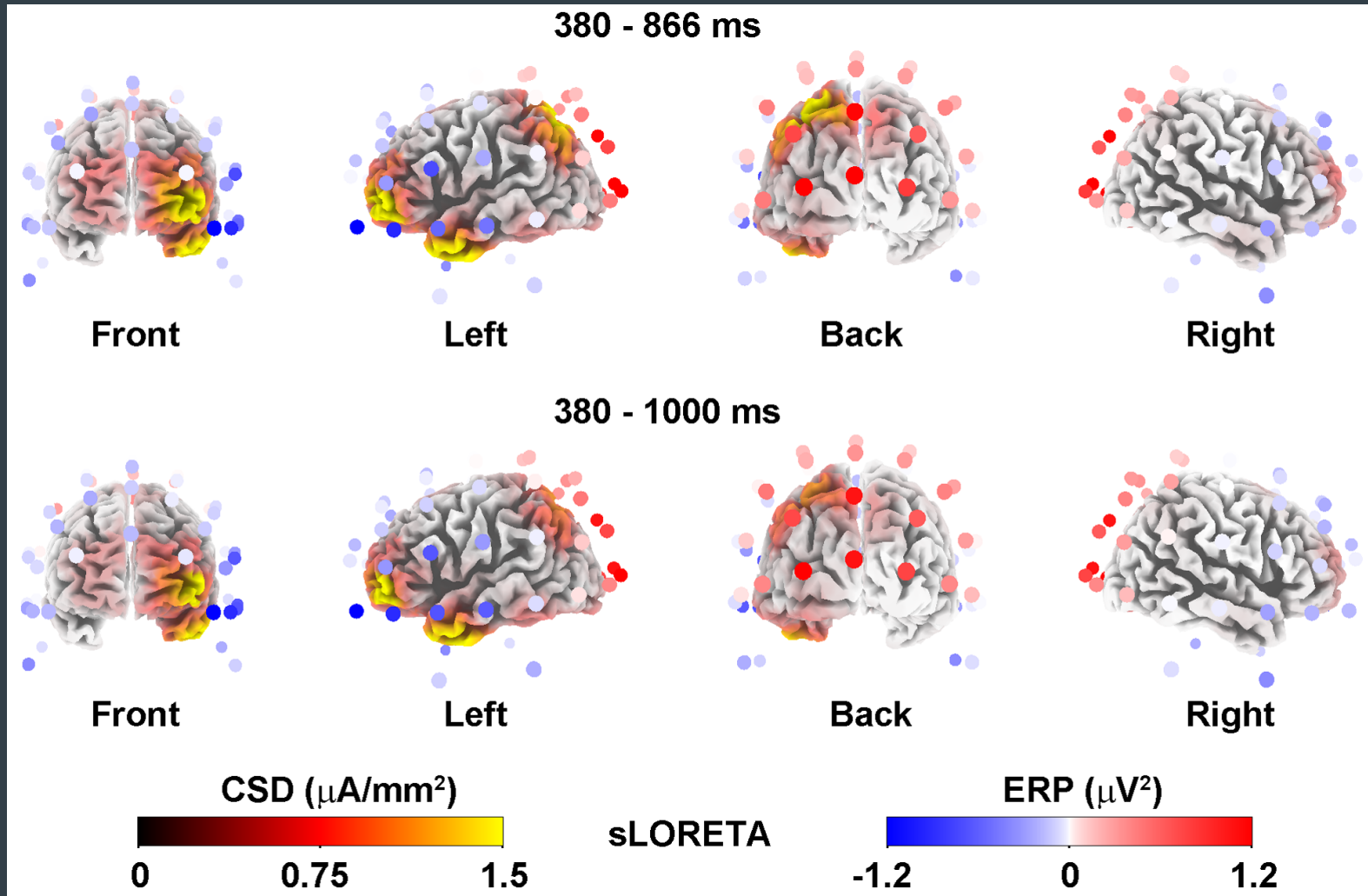




# TEXAS

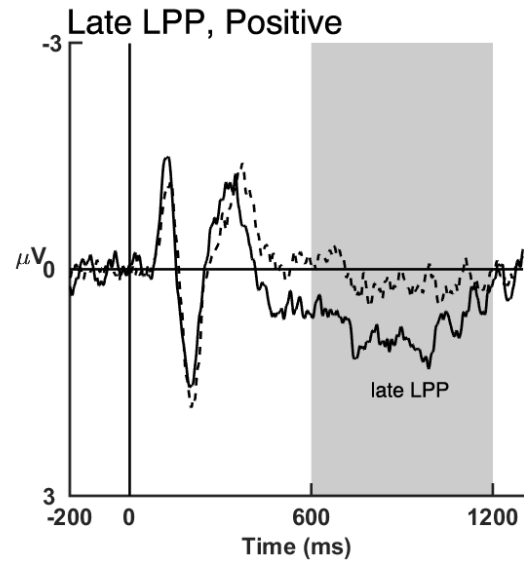
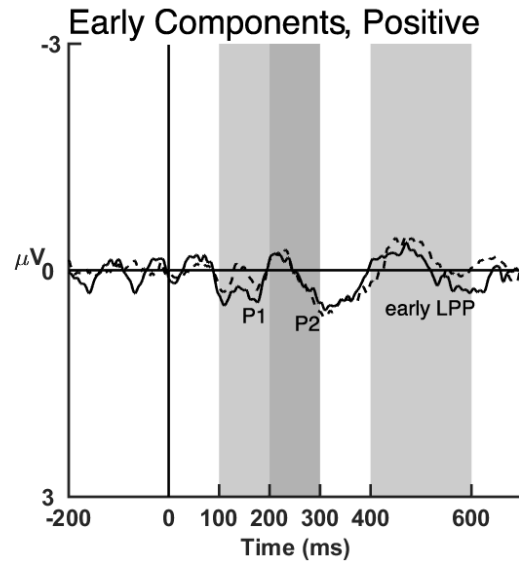
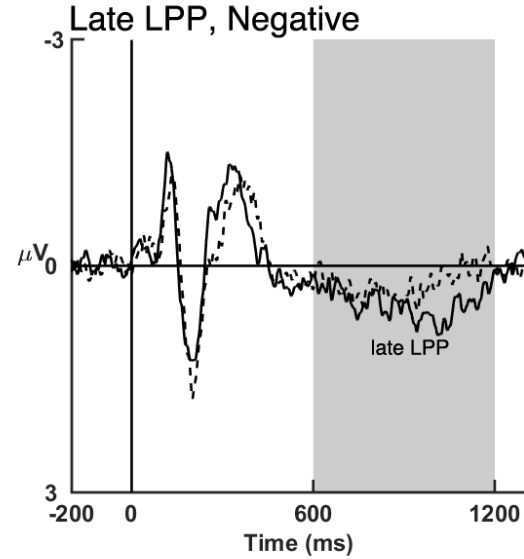
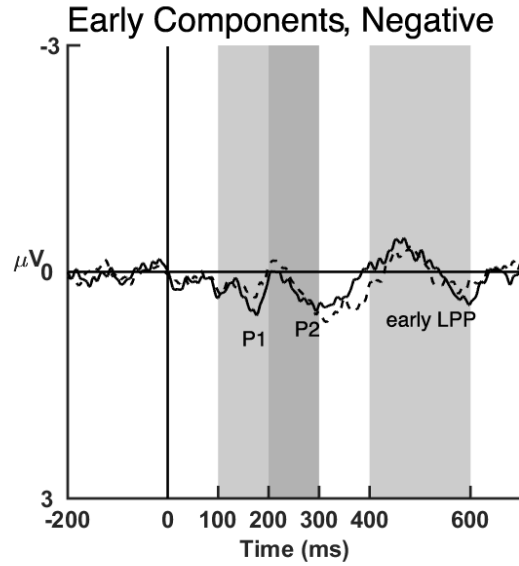
The University of Texas at Austin

WHAT STARTS HERE CHANGES THE WORLD



sLORETA-based CSD analysis of the grand-averaged between-group ERP difference wave averaged from 380 – 866 ms (top row) and 380 – 1000 ms (bottom row). Front/back and left/right visual perspectives are labeled. Colors on the cortical maps indicate the magnitude of the estimated current source density of the difference wave at the displayed cortical locations; dark colors indicate smaller magnitude, light colors indicate larger magnitude. Circular disks surrounding the cortical map represent the relative positions of the scalp electrodes. Disk colors indicate the magnitude and polarity of the ERP difference wave (red positive, blue negative).

