Completing a Race IAT changes racial bias

Ian Hussey & Jan De Houwer

Ghent University, Belgium

Author Note

Correspondence should be addressed to Ian Hussey, Department of Experimental-Clinical and Health Psychology, Ghent University, Henri Dunantlaan 2, Gent 9000, Belgium. Email: ian.hussey@ugent.be. The preparation of this article was made possible by Ghent University grants 01P05517 to IH and BOF16/MET\_V/002 to Jan De Houwer.

Abstract

The Race Implicit Association Test has been used in online studies to assess implicit racial biases in over four million participants. Results from three pre-registered experiments (*N* = 685) demonstrated that completing a Race IAT serves to change the racial attitudes that it seeks to assess. Increases in negative implicit racial attitudes were observed on two different implicit measures, but did not generalize to a behavioural measure of racial bias. Increases in positive explicit racial attitudes were also observed. Results highlight an important caveat for many forms of psychological assessment: that by measuring, we often perturb the system that we wish to understand.

Keywords: Implicit racial bias; implicit social cognition; implicit association test

Completing a Race IAT changes racial bias

All psychological testing to some degree also provides individuals with new experiences that influences their subsequent behaviour: just because a task is intended as a testing context does not mean that it will not train or induce other experiences or behaviour. This is akin to Heisenburg’s observer effect in physics, where the act of measuring perturbs the system that we are interested in understanding. For example, there is significant literature on the question of whether asking individuals about suicidality increases the risk of future suicidal behaviour (De Cou & Schumann, 2017). The implications of these results for future research of course depend on any learning effects direction and magnitude. For example, lowering the risk of suicide merely by asking about it would be desirable, whereas raising it would be problematic.

In contrast, the study of implicit biases and implicit social cognition has paid relatively little attention to this question of whether assessing implicit attitudes also serves to change those attitudes. This question gains increased importance given the sheer scale of use of implicit measures: for example, upwards of forty million participants have now completed Implicit Attitudes Test in online studies (e.g., Xu, Nosek, & Greenwald, 2014), and implicit measures are used in a wide range of socially important domains including the assessment of risk of suicidal behaviour (Nock et al., 2010).

Recent research has demonstrated that implicit racial attitudes can be intentionally changed in several ways, such as via evaluative conditioning and learning paradigms (Lai et al., 2014). However, until recently, little or no work has examined the influence of the completing the IAT on the very attitudes it seeks to assesses.

Importantly,

A single block of IAT categorizations can induce learning (ebert)

The act of completing an IAT has recently been shown to be capable of establishing attitudes towards novel stimuli (Hussey & De Houwer, REF).

Specifically, the Race IAT has also been shown to induce. (Vorauer, 2012) – some existing evidence but no fine grain explanation of what learning processes are involved

However, it’s not clear what mechanism might drive this, and/or completing the IAT changes implicit measures themselves.

(Hussey & De Houwer, 2017) – recent evidence that completing an IAT can establish novel implicit and explicit attitudes, and that this learning is analogical in nature.

e.g., analogy within IAT.

However, no work on whether learning via the IAT change well-established attitudes, such as racial attitudes.

We therefore examined whether the Race IAT can increase negative implicit biases against the racial out-group.

# Experiment 1

## Method

We report how we determined our sample size, all data exclusions, all manipulations, and all measures in the study, and all studies in this article (Simmons, Nelson, & Simonsohn, 2012). All inclusion and exclusion criteria, data collection stopping rules, analytic strategies and code for their implementation were pre-registered. All data and code are available in supplementary materials the OSF (<https://osf.io/7pbjq/?view_only=95883ad70c624ee780351e8aaf8044cc>), along with detailed descriptions of each measure and the full results of all models.

