Revisiting the unintentionality of the AMP effect: Experiment 4

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*Pre-registration*

**Author note**

JC, IH, and SH, Department of Experimental Clinical and Health Psychology, Ghent University. This research was conducted with the support of Grant BOF16/MET\_V/002 to Jan De Houwer and Ghent University postdoctoral fellowship 01P05517 to IH. Correspondence concerning this article should be sent to [jamie.cummins@UGent.be](mailto:jamie.cummins@UGent.be). The preregistration, materials, and data for the first experiment from this project are available at <https://osf.io/p6e3c/>. The preregistration, materials, and data for the second experiment from this project are available at https://osf.io/32cu7/. The preregistration, materials, and data for the third experiment from this project are available at https://osf.io/uv3wk/.

**Background and rationale**

Our third experiment demonstrated that participants who reported being more influenced in a modified influence-assessment Affect Misattribution Procedure (IA-AMP) also showed larger effects in a previously-completed standard AMP, even when the stimuli used in the two AMPs were different (i.e., in a US-Democratic sample, using standard positive and negative primes in the IA-AMP, and images of Obama and Trump in the standard AMP). This finding suggests that AMP effects are the product of a subset of participants who *in general* tend to respond intentionally to the primes, regardless of what those primes may be. In Experiment 4, we intend to extend this finding further, by investigating the impact which influence rate has on the utility of the AMP in classifying participants in a known-groups design, as well as the consistency of influence rates across AMPs.

This experiment will firstly attempt to replicate the first two hypotheses from Experiment 3. H1 asserts that, at the trial-level of analysis, the influence of prime stimuli on evaluations of the target stimuli in the IA-AMP will be moderated by whether participants report having been influenced or not. H2 asserts that, at the subject-level of analysis, the rate of influence reported in the IA-AMP will be predictive of the effect size in that IA-AMP. We will conduct these analyses (i.e., H1 and H2) on each of the two IA-AMPs we present in this experiment. Our third hypothesis H3 asserts that, the AMP effect of a participant in one IA-AMP will be predicted by the rate of influence recorded by that participant in the other IA-AMP[[1]](#footnote-1). We will investigate this for both orderings of the IA-AMPs (i.e., does influence rate in AMP 1 predict scores in AMP 2, and does influence rate in AMP 2 predict scores in AMP 1). Our fourth hypothesis, H4, asserts that the influence rates within participants in the two IA-AMPs should be highly correlated. Finally, our fifth hypothesis, H5, asserts that differences in AMP effect sizes between Democrats and Republicans will be greater when the AMP effect is computed based only on influenced trials, as compared to when it is computed based only on uninfluenced trials.

**Method**

**Sample**

Data will be collected online via the Prolific Academic website. Based on an expected mean duration of 20 minutes, participants will be paid £1.66.

**Planned sample size & stopping rules.** Power analyses for interactions in mixed-effects models are difficult to determine, therefore no power analysis was conducted for our first analysis. For our second analysis, we used the pwr package in R to compute the number of participants required to detect a medium f2 effect size (i.e., 0.15) in a regression analysis with a single IV, at the conventional alpha level (.05) and at 95% power. Given these criteria, 89 participants would be required. The aforementioned power analysis is also applicable for our third analysis. With 89 participants, at a standard alpha level and a power of .9, we would be able to detect a correlation of *r* = .33. We will collect data from 200 participants (100 Democrats and 100 Republicans) based on the availability of resources. We consider this sample size sufficient to power our analyses for all 5 of our hypotheses.

**Inclusion criteria*.*** Age 18-65, fluent English, US citizen, self-reported Democratic Party or Republican Party supporter on the Prolific site, Prolific rating >= 90%, no participation in similar studies by our research group.

**Exclusion criteria.**Completion time on Prolific < 3 minutes, partial data on the demographics questionnaire or either AMP, identifying as neither Republican nor Democrat on the political alignment self-report measure.

**Design**

All manipulated factors in the design are within-subjects, with the exception of one between-subjects factor: political alignment (Democrat or Republican). Of the within-subjects factors, the first factor is that of AMP type, and has two levels: either politics IA-AMP, or the positive/negative IA-AMP. For both AMPs, the prime-type is manipulated within the procedure, each with two levels. For the political AMP, the levels of prime type are images of Obama and images of Trump (taken from the Presidents-IAT materials from the Project Implicit Demos; see <https://osf.io/f38ag/>). For the positive-negative AMP, the levels of prime type are the generally positive and negative images used in the previous 3 experiments of this project.