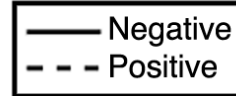
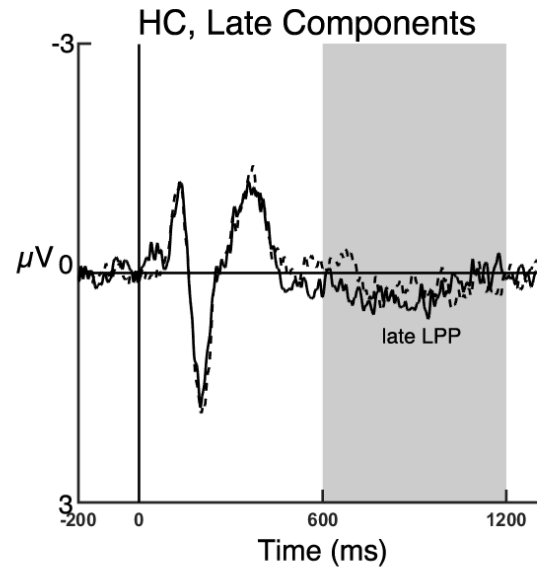
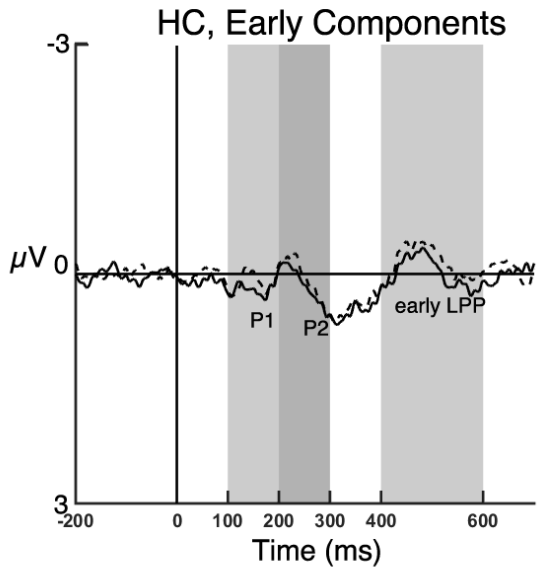
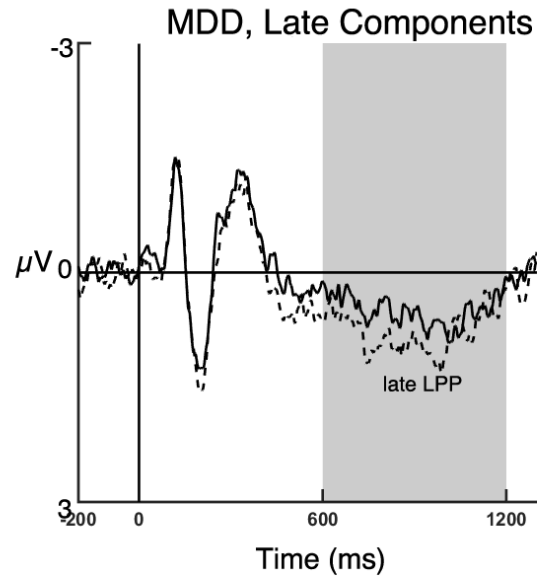
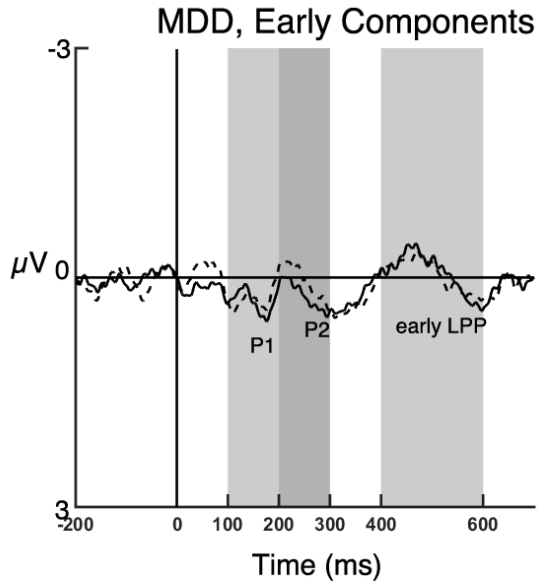
averages  
across Pz,  
POz, P1, P2,  
PO3, and PO4



— MDD  
- - - HC

averages  
across Fz, FCz,  
and Cz

averages  
across Pz,  
POz, P1, P2,  
PO3, and PO4



averages  
across Fz, FCz,  
and Cz

	HC		MDD	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Positive Processing Bias	0.92	0.091	0.45	0.16
Negative Processing Bias	0.084	0.091	0.55	0.16
Positive Words Endorsed	25.30	6.27	14.84	5.23
Negative Words Endorsed	2.09	2.19	18.89	6.99
Positive Recall	9.78	3.81	7.79	2.86
Negative Recall	6.00	3.19	8.63	3.62
Self-Referential Positive Recall	6.74	3.26	3.32	1.92
Self-Referential Negative Recall	0.78	1.00	4.37	2.61
Positive RT	409.5	183	506.4	274
Negative RT	400.9	169	497.7	272