

The Effects of Valence on Memory: An ERP Study

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Broaden-and-Build/Attention Narrowing Hypothesis



Memory

- Valence may influence the creation of false memories
 - Positive memories = more broad features
 - Negative memories = more central details

Event-Related Potential

- Measures electrical potentials of populations of neurons.
 - timing benefits (ms)



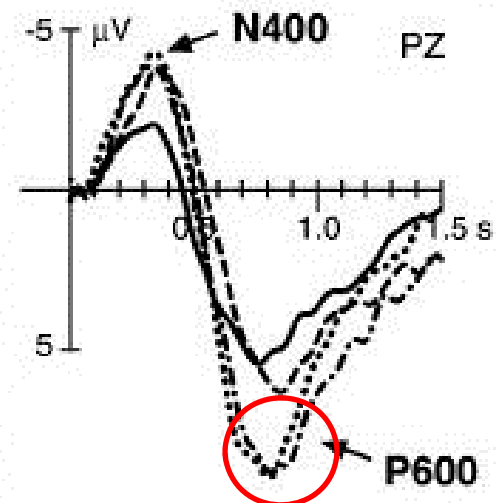
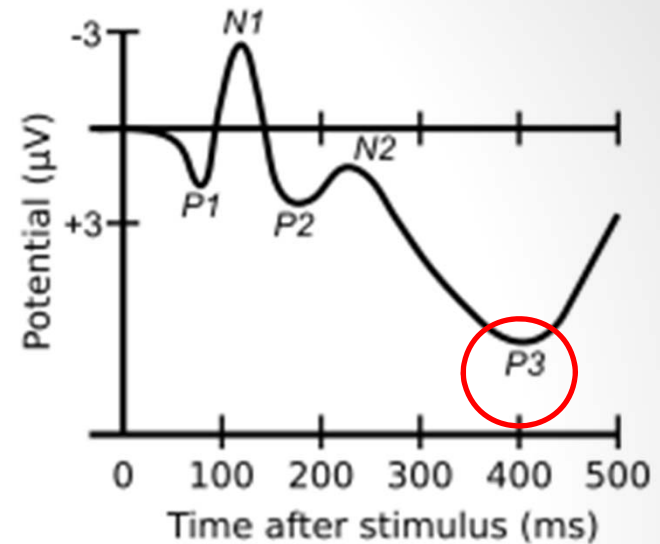
ERP Components

P300

- Early attentional processes

P600

- enhanced processing of emotion
- later cognitive processing

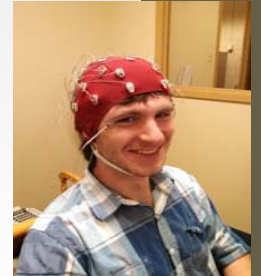


Research Questions:

1. Are there more false memories for positive or negative stimuli?
2. Is there an earlier increase in ERP amplitudes for positive stimuli or negative stimuli?
3. Do anxiety and life events impact memory?