Sample. Participants for all studies were recruited online using the Prolific platform ([www.prolific.ac](http://www.prolific.ac)) and the experiment was completed through participants’ internet browsers. In line with recommendations to prevent selective attrition when recruiting participants online, participants were informed about the duration of the experiment prior to participation (Zhou & Fishbach, 2016). Inclusion criteiria were white ethinicity (to create a homogenous in- and out-groups), age 18 to 65, English as a first language, full use of both hands, normal or corrected to normal vision, and no participation in the researchers’ similar previous experiments. Participants provided informed consent prior to participation in all experiments. 159 individuals provided at least some data and were paid £1.20. For all experiments, exclusion criteria were incomplete data on any task and more than 10% of trials < 300 ms on either of the behavioural tasks. Eleven individuals were excluded on this basis (6.9%). No evidence of condition-dependent attrition or exclusion was found, χ2(1, *n* = 159) < 0.001, *p* > .999. 148 participants remained in the analytic sample (*M*age = 32.1, *SD* = 11.1; 47 women, 98 men, 3 identified using a non-binary category or provided no response).

Procedure and measures. Participants were randomly assigned to the Race IAT condition or the Flowers-Insects IAT condition when they began the experiment. Participants completed the Modern Racism Scale, then either the Race IAT or Flowers-Insects IAT, then the black faces SC-IAT and ratings scales. IAT and SC-IAT block order was counterbalanced between participants, as was the order of the SC-IAT and ratings scales.

Modern racism scale. This seven-item self-report measure includes items such as “Black people are getting too demanding in their push for equal rights” and uses a five-point response scale (strongly disagree to strongly agree: McConahay, 1986). Sum scores on this scale were entered as a covariate in all models.

Implicit Association Tests. The IAT assesses the relative speed with which participant can categorize two target categories (black people and white people) and two attribute categories (good and bad). It does so by comparing how quickly participants respond when one set of targets and attributes share a response key (e.g., press left for black people or bad, press right for white people or good) with how quickly they respond when intersections are reversed (e.g., press left for black people or good, press right for white people or bad). All task parameters followed the recommendations of a methodological review the IAT (Nosek, Greenwald, & Banaji, 2005). Two versions of the IAT were employed that differed in their target stimuli. The Race IAT used the same stimuli that have been employed in the task hosted on the well-known Project Implicit website since 2002 (Xu et al., 2014). This employed the target categories “black people” (six pictures of black men and women’s faces) and “white people” (six pictures of white men and women’s faces), and the attribute categories “good” (joy, happy, laughter, love, glorious, pleasure, peace, and wonderful) and “bad” (evil, agony, awful, nasty, terrible, horrible, failure, and hurt). The Flowers-Insects IAT was identical other than changing the target categories to “Flowers” (six pictures of flowers) and “Insects” (six pictures of insects; Greenwald, McGhee, & Schwartz, 1998).

Single-Category Implicit Association Test. A variant of the IAT, the SC-IAT contains only one target category so as to provide a procedurally non-relative measure of bias towards one category (black people) without a contrast category (e.g., white people; Karpinski & Steinman, 2006). The presence of any learning effects between the groups could therefore be attributed to the IAT condition.

Ratings scale. Participants rated the six images of black men and women’s faces used in the race IAT using a seven-point scale (1 - very negative to 7 - very positive).

## Results

Typically, responses on the SC-IAT are quantified using a variant of the *D* scoring algorithm (Greenwald, Nosek, & Banaji, 2003) to control for general responding speed between participants. We expected to observe relatively small effect sizes, and therefore chose to employ an alternative, more power analytic strategy: mixed effects modeling (Bates, Mächler, Bolker, & Walker, 2015). These provide greater power by considering all data points generated by each participant (e.g., 140 reaction times within the SC-IAT’s critical blocks) while still controlling for differences in general responding speed between participants and acknowledging the non-independence of the multiple reaction times generated by each participant. We employed mixed-effects models for all measures in the present article. For the sake of clarity and brevity, only results of main or interaction effects testing our pre-registered hypotheses will be reported for each experiment. Full results of each mixed model are included in the supplementary materials.

Reaction times on the SC-IAT test blocks that deviated from the mean by > 2.5 standard deviations were removed as outliers (0.55% of trials removed). This approach was also applied for the AMP and Shooter bias task in subsequent experiments. Data were then entered into a linear mixed-effects model. Reaction time was entered as the dependent variable, SC-IAT block, IAT condition and their interaction were entered as fixed effects, racism was entered as a fixed-effect covariate, and participant was entered as a random effect (Wilkinson notation: RT ∼ block \* condition + racism + (1 | participant)). Results demonstrated that SC-IAT effects differed significantly between IAT conditions, *B* = 4.459, 95% CI = [1.030, 7.887], β = 0.017, 95% CI = [0.004, 0.029], *p* = .011. Inspection of the estimated marginal means revealed that participants who completed the Race IAT demonstrated more negative implicit bias towards black people on the subsequent SC-IAT than did participants who completed the Flowers-Insects IAT, as hypothesized.

