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Children's Emotional State and False Memory in the DRM Paradigm

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ABSTRACT

Children are called to give testimony for highly emotional experiences during court cases. Research indicates that children in a negative emotional state recall with lesser vividness (Berliner et al. 2003) and are more likely to incorporate false information (Levine, Burgess & Laney, 2008). The present study will examine this further by examining the influence of negative and positive emotional states on recall and recognition in child-normed lists within the Deese-Roediger-McDermott (DRM) paradigm. The DRM paradigm is a cognitive task that relies on gist memory for remembrance of the critical lure in semantically associated word lists. It is expected that the eight year old children in a negative emotional state will have greater occurrences of false memory than the five year old children in either emotional state and eight year old children in a positive emotional state. Implications for the results will indicate that child eye witnesses may attempt to accommodate during testimony by assenting to leading questions or elaborating the details of event to fill in the gaps of a traumatic memory.

BACKGROUND

False memory, the alteration or exclusion of details (Reyna & Lloyd, 1997), is of particular concern in court cases, such as sexual abuse, that involve the single testimony of child witnesses. Recall of highly sensitive and emotional experiences may cause child witnesses to enter negative emotional states. Feelings of sadness have shown to have association to self-competency and confidence, increases in vulnerability to suggestibility (Levine, Burgess & Laney, 2008) and decreases in vividness for traumatic memories (Berliner, Hyman, Thomas, and Fitzgerald, 2003).

The Deese-Roediger-McDermott (DRM) procedure uses word association as a means to study false memory. Words with high association are presented (bed, snooze, rest) but the critical lure, word that serves as the underlying category (e.g. sleep), is not presented. Gist memory, the general memory of an experience, may lead to formations of plausible but inaccurate memories (Brainerd, Reyna & Forrest, 2002).

In the DRM paradigm, several studies have manipulated word lists to examine the role of gist memory. Younger children have consistently shown have lesser false recall than adults and older children when studies included: shorter word lists (Sugrue, Strange & Hayne, 2009) and child-normed lists (Anastasi & Rhodes, 2008).

Studies that examined the impact of negative emotion have found a damaging effect to memory accuracy in the DRM procedure. Adults have been found to have higher rates of false recall after listening to negative affect music (Wright, Startup and Matthews, 2005) and higher rates of false recognition for negative emotional words (El Sharkawy et al., 2008). Similar results were also found in children (Howe, 2007).

Overall, younger children may have less vulnerability to false memory in the DRM procedure due to their inexperience with word associations (Kulofsky & Klemfuss, 2008). Negative emotional states may injure a child's confidence in the specifics of an event and therefore increase incorporation of misinformation.