METHOD

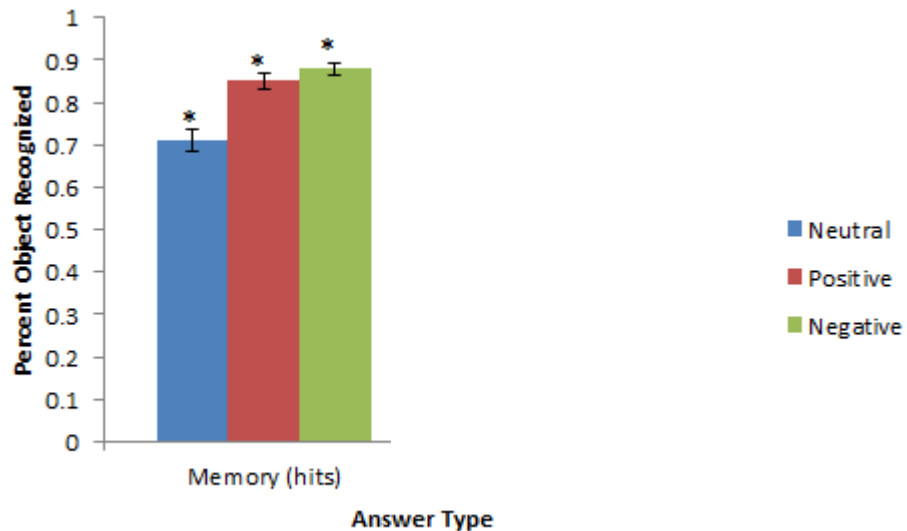
Study



Test

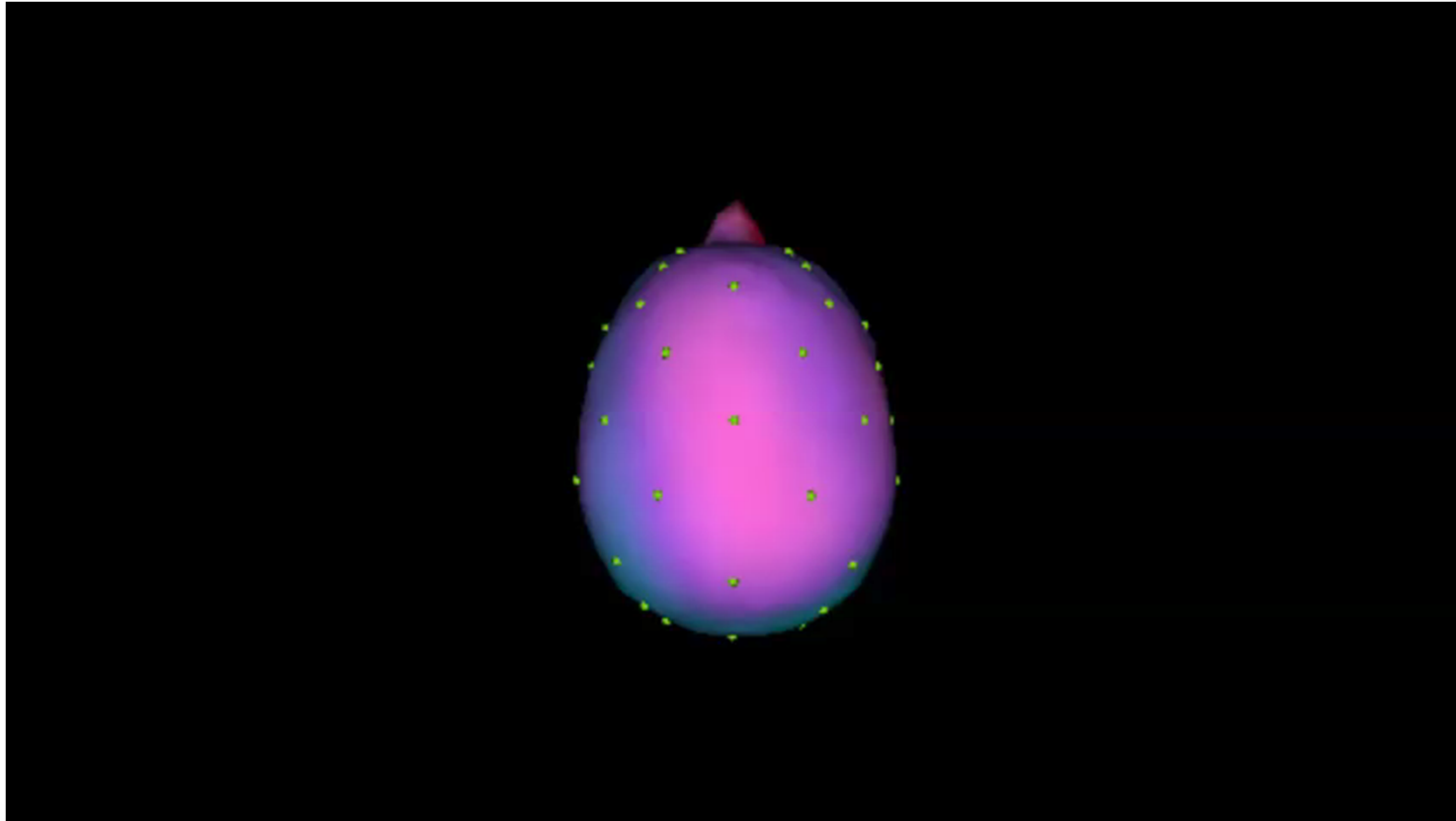


Are there more false memories for positive or negative stimuli?