Self-report ratings data were analyzed using a similar linear mixed-effects model, with rating as the dependent variable, IAT condition as a fixed effect, racism as a fixed-effect covariate, and participant as a random effect (rating ∼ condition + racism + (1 | participant)). Contrary to our hypothesis, no evidence was found for differences in ratings between the IAT conditions, *B* = -0.04, 95% CI = [-0.18, 0.10], β = -0.04, 95% CI = [-0.17, 0.09], *p* = .560.

# Experiment 2

In order to examine the robustness of the effect observed in Experiment 1, we conducted a close replication using a different implicit measure as a dependent variable: the Affective Misattribution Procedure (AMP: Payne, Cheng, Govorun, & Stewart, 2005). This served to decrease the procedural similarities the training task (IAT) and testing task, and therefore remove the possibility that the effects in Experiment 1 were merely a carryover effect from the training task. The design was otherwise identical to the previous experiment.

## Method

Sample. 232 individuals provided at least some data and were paid £1.20, 19 were excluded (8.2%)[[1]](#footnote-1). No evidence of condition-dependent attrition or exclusion was found, χ2(1, *n* = 232) = 1.64, *p* = .200. 213 participants remained in the analytic sample (*M*age = 35.8, *SD* = 12.1; 103 women, 108 men, 2 identified using a non-binary category or provided no response).

Procedure and measures. These were identical to Experiment 1 other than the use of the AMP instead of the SC-IAT. This task presents participants with Chinese characters and asks them to rate them either as positive or negative. Prime stimuli are flashed briefly on screen before each Chinese character. However, participants are instructed to ignore these primes and rate the valence of the Chinese characters only. Previous research demonstrates that participants unintentionally misattribute the valence of the primes for that of the Chinese characters, providing a measure of automatic evaluations of the primes (Payne & Lundberg, 2014). In this case, a single-category version of the AMP was employed so as to provide a measure of implicit racial bias towards black people in the absence of a racial contrast category (e.g., white people). Two forms of prime were used: images of black people (black primes) and grey squares (neural primes: see Payne et al., 2010). All other details of the AMP followed typical practices for this widely-used implicit measure. Participants also provided an exploratory single-item self-report measure of stimulus awareness after the AMP. This asked whether the images that were presented in the AMP were of a) black people, b) white people, c) both, or d) I don’t know.

## Results

Trials on the AMP where reaction time deviated from the mean by > 2.5 standard deviations were removed as outliers (1.09% of trials removed). A binary logistic mixed-effects model was constructed with AMP ratings as the dependent variable, AMP prime type (black faces vs. neutral grey square), IAT condition and their interaction as fixed effects, racism as a fixed-effect covariate, and participant as a random effect (rating ∼ prime \* condition + racism + (1 | participant)). As hypothesized, AMP effects differed between the two IAT conditions, OR = 0.92, 95% CI = [0.90, 0.95], *p* < .001. Inspection of the estimated marginal means indicated participants who completed the Race IAT demonstrated more negative implicit bias towards images of black people on the subsequent AMP than did participants who completed the Flowers-Insects IAT.

The self-report ratings data were analyzed using an identical model to Experiment 1. Results revealed no evidence for differences in self-report ratings between IAT conditions, *B* = 0.10, 95% CI = [-0.02, 0.22], β = 0.10, 95% CI = [-0.01, 0.21], *p* = .089.

# Experiment 3

In a third experiment, we examined the generalizability of this learning effect to other behavioural tasks that assess racial bias: the Shooter Bias task (or Police Officer’s Dilemma Task: Correll et al., 2007). This task presents participants with images of men who are either armed or unarmed and requires them to make “shoot” or “don’t shoot” responses under time pressure. Previous studies have demonstrated a greater propensity to shoot images of black men relative to white, therefore providing a measure of racial bias. The design was otherwise identical to the previous experiments.

