Depression and Information Processing: The Influence of Affective Cues on College Students' Memory Retrieval

Yutong (Tina) Zhu

Faculty Advisors: Drs. Laura Holt and Elizabeth Casserly

Trinity College
HARTFORD CONNECTICUT

Clinical Depression among College Students

- Depression (major depressive disorder or clinical depression) is one of the most prevalent psychiatric problems among college students.
- The American College Health Association – National College Health Assessment (ACHA–NCHA): more than 30 percent of college students reported felt "so depressed that it was difficult to function" within the past 12 months [1].
- Recent data reported a rising prevalence of depression diagnosis among college students, accompanied by an increase in related symptomatology and severity [2].
- There is an additional 7% of the population who present depressive symptoms although does not reach the diagnosis threshold [3], suggesting a larger number of young adults suffering from depression.

The Cognitive Vulnerability models of depression [4]

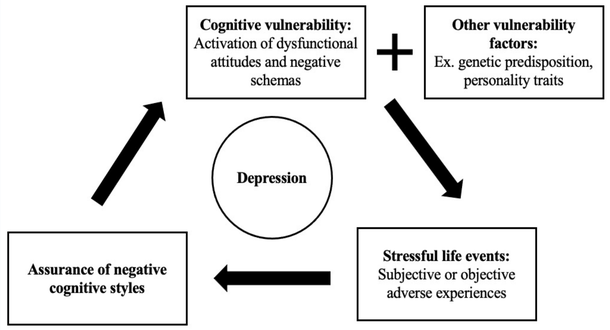


Figure 1. A developmental model of depression based on the CV models of depression

Emotional Faces as Affective Cues

Despite the influence of affective cues on individuals' emotional processing, different cue types suggest nuanced differences in inducing moods while accessing personal affective memories Using emotional faces leads to more consistent findings than affective words when investigating the attentional bias in depression [5]. This may because that event-specific knowledge is stored as image representations [6]. Accordingly, in this research, depressed facial expressions instead of word cues were presented to assist participants to retrieve relevant episodic memories (Figure 2).

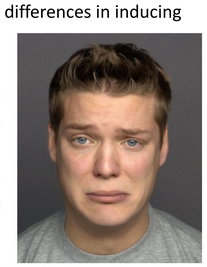
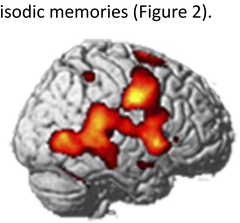


Figure 2. Sample affective image cue (e.g., sadness)



Research Design and Hypotheses

Depression and Cognitive Style Assessments
- Demographic data
- The Center for Epidemiological Studies-Depression (CES-D)
- The Cognitive Style Questionnaire-Short Form (CSQ-SF)

Affective Word Recognition Task 1
- Affective Norms for English Words (ANEW)
- Go/no-go task: 30 old trails + 30 new trails (10 positive + 10 negative + neutral words each)

Affective Valence Cues
- Chicago Face Database Version 2.5
- Ask the participants to recall "a memory of [their] own."

Affective Word Recognition Task 2
- Affective Norms for English Words (ANEW)
- Go/no-go task: 30 old trails + 30 new trails (10 positive + 10 negative + neutral words each)

Hypotheses:

1. Participants would have higher accuracy in recognizing negative valence words than neutral or positive ones in the post-manipulation word recognition task.
2. Participants' level of depression would negatively correlate to their word recognition accuracy.
3. Participants who scored higher on the depression spectrum will be more susceptible to negative affective stimuli, thus showing higher variations in their performances. By contrast, participants who scored lower on the depression spectrum would have more blunt responses to negative affective stimuli, thus having smaller variations in their task performance.

Participants

	Num of Participants (*N* =20)
Gender (Mage = 19, SD = .973)	
Male	9 (45%)
Female	11 (55%)
Race/Ethnicity	
White/Caucasian	15 (75%)
Black or African American	3 (15%)
Asian or Asian American	2 (10%)
Middle Eastern	1 (5%)
Depression History	
Clinical depression	6 (30%)
"Unsure"	1 (5%)
No depression history	13 (65%)
Current Treatment (if applicable)	
Antidepressants	4 (20%)
Psychiatric medication	2 (10%)
Psychotherapy	7 (35%)

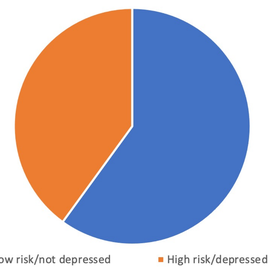


Table 1 & Figure 3. Demographic data and depression status (CES-D score) of the participants

40% of participants (*n* = 8) scored above the CES-D cutoff for clinical depression with current medication and psychotherapy, which may impact the results of the study.