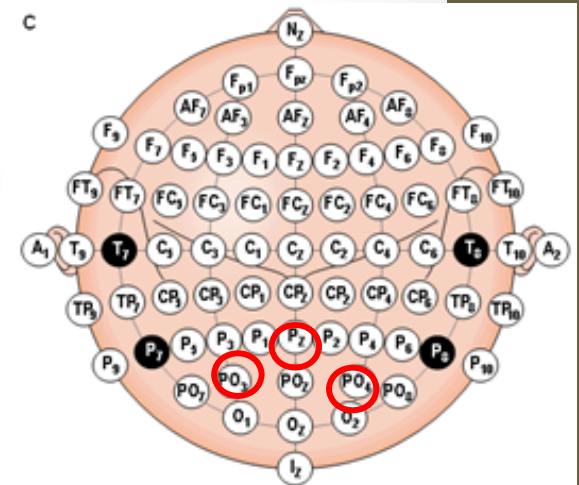
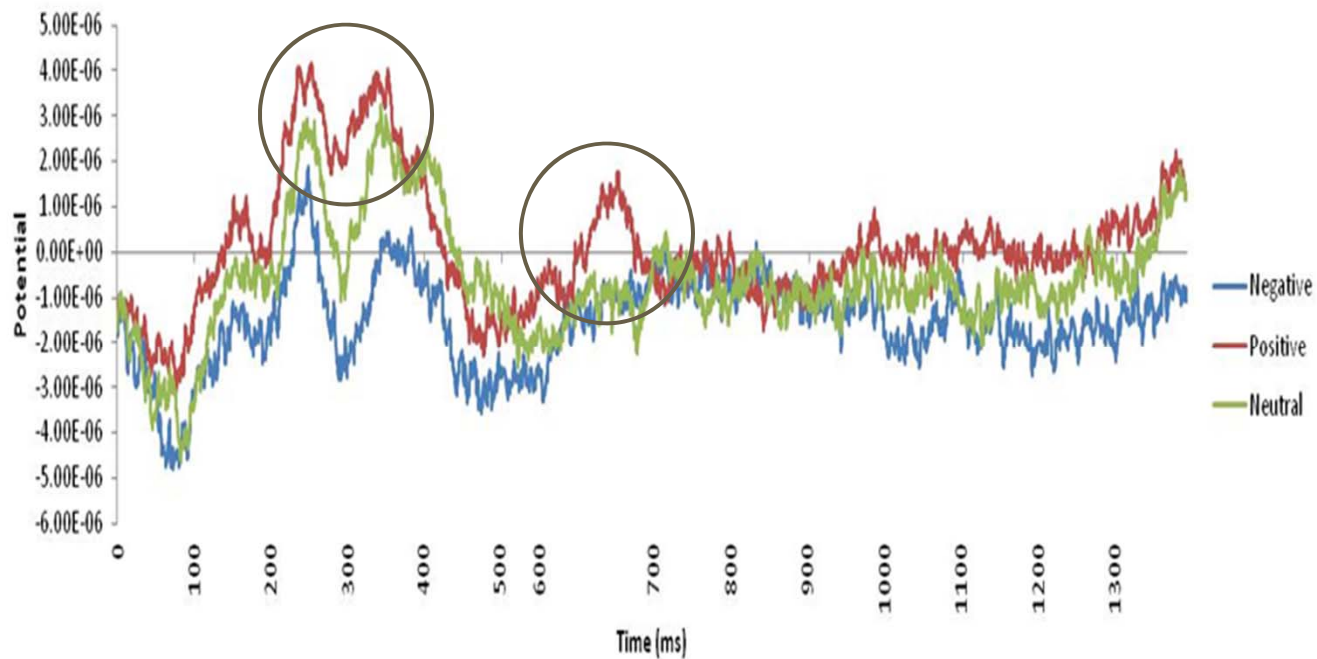


- False memories were found for positive stimuli compared to negative and neutral
 - Broadened Attention

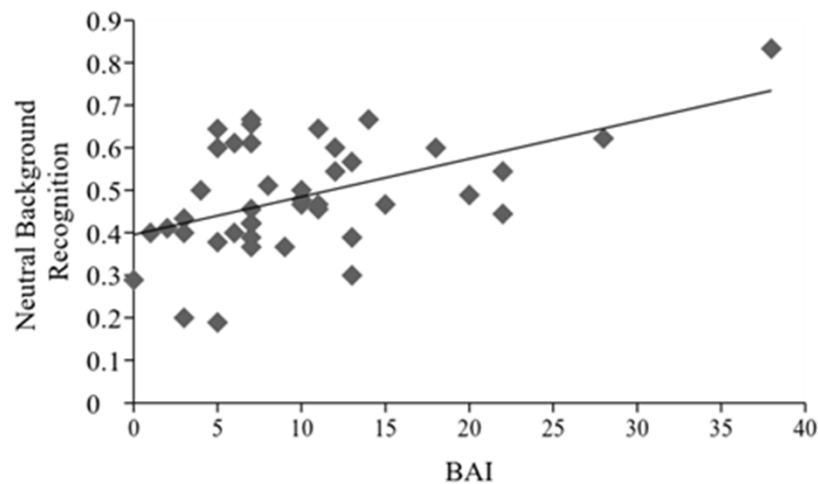
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Does anxiety impact memory?



Beck Anxiety Inventory

- Higher anxiety was associated with better memory for neutral backgrounds
- Hypervigilance

Do life events impact memory?

- more life events is associated with more negative items recalled, $r(40) = .29, p = .055$.
 - priming

Life Events Checklist

<i>Event</i>	<i>Happened to me</i>	<i>Witnessed it</i>	<i>Learned about it</i>	<i>Not Sure</i>	<i>Doesn't apply</i>
1. Natural disaster (for example, flood, hurricane, tornado, earthquake)					
2. Fire or explosion					
3. Transportation accident (for example, car accident, boat accident, train wreck, plane crash)					
4. Serious accident at work, home, or during recreational activity					
5. Exposure to toxic substance (for example, dangerous chemicals, radiation)					
6. Physical assault (for example, being attacked, hit, slapped, kicked, beaten up)					
7. Assault with a weapon (for example, being shot, stabbed, threatened with a knife, gun, bomb)					

Conclusion

- More false memories for positive stimuli than negative, which may be due to broadened attention.
- Positive stimuli elicit an earlier increase in ERP amplitude than negative stimuli, which may be due to maximizing pleasure.
- Anxiety positively correlated with neutral backgrounds, which may be due to hypervigilance.
- Negative life events positively correlated with negative items recalled, which may be due to priming.

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Questions?