



Emotions ↑ remembering: An Investigation into Emotions' Role in Episodic Memory

Shengxi (Angela) Miao, BA, xidetianshi@gmail.com

Nada Alaifan, MA

Peter Graf, PhD

Department of Psychology

University of British Columbia

Reasons for the Study



-People tend to remember more vividly emotional events from their daily lives (Mather, 2015). Evidence comes mainly from the research on autobiographical memory. The results from episodic memory are unclear.

-In some episodic memory studies, emotional events are remembered better than emotionally neutral events (Davidson & Vanegas, 2015; Bradley, Greenwald, Petry & Lang, 1992); others suggest that remembering is equivalent for emotional and nonemotional events (Sharot & Yonelinas, 2008).

-Past studies also show mixed results on the sex difference on emotional memory, where some show females outperform males in emotionally neutral memory tests (Gomez, Guntan & Danuser, 2020), while others indicate females remember more emotional events than males (Bloise & Johnson, 2007).

Specific Research Questions



-Given the mixed nature of past studies, the objectives of the present study are:

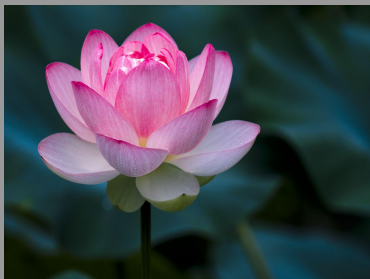
- 1) To demonstrate under which condition the enhanced emotional memory occur.
- 2) To understand what role does sex play between these two variables. Thus, the present study intends to see ***if there is a sex difference on episodic memory recollection.***

Method & Procedure

Participant: 188 Undergraduate students at UBC (96 females) participated for partial course credit

Encoding Phase (~10min):

There were 3 kinds of pictures: Positive, Negative & Neutral, all from the NAPS norms. 20 pictures from each valence bin were shown, arranged in random order.



How does it make you feel?



Very Unpleasant

Very Pleasant

Intermission Phase (~15min):

- NEO Personality Inventory
- TMF Gender Scale (Kachel et al., 2016)
- NAART

Test Phase (~25min):

- Each participant was asked to free recall the pictures they memorized from the encoding phase to the best of their ability in random order
- Participant was asked to provide distinctive details of the respective pictures.

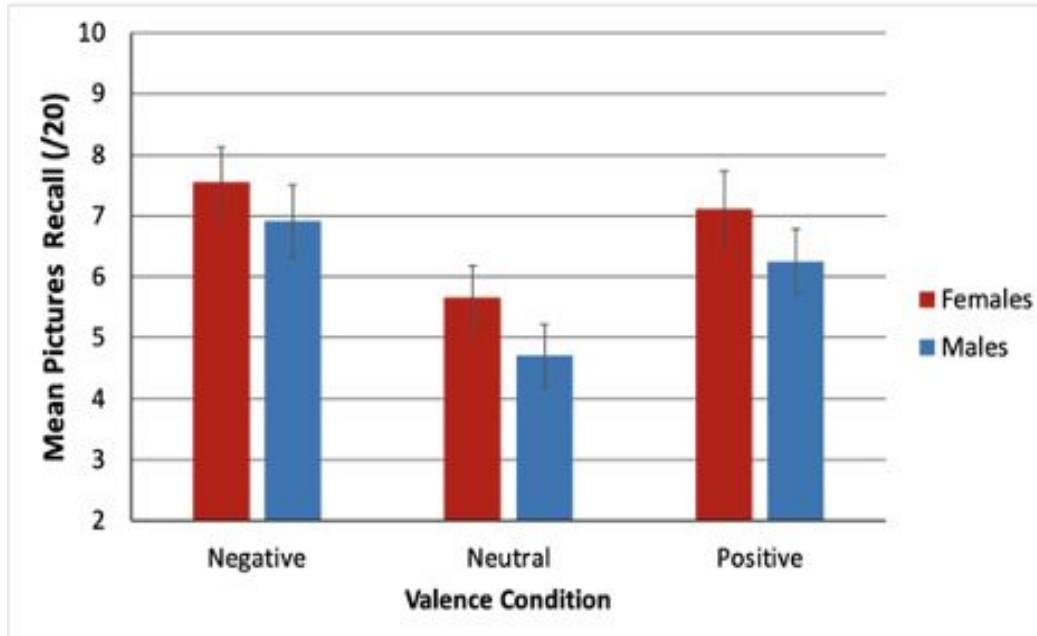
Memory Test Scoring



Free recall test :

