



Research report

Political conservatism predicts asymmetries in emotional scene memory



Mark Mills^{a,*}, Frank J. Gonzalez^b, Karl Giuseffi^b, Benjamin Sievert^b, Kevin B. Smith^b, John R. Hibbing^b, Michael D. Dodd^a

^a Department of Psychology, University of Nebraska, Lincoln, NE, United States

^b Department of Political Science, University of Nebraska, Lincoln, NE, United States

HIGHLIGHTS

- Old/new memory task for positive, negative, and neutral scenes.
- Positive correlation between memory negativity bias and conservatism.
- Conservatism explained 45% of subject variation in negativity bias.
- Associations between ideology and emotional bias extend to memory.

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ABSTRACT

Variation in political ideology has been linked to differences in attention to and processing of emotional stimuli, with stronger responses to negative versus positive stimuli (negativity bias) the more politically conservative one is. As memory is enhanced by attention, such findings predict that memory for negative versus positive stimuli should similarly be enhanced the more conservative one is. The present study tests this prediction by having participants study 120 positive, negative, and neutral scenes in preparation for a subsequent memory test. On the memory test, the same 120 scenes were presented along with 120 new scenes and participants were to respond whether a scene was old or new. Results on the memory test showed that negative scenes were more likely to be remembered than positive scenes, though, this was true only for political conservatives. That is, a larger negativity bias was found the more conservative one was. The effect was sizeable, explaining 45% of the variance across subjects in the effect of emotion. These findings demonstrate that the relationship between political ideology and asymmetries in emotion processing extend to memory and, furthermore, suggest that exploring the extent to which subject variation in interactions among emotion, attention, and memory is predicted by conservatism may provide new insights into theories of political ideology.

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Emotion modulates several cognitive processes, including perception, attention, decision making, and memory (see Ref. [19], for review). For example, relative to neutral stimuli, emotional stimuli are associated with enhanced contrast sensitivity in early vision [27], are detected faster and more accurately in a field of distractors [11], and are more likely to be attended [6] and remembered [16]. Not all emotional stimuli are equivalent in their effects on cognition, however. Often, large asymmetries can be observed in the effects of different emotions. In particular, a well-established find-

ing is *negativity bias*—on average, individuals are attuned more to generally negative versus generally positive stimuli [1]. The present study is concerned with the variation around this “average”. Some individuals respond strongly to negative stimuli (e.g., those with high anxiety); others less so (e.g., those with less anxiety). Likewise, some negative stimuli strongly affect cognitive processes (e.g., snakes and spiders); others less so (e.g., road kill). Here, we use crossed random effect modeling to investigate simultaneously the extent to which subject variation in the effect of emotional scene content on declarative memory is explained by political ideology, as well as the extent to which scene variation in the effect of political ideology on memory is explained by emotion-related variables.

Previous work has shown that political ideology is associated with attentional asymmetries in the processing of emotionally

* Corresponding author at: 238 Burnett Hall, Department of Psychology, University of Nebraska-Lincoln, Lincoln 68588, NE, United States.

E-mail address: mark.mills2@huskers.unl.edu (M. Mills).

valenced stimuli [4,22,31]. Carraro et al. [4] (Experiment 1) used an emotional Stroop task and found that, relative to liberals, conservatives responded more slowly to negative words, suggesting that negative information automatically captured the attention of conservatives. In a second experiment using a dot-probe task, conservatives were more likely to direct their attention toward spatial locations at which negative information was presented [4]; (Experiment 2), suggesting that the likelihood of attending negative scene content also correlates positively with conservatism. Similar findings have been reported across different tasks, stimuli, and measures. Dodd et al. [8] recorded eye movements during a free-view task in which participants viewed collages of positive and negative scenes and found that speeded fixation of and prolonged dwell time on negative versus positive scenes each correlated positively with conservatism, suggesting that eye movements were selectively biased toward negative stimuli as a function of political ideology. Mills et al. [22] recorded both behavioral and eye movement responses during a visual search task for happy and angry faces and found a positive correlation between anger-superiority (speeded detection of angry versus happy faces, as measured by behavioral response times) and conservatism. In contrast to Carraro et al. [4] (Experiment 1), however, this speed advantage was not due to attention capture but rather to post-selection processes. Specifically, Mills et al. showed that all individuals were equally quick to fixate angry faces but whereas liberals tended to make additional eye movements before manually responding to the presence of an angry face, conservatives did not, suggesting their response time advantage was due to speeded response selection rather than attention capture.