**IVs.**

1. Party alignment of the participant (Democrat or Republican).
2. Identity of the prime stimuli used in the AMP (positive vs. negative IA-AMP; Obama vs. Trump IA-AMP).

3. In each IA-AMP, subjective ratings for each trial of whether evaluation of the target stimulus was influenced by the prime stimulus or not. A Go/No-Go response format is employed: press spacebar if influenced, do not press if not influenced.

**DV.** Evaluations of target Chinese characters within each AMP as pleasant or unpleasant.

**Variables used for methodological counterbalancing (not analyzed).** Questions 3 and 4 in the self-report measures will be presented in a counterbalanced order.

**Self-report measures*.*** We will ask several exploratory questions after the IA-AMP, and specify that participants should answer them in relation to the IA-AMP only:

1. Influence awareness:

“Think back to the task you just completed. On how many trials was a valenced picture presented before the Chinese character? It is important that you are honest here.”

[1 = None, 2 = A few, 3 = less than half, 4 = About half, 5= More than half, 6 = Most, 7 = All]

1. General influence:

“To what extent were your ratings of the Chinese symbols influenced by the pictures that appeared immediately before those symbols?”

[1 = Never, 2 = Very rarely, 3 = Somewhat rarely, 4 = Sometimes, 5 = Somewhat often, 6 = Very often, 7 = Almost always]

1. Intentional influence:

“How often did you *intentionally* base your rating of the Chinese symbol on the image that immediately appeared before it?”

[1 = Never, 2 = Very rarely, 3 = Somewhat rarely, 4 = Sometimes, 5 = Somewhat often, 6 = Very often, 7 = Almost always]

1. Unintentional influence:

“How often do you think that your rating of the Chinese symbol was *unintentionally* influenced by the pictures that appeared immediately before those symbols?”

[1 = Never, 2 = Very rarely, 3 = Somewhat rarely, 4 = Sometimes, 5 = Somewhat often, 6 = Very often, 7 = Almost always]

1. Demand compliance:

“Think back to the task with the Chinese characters. During the task, we asked you after each trial to indicate whether your response to the Chinese character was influenced by the image that appeared before it. Please choose the following option that is the most true for you:”

[1 = My responses were based on what I thought the researcher wanted me to say, 2 = My responses were genuinely based on whether I was influenced or not, 3 = I’m not sure or don’t know why I responses the way I did]

1. Political alignment:

“In terms of the two major political parties in the US, do you consider yourself more Democratic or Republican?”

[1 = Very Republican, 2 = Somewhat Republican, 3 = A little Republican, 4 = Neither/Moderate, 5 = A little Democratic, 6 = Somewhat Democratic, 7 = Very Democratic]

1. Self-exclusion:

“In your honest opinion, do you think should we use your data in our analysis?

There are many reasons why you might feel that we should exclude your data, such as a computer malfunction or a distraction at an important moment during the experiment.

Note, however, that being influenced by the pictures that came before the Chinese characters is NOT a reason to self-exclude from the study.

Your responses on this question will NOT affect your payment. However, if you choose 'No, exclude my data', please fill in the accompanying text box to let us know why.”

**Procedure**

Participants will complete the demographics questionnaire, both IA-AMPs, and then the self-report measures.

**Measures**

Two modified (from Experiment 1 of the current project; see <https://osf.io/uqs2d/>) Affect Misattribution Procedures (AMP; Payne et al., 2005). The first AMP has the following parameters: 10 practice trials, 72 main trials, 6 images of Obama and 6 images of Trump, and 72 Chinese characters. The second AMP has the same parameters except with 12 positive images and 12 negative images.

**Hypotheses**

**M1 (manipulation check).** An AMP effect will be demonstrated for both AMPs. The target stimuli will be differentially evaluated based on the source stimuli that preceded them, such that (i) in the positive-negative AMP for both groups, targets preceded by negative primes will be rated more negatively than those preceded by positive primes, (ii) in the politics AMP for Democratic supporters, targets preceded by Trump primes will be rated more negatively than those preceded by Obama primes, (iii) in the politics AMP for Republican supporters, targets preceded by Obama primes will be rated more negatively than those preceded by Trump primes.

**H1.** For both AMPs, the influence of prime identity on the valence rating of the Chinese characters will be moderated by that subset of trials in which participants report being influenced by the prime stimulus.

**H2.** For both AMPs, the magnitude of the AMP effect will be predicted by the proportion of influenced trials to non-influenced trials in that AMP.