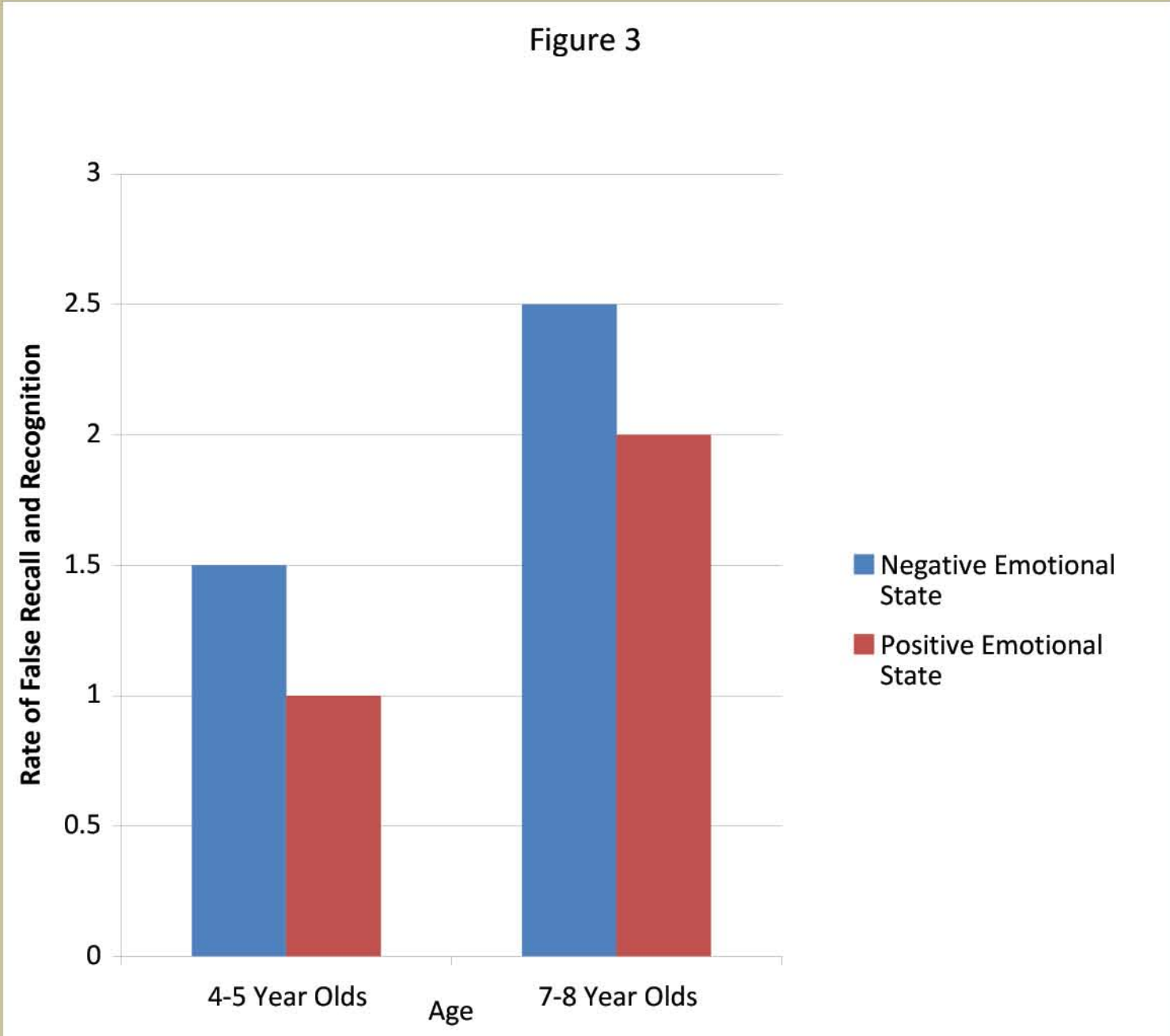
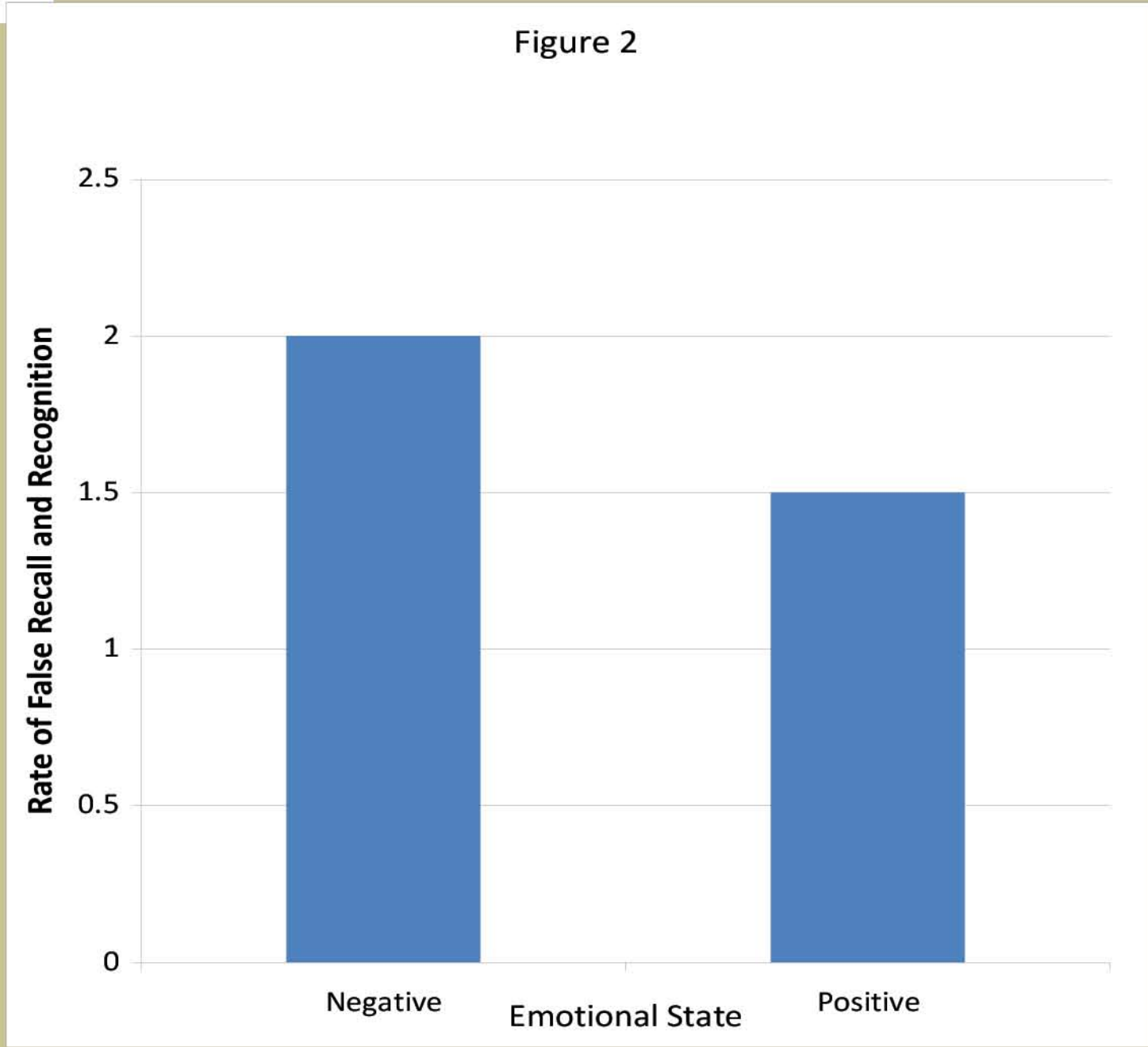
