"Thinking about it: The impact of Covid-19 related stimuli on prospective memory"

Peer J

Summary:
The present study examined the impact of Covid-19 stimuli (as well as general stress, anxiety, and depression) on prospective memory (PM). The experimental approach involved a combination of a traditional PM paradigm (baseline phase followed by PM phase) in conjunction with the affective priming paradigm, in which a video of varying valence was presented in between experimental phases. Three types of videos were included in the design as a between-groups manipulation: a neutral one, a negative one, and a Covid-19 related one. Anxiety/depression measures (i.e., DASS-12 scale) was administered prior the experiment, and a Covid-19 PTSD questionnaire (and related questions) were administered after the experiment. Data analyses consisted of a series repeated measures ANOVAs, linear mixed effects models, and correlations. Results showed an effect of video on ongoing task accuracy only. Across dependent measures, model fit significantly improved when DASS-subscales were included in model. Overall, well-designed experiment with interesting findings.

Custom and Raw Data Checks

The study followed the guidelines of the Helsinki declaration and was approved by IRB of University of Padova (Protocol 3931). Approval letter was included in submission materials.

Raw data was reviewed and no evidence on inappropriate manipulation was found. Materials and experiment procedures are available on OSF.

1. **Basic Reporting**
    - Language and writing were good, however, there are few grammatical errors throughout the manuscript (no impact on content comprehension though).
    - The introduction and background literature was relevant and appropriate citations were included.
    - Figures are relevant and well-labeled, but the quality of the image is low-resolution.
    - Raw data is provided and accessible.

2. **Experimental Design**
    - To my knowledge, the experimental design involves original primary research that bridges a gap in the PM literature.
    - The research question, and consequent hypothesis, were clear and well defined.
    - Methodology involves classical paradigms that were well-established in the literature.

3. **Validity of the Findings**
    - The raw data files are provided, and the statistical analyses employed are appropriate for the data.
    - However, conclusions from results need to be qualified a bit more, as the results seem more nuanced than what is described in Abstract, Discussion, and Conclusion sections (see Main Comments below).

4. **Main Comments**:

Overall, this was an interesting investigation with clear hypothesis and strong experimental design. Throughout, the manuscript does do a great job at reviewing previous work on the area, and the authors consistently connect the findings to prior published studies. However, I believe that the finding that Covid-related information positively impacts performance in the PM task is more nuanced than how it is described in the Discussion section (lines 455-460). Particularly, the video manipulation seems to only impact accuracy for the ongoing task, but *not* detection of PM cues (lines 405-407). Typically, in PM studies, participants divide their attention between the ongoing task (lexical decision) and the PM task (monitoring for and detecting PM cues), with performance improving in one task as it decreases in the other, depending on what is prioritized by participants (so-called "attention-allocation policy" employed by participant; Marsh, Hicks, & Cook, 2005). In other words, participant tend to focus attention resources on one task only, and they can switch back-and-forth tasks as the experiment progresses. However, because ongoing task RTs were also *not* impacted by the video manipulation (lines 390-393), it seems that participants were focusing primarily on the lexical decision task, and not on monitoring for PM cues (or at least that the video manipulation did *not* influence the degree of monitoring engaged by participants in the study, as indicated in lines 396-397).

As currently described in the manuscript, both in the Abstract and Conclusion, the authors claim that the "…Covid-related clip performed significantly better in the PM condition than participants in the other conditions…" (lines 36-36) and that "…exposure to a Covid-related video clip right before the beginning of the PM task resulted to improve accuracy in the PM condition…" (lines 567-569). I believe these, and similar statements in the Discussion, may be a little bit misleading as the Covid-related video did not facilitate detection of PM cues, nor it increased monitoring for such cues. I invite the authors to qualify their conclusions by highlighting that, when they talk about "accuracy" or "performance," they are indeed referring to accuracy/performance in the ongoing task of the experiment, not the PM task. This will help readers to fully understand the insights of the current study, as well as its implications. Particularly, that the PM process at play here (monitoring and cue detection) seems to be influenced by general anxiety-, stress-, and depression-related states (as captured by the DASS), rather than by Covid-specific information. If any, the impact of Covid-19 related stimuli on prospective memory seems to be minimal here.

Minor Comments/Queries:

On line 250, it is indicated that the "Cough" excerpt was chosen because it presented valence and arousal levels similar to the negative video. Descriptive stats are provided in Table 1, however, were there any specific analyses conducted (i.e., t-test?) to demonstrate that these vides are indeed similar to one another in terms of valence and arousal?

Across dependent measures, the manuscript describes a series of repeated measures were adopted prior to the LME models. I believe these are actually "mixed" model ANOVAs, as the Video version is a between-groups variable.

On line 346, the authors describe the results of an ANOVA with a F-ratio of 4.263, however, I am unsure here what was being analyzed here (Accuracy or RTs?) as it says that, "Once an effect of Video was found, RTs and Accuracy were investigated, separately…" So I am not sure what the dependent measures is reflected in that F-ratio.