## Method

Participants. 294 individuals provided at least some data and were paid £1.20, 48 were excluded (16.3%). Some evidence of condition-dependent attrition or exclusion was found, χ2(1, *n* = 294) = 4.21, *p* = .040, with greater attrition in the Flowers-Insects IAT condition (31/147) than the Race IAT condition (17/147). 246 participants remained in the analytic sample (*M*age = 36.1, *SD* = 11.5; 152 women, 91 men, 3 identified using a non-binary category or provided no response).

Procedure and measures. These were identical to Experiment 1 and 2, with the exception of the use of a Shooter Bias task as a dependent variable. All parameters of the Shooter bias task followed the recommendations of a recent methodological review (Correll, Hudson, Guillermo, & Ma, 2014). In contrast to previous research that manipulated presenting images of black and white men within-participants, we adopted an entirely between-groups design. A single-category version of the Shooter Bias task was used to provide a measure of bias towards black people in the absence of a contrast category (e.g., white people) between the two IAT conditions.

## Results

Analyses of Shooter Bias task data typically include more than one metric of performance within the task. We therefore selected the three most common metrics on the basis of a recent meta-analysis: differential reaction times between trial types (armed vs. not armed), response sensitivity, and response bias (Correll et al., 2014). Each was analyzed using a linear mixed effects model. 1.09% of trials were first removed as outliers. Reaction time was entered as the dependent variable, trial type (armed vs. unarmed), IAT condition and their interaction were entered as fixed effects, racism as a fixed-effect covariate, and participant as a random effect (RT ∼ trial\_type \* condition + racism + (1 | participant)). No interaction between trial type and IAT condition was found, *B* = 0.983, 95% CI = [-0.298, 2.264], β = 0.010, 95% CI = [-0.003, 0.023], *p* = .133.

Second, we calculated an index of sensitivity, or the ability to accurately discriminate armed from unarmed individuals (d'). Differences in sensitivity between the IAT conditions were assessed in a second model: sensitivity was entered as the dependent variable, trial type (armed vs. unarmed), IAT condition as a fixed effect, racism as a fixed-effect covariate, and participant as a random effect (d' ∼ condition + racism + (1 | participant)). Our hypothesis that the Shooter Bias effects differed between the two IAT conditions referred to the main effect for experimental condition, which was found to be non-significant, *B* = 0.02, 95% CI = [-0.10, 0.14], β = 0.02, 95% CI = [-0.10, 0.15], *p* = .741.

Third, we calculated an index of response bias (c). This refers to participants’ biases towards proving a “shoot” response relative to a “don’t shoot” response, regardless of whether the image presented an individual who was armed or unarmed. Response bias was entered as the dependent variable, trial type (armed vs. unarmed) and experimental condition as a fixed effect, racism as a fixed-effect covariate, and participant as a random effect (c ∼ condition + racism + (1 | participant)). No differences in response bias was found between IAT conditions, *B* = 0.004, 95% CI = [-0.034, 0.042], β = 0.013, 95% CI = [-0.113, 0.139], *p* = .840.

The self-report ratings data were analyzed using the same model to previous experiments. In this case, differences in self-report ratings were found between the IAT condition, *B* = 0.19, 95% CI = [0.08, 0.31], β = 0.18, 95% CI = [0.08, 0.28], *p* < .001. Inspection of marginal estimated means indicated that participants rated the images of black men and women more positively when they previously completed a Race IAT than a Flowers-Insects IAT. Finally, self-report ratings from all three experiments were submitted to a random effects meta-analysis. This model was identical to the previous analyses of self-report ratings other than also including experiment as a random effect, but was not pre-registered. Results were consistent with those from Experiment 3: participants ratings of images of black people’s faces were more positive when they previously completed a Race IAT than a Flowers-Insects IAT, *N* = 603, *B* = 0.10, 95% CI = [0.03, 0.17], β = 0.10, 95% CI = [0.03, 0.16], *p* = .004.

# Discussion

Results from all three metrics of performance on the Shooter Bias task provided no evidence that participants’ performances on the Shooter Bias task were influenced by previously completing a Race IAT relative to a Flowers-Insects IAT.