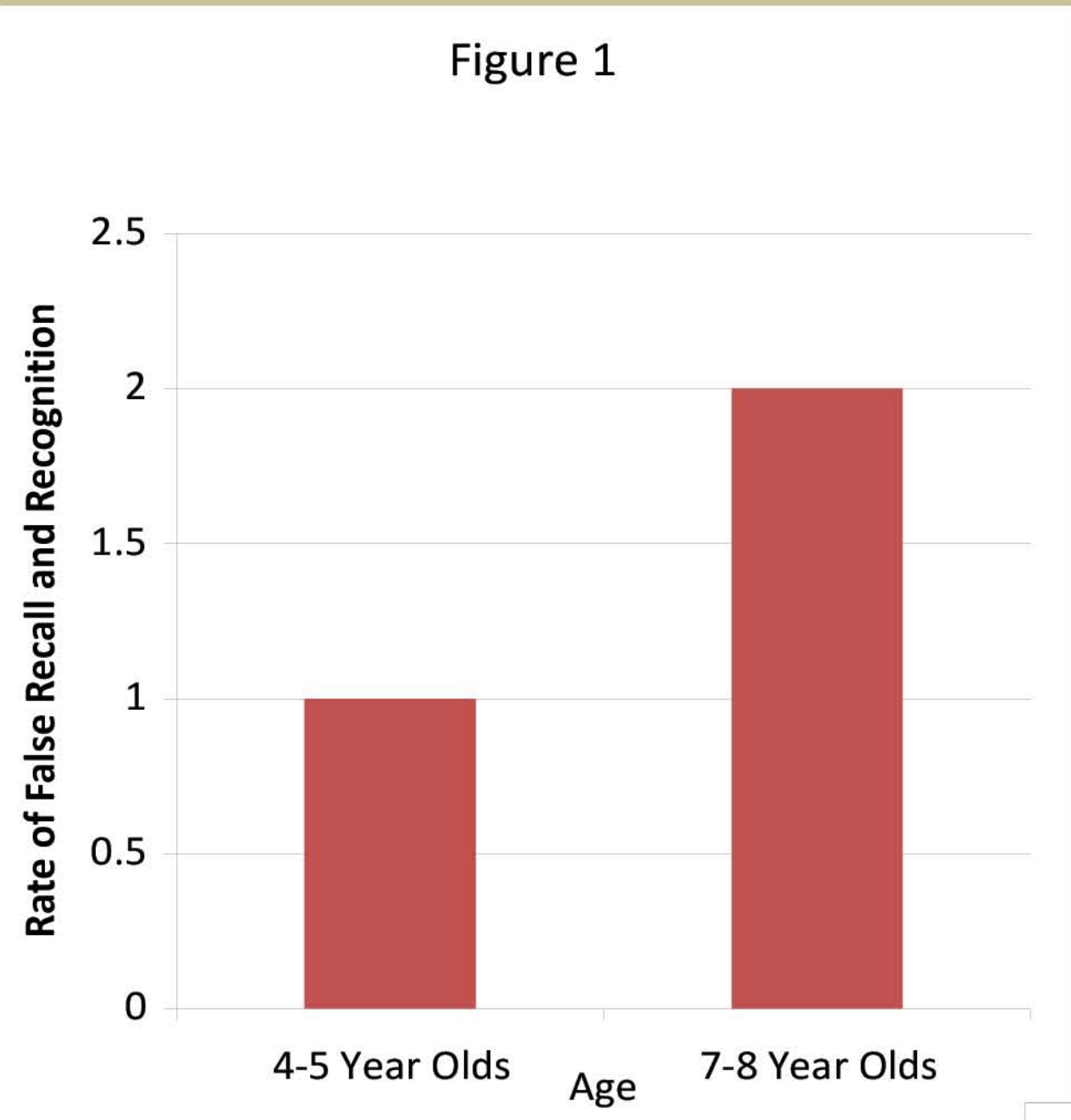
METHOD

