INTRODUCTION

- Research on working memory has suggested domain-specific components including visual, verbal, spatial, and most recently, affective working memory (e.g., Mikels et al., 2008; 2005). Affective working memory is defined as the ability to hold an emotional experience online and to use that information to guide behavior, and is crucial to everyday interpersonal functioning.
- Affective working memory is thought to be impaired in various disorders including depression, anxiety, and schizophrenia. For example, it is evidence that affective working memory may be related to clinical predictors of depression, such as rumination (e.g., Nolen-Hoeksema, 2000). Affective working memory also appears to be related to pathological signs of schizophrenia such as deficits in pleasantness (e.g., Gogtay & Taitt, 2003).
- The current study utilized a design by Mikels and colleagues to investigate whether affective working memory can be reliably measured over a one week delay.
- In light of previous research and strong theoretical backing, we expect this task to have good test-retest reliability.

RESULTS

- Reliability between session one and session two was found within the following (see Table 1):
  - Negatively valenced images, r = .576, p < .01
  - Affective images (positive and negative), r = .44, p < .05
  - Brightness images, r = .426, p < .05
  - A main effect of valence in accuracy, F(3, 223) = 2.93, p < .05
  - Effect size of Δr = .41 for negatively valenced images
  - Means and standard deviations:
    - Negative Images: 77.78% (12.10)
    - Positive Images: 74.35% (11.16)
    - Emotion Images: 76.05% (9.60)
    - Brightness Images: 72.31% (14.43)
  - Practical effects (see Table 2):
    - Negative Images: F(1,28) = 10.43, p < .01
    - Emotional Images: F(1,28) = 8.75, p < .01

METHODS

- 20 undergraduate students (28 female, mean age 23.23, SD 4.96) participated.
- Participants were presented with a target image and were asked to hold in mind the emotional intensity of this image during a 3 to 10 second delay period, and then were presented with a subsequent probe image (see Figure 1). They then indicated whether the second image was higher or lower in intensity than the first image.
- In each task, emotional images containing positive or negative stimuli were compared, and in the control condition, images were compared on their visual brightness.
- Participants returned after a one week delay to complete a second session of the image comparison task (used to assess reliability), and then rated all images on either emotional intensity or brightness.

DISCUSSION

- In accordance with our hypothesis, measures of affective working memory appear to be reliable over time.
- Variability between participants indicates the measure is sensitive to individual differences.
- As expected, measures using participants' own ratings of images, as opposed to normed ratings, yielded more precision.
- Negatively valenced trials were more reliable in personal accuracy than positively valenced images, possibly reflecting the negativity bias.
- Limitations include: 1) limited sample size 2) mostly female participants 3) need for a more sensitive scale to rate individual images.
- Implications include clinical application in treatment programs aimed at improving affective working memory in patients suffering from schizophrenia and motivational deficits.
- For example, there is some evidence that schizophrenia patients may have trouble holding in mind affective experiences (Card et al., 2007). This may prove to be a measure of this ability.

**Table 1**

<table>
<thead>
<tr>
<th>Correlations Between Sessions by Domain</th>
<th>Session 1</th>
<th>Session 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domain</td>
<td>Emotion</td>
<td>Positive</td>
</tr>
<tr>
<td>Emotion</td>
<td>.461**</td>
<td>.221**</td>
</tr>
<tr>
<td>Positive</td>
<td>.205</td>
<td>.041</td>
</tr>
<tr>
<td>Negative</td>
<td>.473**</td>
<td>.287</td>
</tr>
<tr>
<td>Brightness</td>
<td>.539**</td>
<td>.498**</td>
</tr>
</tbody>
</table>

**Table 2**

<table>
<thead>
<tr>
<th>Pracitical Effects Between Sessions by Domain</th>
<th>Session 1</th>
<th>Session 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domain</td>
<td>df</td>
<td>F</td>
</tr>
<tr>
<td>Negative</td>
<td>1, 28</td>
<td>10.43</td>
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<tr>
<td>Emotion</td>
<td>1, 28</td>
<td>8.75</td>
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<tr>
<td>Positive</td>
<td>1, 28</td>
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<tr>
<td>Brightness</td>
<td>1, 28</td>
<td>0.04</td>
</tr>
</tbody>
</table>

**Figure 1. Affective and Brightness Working Memory Tasks**

**Figure 2. Percentage Accuracy by Domain**

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**REFERENCES**