Results from three pre-registered studies demonstrated that the act of assessing racial attitudes using a Race IAT also served to change those attitudes. Experiments 1 and 2 suggest that completing a Race IAT increased negative implicit negative racial bias towards black people on a subsequent implicit measure (the SC-IAT and AMP). However, Experiment 3 found no evidence for the generalizability of this effect to another behavioural measure of racial bias (the Shooter Bias task). Unexpectedly, results from Experiment 3 and a meta-analysis of all three experiments suggested the opposite pattern of effect on the self-report measures: completing a Race IAT increased positive explicit evaluations of black people relative to completing a non-racial Flowers-Insects IAT. All analyses controlled for self-reported racism as a covariate, and used homogenous racial in- and out-groups (white participants and images of black people, respectively).

Implications for the IAT

Issues raised: magnitude of the learning effect (small); persistence of effect across time (likely not); specificity of effect to the IAT (likely not); explanation of the effect (analogical, based on previous work).

All three experiments employed homogenous in- and out-groups by recruiting white participants and employing stimuli related to black people in all tasks other than the IAT. Future research might examine effects between other in- and out-groups, and their relative strength between these group pairings.

Future research might examine whether these changes in racial attitudes due to competing the Race IAT persist across time (cf. Lai et al., 2014, 2016).

References

Bates, D., Mächler, M., Bolker, B., & Walker, S. (2015). Fitting Linear Mixed-Effects Models Using lme4. *Journal of Statistical Software*, *67*(1), 1–48. https://doi.org/10.18637/jss.v067.i01

Correll, J., Hudson, S. M., Guillermo, S., & Ma, D. S. (2014). The Police Officer’s Dilemma: A Decade of Research on Racial Bias in the Decision to Shoot. *Social and Personality Psychology Compass*, *8*(5), 201–213. https://doi.org/10.1111/spc3.12099

Correll, J., Park, B., Judd, C. M., Wittenbrink, B., Sadler, M. S., & Keesee, T. (2007). Across the thin blue line: Police officers and racial bias in the decision to shoot. *Journal of Personality and Social Psychology*, *92*(6), 1006–1023. https://doi.org/10.1037/0022-3514.92.6.1006

De Cou, C. R., & Schumann, M. E. (2017). On the Iatrogenic Risk of Assessing Suicidality: A Meta-Analysis. *Suicide and Life-Threatening Behavior*. https://doi.org/10.1111/sltb.12368

Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. (1998). Measuring individual differences in implicit cognition: the Implicit Association Test. *Journal of Personality and Social Psychology*, *74*(6), 1464–1480. https://doi.org/10.1037/0022-3514.74.6.1464

Greenwald, A. G., Nosek, B. A., & Banaji, M. R. (2003). Understanding and using the Implicit Association Test: I. An improved scoring algorithm. *Journal of Personality and Social Psychology*, *85*(2), 197–216. https://doi.org/10.1037/0022-3514.85.2.197

Hussey, I., & De Houwer, J. (2017). *The IAT as an analogical learning task*. Manuscript submitted for publication.

Karpinski, A., & Steinman, R. B. (2006). The single category implicit association test as a measure of implicit social cognition. *Journal of Personality and Social Psychology*, *91*(1), 16–32. https://doi.org/10.1037/0022-3514.91.1.16

Lai, C. K., Marini, M., Lehr, S. A., Cerruti, C., Shin, J.-E. L., Joy-Gaba, J. A., … Nosek, B. A. (2014). Reducing implicit racial preferences: I. A comparative investigation of 17 interventions. *Journal of Experimental Psychology: General*, *143*(4), 1765–1785. https://doi.org/10.1037/a0036260

Lai, C. K., Skinner, A. L., Cooley, E., Murrar, S., Brauer, M., Devos, T., … Nosek, B. A. (2016). Reducing implicit racial preferences: II. Intervention effectiveness across time. *Journal of Experimental Psychology: General*, *145*(8), 1001–1016. https://doi.org/10.1037/xge0000179

McConahay, J. B. (1986). Modern racism, ambivalence, and the modern racism scale. In J. F. Dovidio & S. L. Gaertner (Eds.), *Prejudice, Discrimination, and Racism* (pp. 91–125). San Diego, CA: Academic Press.