Forty 4-5 year old and forty 7-8 year old children will be recruited from preschools and elementary schools. All children will come from schools that are in similar neighborhoods so that socio-economic status is not a factor across age groups.

- Emotion Inducer: Children will be asked to assist an experimenter in finding a lost toy. Half of the participants will find the toy and receive a prize and the other half will not find the toy and receive a toy after the completion of the study.
- Word Lists: Each word list will be presented orally to participants at a 2-sec per word rate.
- Recall Tests: Participants will then be asked to recall as many words as possible. In between each list, shape and color identification will be used as a distractor task.
- Recognition Tests: Participants will be asked to use a checklist to indicate which words were heard during the word list presentations.

EXPECTED RESULTS

- For both the recall and recognition data, the design will be a (Age: five year olds, eight year olds) x 2 (Emotion: sad, happy) x 2 (Item: (list, critical lure) between subjects design. Similar results are expected for both recall and recognition measures.
- Main effect of age: older children will have greater rates of false memory than the younger children. **See Figure 1**
- Main effect of emotion: children in negative emotional states will have higher rates of false memory than children in positive emotional states. **See Figure 2**
- Interaction: older children in a negative emotional state will have greater rates of false recall and recognition than older children in a positive emotional state or younger children in either emotional state. **See Figure 3**



DISCUSSION

Court cases will most likely continue to require children to provide their testimony in highly sensitive and emotional experiences. It is important to consider the impact of emotion on incorporation of misinformation.

Older children have higher language skills that can be used for elaboration in episodic memory (Kulofsky & Klemfuss, 2008). The National Institute of Child Health and Human Development (NICHD) may be useful in efforts to reduce incorporation of misinformation for children in negative emotional states. The NICHD protocol uses mostly open ended and cued recall questions while minimizing yes-no questions, which should lessen the occurrence of misinformation (Odegard et al, 2009).

The emotion inducer may not be sufficient enough to activate the desired emotion or replicate emotions experienced in a natural setting. Future research is needed to examine the influence of negative emotional states on recall and any potential differences in emotional state during the experience or while remembering the information. Efforts should also be made to design studies that use more ecologically valid experiences.

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