**H3.** The magnitude of the AMP effect in one AMP will be predicted by the proportion of influenced trials to non-influenced trials in the other AMP.

**H4.** The influence rates of participants will correlate highly across the two AMPs.

**H5.** Differences in AMP effects between Democrats and Republicans will be greater when the AMP effect is calculated based only on influenced trials compared to when it is calculated based only on uninfluenced trials.

**Results**

**Analytic strategy**

**Manipulation & hypothesis tests.** Using the R package *lme4*, we will construct two frequentist logistic mixed-effects models to assess the evidence for the main effect of prime identity in both AMPs (M1). Both models will include participant ID as a random intercept to acknowledge the non-independence of the multiple ratings provided by each participant. The Wilkinson notation for the first model (i.e., for the positive-negative AMP) will be:

valence\_rating ~ prime\_identity + (1 | participant)

The second model (for the politics AMP) will also include participants’ political identity (Democrats or Republicans), given that we expect oppositional effects for Democrats and Republicans. Wilkinson notation for this model is:

valence\_rating ~ prime\_identity \* political\_affiliation + (1 | participant)

We will construct two frequentist logistic mixed-effects model to quantify the interaction between prime identity and influence ratings in each AMP (H1). The models will also include participant ID as a random intercept. In-line with best practices for such analyses, we will use effect coding for the IVs, rescaling each to -.5 and .5. The Wilkinson notation for the model for the positive-negative AMP is as follows:

valence\_rating ~ prime\_identity \* reported\_influence + (1 | participant)

The model for the politics AMP will also include political affiliation as a fixed effect. Wilkinson notation for the model for the political AMP is as follows:

valence\_rating ~ prime\_identity \* reported\_influence \* political\_afflication + (1 | participant)

If no interaction effect is found, Bayesian analyses may be used may be used to quantify the evidence for the null hypothesis using the R package *brms*. This would likely employ default priors that are designed to be uninformative (i.e., Students t distribution [students\_t(3, 0, 10)] placed on all parameters).

We will also construct two standard regression models to assess whether a greater proportion of influenced trials in each AMP predicts a larger effect size in that AMP, for both the positive-negative AMP and the politics AMP (H2). For both AMPs, we will compute an AMP effect size for each participant by subtracting the number of ‘pleasant’ responses when the target was preceded by a positive prime from the number of ‘pleasant’ responses when the target was preceded by a negative prime. For the politics AMP, given that we are not interested in directionality of the effect, and only the absolute magnitude, we will only consider the absolute magnitude of the effect in our analysis. We will also compute the proportion of influenced trials to uninfluenced trials for each participant on each AMP. The Wilkinson notation for this model is:

AMP\_effect\_size ~ proportion\_influenced

In order to assess H3, we will construct two regression models similar to those of H2, with one exception: while H2 assesses whether influence rates within one AMP (e.g., politics AMP) predict scores in that same AMP (i.e., in this example, the politics AMP), H3’s models will assess whether influence rates within one AMP (e.g., politics AMP) predict scores in the *other* AMP (i.e., in this example, the positive-negative AMP).

In order to assess H4, we will conduct a simple correlation analysis between the influence rate in the politics AMP, and the influence rate in the positive-negative AMP.

Finally, for H5, we will firstly compute two new scores for the politics AMP: the influenced AMP effect, and the uninfluenced AMP effect. These AMP effects are computed identically to the AMP effect detailed above, but with one exception: the influenced AMP effect is computed by only considering those trials where the participant reported having been influenced, while the uninfluenced AMP effect is computed by considering only those trials where the participant did not report having been influenced. We will then conduct two between-subjects t-tests between Democrats and Republicans: one with influenced AMP effect as DV, and one with uninfluenced AMP effect as DV. We will then compute the Cohen’s *d* effect sizes, and their 95% CIs, for both t-tests. We will then use the *d* from the uninfluenced AMP effect t-test as a zero point to compare with the influenced AMP effect t-test. Specifically, we expect that the lower-bound 95% CI for the *d* of the influenced AMP effect t-test will be greater than the *d* estimate of the uninfluenced AMP effect t-test.

1. Note: given that this study will constitute two groups (i.e., Democrats and Republicans) which should show opposing AMP effects in the politics AMP (i.e., Obama-positive effects for Democrats, Trump-positive effects for Republicans), we will use the *absolute* AMP effect. That is, we will assess whether AMP effect sizes, regardless of directionality, increase as a function of influence rate on the other AMP. [↑](#footnote-ref-1)