Influence awareness in the AMP: A replication of Experiment 3 of Payne et al. (2013)

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*Pre-registration*

**Author note**

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**Background and rationale**

The Affect Misattribution Procedure (AMP: Payne et al., 2005) is a popular indirect procedure that aims to provide a measure of one’s “implicit attitudes” (Nosek, Hawkins, & Frazier, 2012). It is often framed positively in terms of its large effect sizes, relatively simple procedural parameters, and high internal consistency relative to other reaction time-based measures (Gawronski & Ye, 2015). Put simply, the task presents a prime stimulus (e.g., a positive or negative image) followed by a target stimulus (e.g., an image of a Chinese character) in quick succession. Participants are required to evaluate the valence of the Chinese character (i.e., whether they find it pleasant or unpleasant) and to ignore the prime. Despite instructions to ignore the prime, participants tend to respond evaluatively in ways that are consistent with the valence of the prime.

The AMP is frequently under the assumption that it captures responding in the absence of awareness or intention to emit such responses. Although several studies have investigated the intentionality of AMP effects, often with mixed findings (e.g., Bar-Anan & Nosek, 2012; Payne et al., 2013; Gawronski & Ye, 2015), less work has examined the extent to which people are unaware of their pattern of responding on the task. To date, the only direct empirical investigation of this has been carried out by Payne et al. (2013) Experiment 3. In this study participants completed one of two AMPs: either a standard AMP, or a so-called ‘skip-AMP. In the skip-AMP, they were provided an option to skip responding on trials where they felt that their evaluation of the target stimulus would be influenced by the proceeding prime stimulus. The authors found that effects on the standard AMP did not differ significantly in magnitude from those in the skip-AMP.

On the one hand, this represents a good initial step towards exploring awareness in the AMP. On the other hand, Payne et al.’s approach is not without issue. The sample size in their study was relatively small (N = 36 per cell). Although Payne et al. argued that this sample would provide power “greater than .85 to detect an interaction between the repeated measures and between-subjects factors, even assuming a small effect size” (p. 383), the authors did not specify what effect size they qualified as “small”, nor what they specified as the correlation between the different within-subject measurements (i.e., the correlation between evaluations of the positive and negative primes). This unspecified correlation can make such a power analysis vary widely. Combining this with the fact that their sample size was relatively small, it is very possible that a true difference between the AMP types exists, but the authors simply did achieve sufficient power to detect such a difference.

In the current experiment, we sought to replicate Payne et al. (2013) Experiment 3 with an increased sample size and by using a within-subject design to increase statistical power. Specifically, we will administer an identical standard AMP and skip-AMP as in the original Payne et al. (2013) study. However, instead of using a between subject design we will administer both AMPs to all participants and compare AMP effect sizes within (rather than between) participants. Furthermore, we preregister a better-fitting statistical methodology, by using a partially-overlapping t-test to account for participants who skip either all trials or no trials. We expect that, contrary to the findings of Payne et al. (2013), there *will* be a statistically significant difference between AMP effects in the standard AMP vs. skip AMP, such that skip AMP effect sizes will be significantly smaller.

**Method**

**Sample**

Data will be collected online via the Prolific Academic website. Based on an expected mean duration of 10 minutes, participants will be paid £0.85.

***Planned sample size & stopping rules***

For our first hypothesis test, we firstly used the pwr package in R to compute the number of subjects required to detect a small Cohen’s d effect size (i.e., 0.3) in a paired-samples t-test at the conventional alpha level (.05) with 95% power. On the basis of this, 147 subjects would be required. We then calculated how many participants would be required to detect such an effect size in a two-sample t-test with otherwise identical parameters; in this case, 289 participants would be required. Given that a partially-overlapping t-test’s power typically falls somewhere between a paired-samples t-test and a two-sample t-test (Derrick et al., 2017), 289 participants would provide us with at least 95% power to detect a small effect size in a partially-overlapping t-test. 289 participants would also provide us with power to detect a very small Cohen’s f effect size (i.e., 0.045) in a linear regression with one dependent variable and one independent variable (i.e., the analysis for our second hypothesis test). We will therefore collect data from 290 participants based on the availability of resources. For our sampling strategy, 290 initial participants will be collected, and exclusion criteria will be applied. Then participants will be added in batches of 10 until at there are at least 290 participants who meet both inclusion and exclusion criteria. Thereafter data collection will stop.

**Inclusion criteria*.*** Age 18-65, fluent English, Prolific rating >= 90%, no participation in similar studies by our research group.

**Exclusion criteria.**Completion time on Prolific < 3 minutes, and partial data on the demographics questionnaire or either AMP.

**Design**

**IVs.**

1. AMP type (standard AMP vs. skip AMP).

2. Valence of the prime stimuli used in the AMP (positive vs. negative).

**DV.** Evaluations within each AMP (pleasant or unpleasant; skipped trials in the skip AMP are discarded).

**Procedure**

Participants will complete the demographics questionnaire, then the standard AMP, and then the skip AMP.

**Measures**

A standard Affect Misattribution Procedure (AMP; Payne et al., 2005) with the following parameters: 10 practice trials, 72 main trials, 12 positive and 12 negative valence images, and 72 Chinese characters. Participants must respond to each Chinese character as either pleasant or unpleasant using the E and I computer keys. The skip AMP is identical to the standard AMP, with the exception that participants can skip trials where they feel they will be influenced by the prime by pressing the spacebar, rather than the E or I key. Notably, our AMPs are identical to those used by Payne et al., with two exceptions: (i) we use 72, rather than 120, trials, and (ii) we do not use neutral primes, as these are regularly unused in other AMP studies (e.g., Gawronski & Ye, 2015).

**Hypotheses**

**H1.** The AMP effect in the skip AMP will be smaller than in the standard AMP.

**H2.** The rate of skipping in the skip AMP will predict effect sizes in the standard AMP.

**Results**

**Analytic strategy**

**Hypothesis tests.** We will compare AMP effects for both the standard AMP and the skip AMP using a partially-overlapping t-test (Derrick et al., 2017). Specifically, the partially-overlapping t-test will be used due to the fact that participants who exhibit a very high degree of awareness in the skip-AMP (i.e., skip most or all trials) may not demonstrate an AMP effect at all, and their exclusion would distort our results (given that those participants who are most highly influence-aware may also be those who would demonstrate the largest AMP effects. We expect that AMP effects should be larger in the standard AMP than in the skip AMP.

For our second hypothesis, we will conduct a linear regression analysis with rate of skipping in the skip AMP as an independent variable, and AMP effect in the standard AMP as a dependent variable. We expect that higher rates of skipping in the skip AMP should predict larger AMP effects in the standard AMP.