- 1) Subjects were required to recall as many previously seen pictures as possible.
- 2) They were asked to provide distinctive details for each respective picture they recall, so that the researcher would be able to distinguish that picture among other ones.
- 3) Each recall test was recorded and transcribed with the corresponding researcher, and 1 score was given to each picture with successful distinguisher.
- 4) The scorings were checked among three researchers, where disagreement was discussed and final consensus was reached.

Recall Test Results: Significant differences due to valence

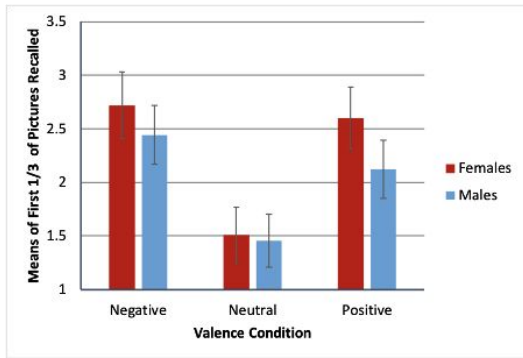


Error bars represent the 95% confidence intervals

-Emotional pictures are recalled significantly more than neutral pictures.

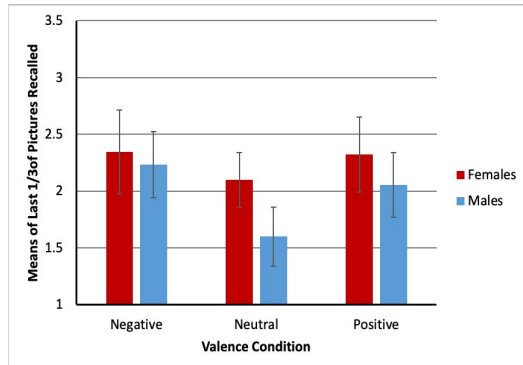
-Significant sex differences emerged for positive and neutral valence condition, but not for negative valence condition.

Recall Test Results: Results seem determined by strategy used for recollection



In the first $\frac{1}{3}$ of recalled pictures:

- Emotional pictures were recalled significantly more
- Significant gender effect emerged only for positive valence condition