Sample Analysis

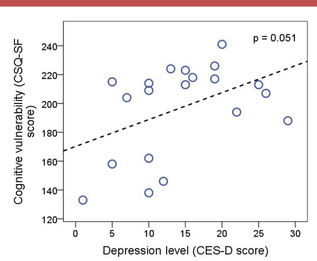


Figure 4. Correlation between depression level and cognitive vulnerability (*p* = .051, *r* = .44)

Correlation analysis found no significant relationship between the participants' depression and cognitive vulnerability (CV) level. Therefore, the assumption that depression and CV reciprocally influence each other to determine the participants' recognition accuracy of affective words is not supported in this study.

Results and Discussion

Revised data analysis and hypotheses:

Analyze participants based on their depression status: Depressed (CES-D score >= 16) vs. non-depressed (CES-D score < 16) group.

1. Participants would have higher accuracy in recognizing negative valence words than neutral or positive ones in the post-manipulation word recognition task.
2. The non-depressed group would exhibit better performance in OVERALL word recognition accuracy.
3. The depressed group would show higher variations in negative word recognition performance.

<u>Finding 1</u>: Word valence had a significant impact on participants' change in word recognition accuracy.

A 2 (depression status) x 3 (word valence) mixed-model ANOVA revealed a significant main effect for word valence on participants' variation in recognition accuracy, F (2,36) = 7.56, p = .01, η_p^2 = .30. Participants showed a significant improvement in negative-word recognition accuracy (M = .55) compared to positive words (M = -1.95) and neutral words (M = -1.10).

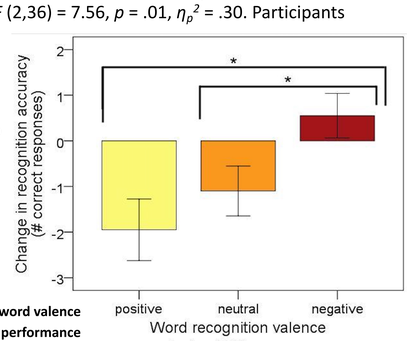


Figure 5. Main effect of word valence on changed performance

Results and Discussion (cont.)

<u>Finding 2</u>: There was no overall difference by level of depression on OVERALL word recognition task accuracy.

The interaction between word valence and depression status did not show a significant impact on participants word recognition accuracy, F (2,36) = 3.40, p = .07, η_p^2 = .16).

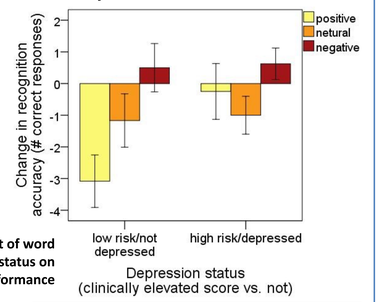


Figure 6. Nonsignificant effect of word valence X depression status on changed performance

<u>Suggestive finding 3</u>:

The negative-valence facial image might interfere with positive word recognition accuracy among non-depressed participants. By contrast, the depressed group's performance in positive-word recognition was less susceptible to the impact of the negative-valence face because they have relatively "blunt" responses to emotions, especially to positive emotions.

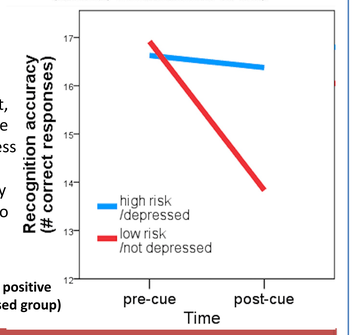


Figure 7. Recognition accuracy for positive words (depressed vs. non-depressed group)

Conclusion

- Participants showed an improved performance in negative-word recognition compared to positive and neutral words.
- Depression status did not have a significant impact on participants' OVERALL word recognition accuracy.
- Instead of showing a larger variation in negative word recognition performance, the non-depressed group might experience an interference/ "Stroop effect" of negative-valence face cues on their positive word recognition accuracy. (future research required)

Acknowledgements

I would like to first thank Professor Laura Holt from the psychology department for supporting me and guiding me during the research process. Her professional knowledge and instructive advice help me push aside distracting information and be clearer about what I was looking at. I appreciate Professors David Reuman and Elizabeth Casserly from the psychology department who helped me analyze and interpret the data. Professor Casserly's insights in statistics also open my understanding of research and data analysis.

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