Taken together, these studies demonstrate that political ideology is associated with attentional asymmetries in the processing of emotionally valenced stimuli, with conservatives being more vigilant toward negative stimuli. As attention is known to enhance memory [21], these findings lead to the prediction that the effect of emotional valence on memory should vary with political ideology in a similar manner. Some evidence for this comes from Shook and Fazio [31], in which an asymmetry in reward-based learning of novel objects was found to vary with political ideology such that superior learning of negatively valenced information (objects paired with a monetary loss) correlated positively with conservatism. This might suggest that conservatives remembered negative objects better than positive objects, though, it should be noted that they were also more likely to misremember positive objects (objects paired with a monetary gain) as being negative. In other words, this finding may reflect a simple bias to respond that an object is “negative”, as opposed to being solely driven by memory. Therefore, to test whether memory for emotionally valenced stimuli varies with political ideology, the present study had participants study 120 positive, negative, and neutral scenes in preparation for a memory test. On the memory test, participants viewed 240 scenes, half of which were the studied scenes and half of which were novel. For each scene, participants indicated whether or not it had been studied. Given the pattern of attentional asymmetry and the general enhancing effect of attention on memory, we expect superior memory for negative versus positive scenes (negativity bias) to be enhanced the more conservative one is. Moreover, political ideology should explain a substantial portion of the variability in negativity bias across subjects.

1. Method

1.1. Participants

Sixty-four undergraduates from the University of Nebraska-Lincoln participated in exchange for course credit. All participants

had normal or corrected-to-normal vision, were naïve to the purpose of the study, and were informed of their rights of participation according to the University of Nebraska-Lincoln institutional review board.

1.2. Measures

Political ideology was measured using the Wilson-Patterson Inventory [35], which asked participants to indicate the degree to which they agreed or disagreed with 20 “hot-button” issues (e.g., abortion). On the basis of these responses, participants received a score indicating the extent to which they held liberal or conservative positions (see Appendix A for items and scoring). Scores ranged from -29 to $+28$ ($M=0.58$, $SD=11.87$), where more positive scores reflect a more conservative ideology. In addition to the Wilson-Patterson Inventory, participants also indicated their self-reported political identification (5-point Likert scale, where 1 = liberal, 2 = moderate, leaning liberal, 3 = moderate, 4 = moderate, leaning conservative, and 5 = conservative) and their self-reported party identification (7-point Likert scale, where 1 = strong Democrat, 2 = weak Democrat, 3 = Independent, leaning Democrat, 4 = Independent, 5 = Independent, leaning Republican, 6 = weak Republican, and 7 = strong Republican). Wilson-Patterson scores correlated significantly with self-reported political identification, $r=0.61$, $p<0.001$, and self-reported party identification, $r=0.58$, $p<0.001$.

1.3. Stimuli

Stimuli were 240 full-color scenes (640×480 pixels) sampled from the Geneva Affective Picture Database (GAPED; [7]. GAPED contains 730 real-world scenes nested within three general scene content categories (positive, negative, and neutral) and pre-rated on dimensions of valence and arousal. Of these, we randomly selected 80 positive and 80 neutral scenes. Positive scenes depicted mostly baby humans, baby animals, and landscapes. Neutral scenes depicted mostly interior scenes and furniture, as well some less-common objects such as an extension cord and analog antenna. GAPED additionally distinguishes between four subcategories of negative scenes: snakes, spiders, human concerns (scenes depicting human rights violations), and animal concerns (scenes depicting animal mistreatment). We randomly selected 10 snakes, 10 spiders, 30 human concerns, and 30 animal concerns, for a total of 80 negative scenes. Descriptive statistics for the selected sample of scenes are presented on Table 1. Example scene stimuli are shown in Fig. 1. Scenes were displayed on a Pentium IV computer with a 17” monitor (60 Hz) within individual testing suites equipped with soft lighting and sound attenuation.

1.4. Procedure

Participants first completed a study phase and then a test phase. In the *study phase*, participants viewed 144 scenes in preparation for a memory test. Each trial began with a central fixation cross, which was replaced after 1000 ms by a to-be-studied scene. Scenes were presented for 2000 ms and were followed immediately by the next trial. To control for serial position effects (primacy and recency), the first and last 12 scenes served as buffers and were excluded from the testing phase. Buffer stimuli were neutral scenes selected from the International Affective Picture Database [18]. The study phase lasted ~7 min and was followed immediately by instructions for the test phase. As these instructions were quite simple, the interval between study and test was no more than 1–2 min.

In the *test phase*, participants viewed 240 scenes, half of which were presented during the study phase and half of which were novel. Each trial began with a central fixation cross for 1000 ms,

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