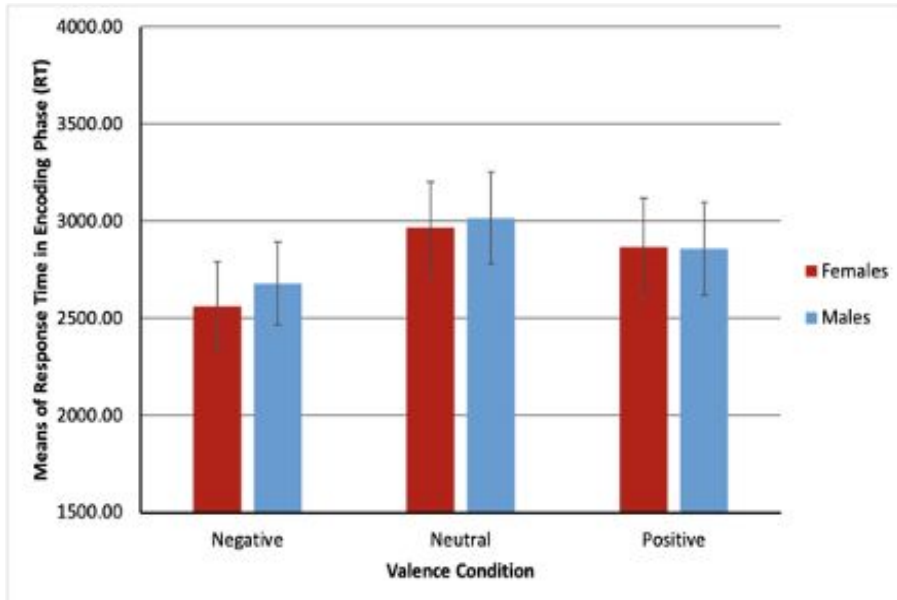


In the last $\frac{1}{3}$ of recalled pictures:

- Emotional pictures were recalled significantly more only for males
- Significant sex difference emerged only for neutral condition

Error bars represent the 95% confidence intervals

Results -Encoding phase: Response Time (RT)

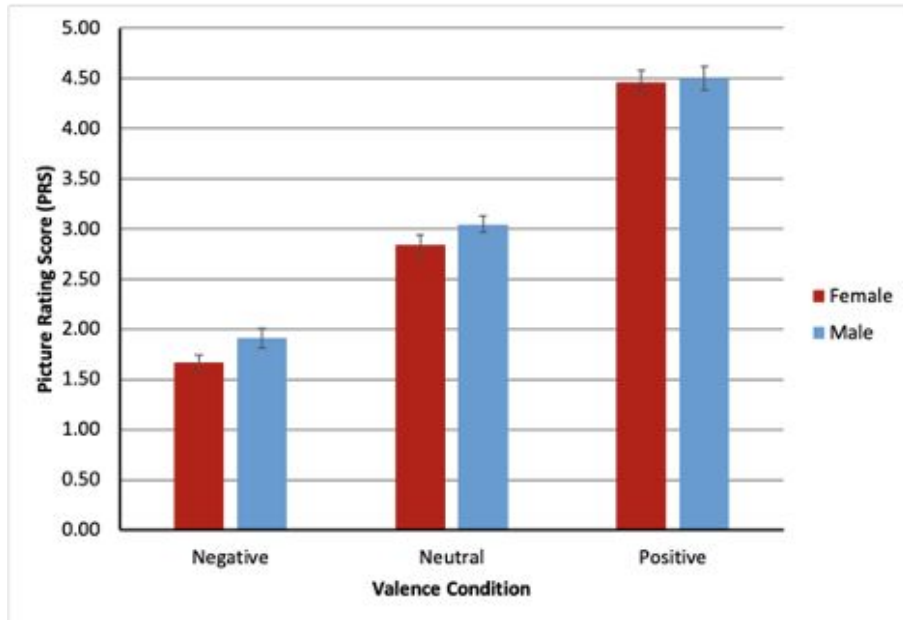


Error bars represent the 95% confidence intervals

-Significant time difference for negative valence condition group

-No significant sex difference on RT for each valence condition

Results -Encoding phase: Picture Rating



Error bars represent the 95% confidence intervals

-Significant difference of rating across all three valence conditions, indicates our valence manipulation worked

-Significant sex differences on picture rating occur for negative and neutral valence condition

Discussion



- Results of the current study is consistent with past study (Bradley, Greenwald, Petry & Lang, 1992) that emotional pictures were remembered more than neutral pictures. Potential reason might be the free recall test used encourages more self-initiated memory process
- Results show a sex difference on the overall pictures recalled and the order of memorized pictures. This suggests a potential sex difference of memory strategies adopted by males vs. females. Female shift their recollection strategy to remember more neutral pictures in the later part of the test, while male's recollection strategy keeps constant. This difference could have a potential link to the ToM by sex
- The implications that the present study may inform other areas of research, or vice versa: relationship between emotional memory and mood disorder, where emotional memory can be potentially involved (depression, bipolar disorder, borderline personality disorder, etc.) and linked to the component of personality construction. Example and rationale see Blaney (1986).