Nock, M. K., Park, J. M., Finn, C. T., Deliberto, T. L., Dour, H. J., & Banaji, M. R. (2010). Measuring the suicidal mind: Implicit cognition predicts suicidal behavior. *Psychological Science*, *21*(4), 511–517. https://doi.org/10.1177/0956797610364762

Nosek, B. A., Greenwald, A. G., & Banaji, M. R. (2005). Understanding and using the Implicit Association Test: II. Method variables and construct validity. *Personality & Social Psychology Bulletin*, *31*(2), 166–180. https://doi.org/10.1177/0146167204271418

Payne, K., Cheng, C. M., Govorun, O., & Stewart, B. D. (2005). An inkblot for attitudes: Affect misattribution as implicit measurement. *Journal of Personality and Social Psychology*, *89*(3), 277–293. https://doi.org/10.1037/0022-3514.89.3.277

Payne, K., Krosnick, J. A., Pasek, J., Lelkes, Y., Akhtar, O., & Tompson, T. (2010). Implicit and explicit prejudice in the 2008 American presidential election. *Journal of Experimental Social Psychology*, *46*(2), 367–374. https://doi.org/10.1016/j.jesp.2009.11.001

Payne, K., & Lundberg, K. (2014). The Affect Misattribution Procedure: Ten Years of Evidence on Reliability, Validity, and Mechanisms. *Social and Personality Psychology Compass*, *8*(12), 672–686. https://doi.org/10.1111/spc3.12148

Simmons, J. P., Nelson, L. D., & Simonsohn, U. (2012). *A 21 word solution*. Social Science Research Network. Retrieved from http://papers.ssrn.com/abstract=2160588

Vorauer, J. D. (2012). Completing the Implicit Association Test Reduces Positive Intergroup Interaction Behavior. *Psychological Science*, *23*(10), 1168–1175. https://doi.org/10.1177/0956797612440457

Xu, K., Nosek, B., & Greenwald, A. (2014). Psychology data from the Race Implicit Association Test on the Project Implicit Demo website. *Journal of Open Psychology Data*, *2*(1). https://doi.org/10.5334/jopd.ac

Zhou, H., & Fishbach, A. (2016). The pitfall of experimenting on the web: How unattended selective attrition leads to surprising (yet false) research conclusions. *Journal of Personality and Social Psychology*, *111*(4), 493–504. https://doi.org/10.1037/pspa0000056

Table 1. *SC-IAT effects (Experiment 1).*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | 95% CI | |  | 95% CI | |  |
|  | *B* | lower | upper | β | lower | upper | *p* |
| Intercept | 662.79 | 601.30 | 724.28 |  |  |  | <.001 |
| SCIAT block | -0.99 | -4.42 | 2.44 | 0.00 | -0.02 | 0.01 | .571 |
| IAT condition | -7.60 | -24.30 | 9.11 | -0.03 | -0.09 | 0.03 | .373 |
| SCIAT block \* IAT condition | 4.46 | 1.03 | 7.89 | 0.02 | <0.01 | 0.03 | .011 |
| Racism | 0.72 | -2.57 | 4.00 | 0.01 | -0.05 | 0.08 | .669 |

Table 2. *AMP effects (Experiment 2).*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | 95% CI | |  |
|  | OR | lower | upper | *p* |
| Intercept | 5.18 | 2.09 | 12.87 | <.001 |
| Prime type | 1.04 | 1.00 | 1.07 | .029 |
| IAT condition | 1.12 | 0.91 | 1.36 | .282 |
| Prime type \* condition | 0.92 | 0.90 | 0.95 | <.001 |
| Racism | 0.96 | 0.91 | 1.01 | .099 |

Table 3. *Shooter Bias effects (Experiment 3).*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  | 95% CI | |  | 95% CI | |  |
|  |  | *B* | lower | upper | β | lower | upper | *p* |
| *Reaction time* | |  |  |  |  |  |  |  |
|  | Intercept | 633.16 | 609.60 | 656.71 |  |  |  | <.001 |
|  | Trial type | -28.85 | -30.13 | -27.57 | -0.29 | -0.30 | -0.28 | <.001 |
|  | IAT condition | -6.00 | -10.93 | -1.08 | -0.06 | -0.11 | -0.01 | .017 |
|  | Trial type \* IAT condition | 0.98 | -0.30 | 2.26 | 0.01 | >-0.01 | 0.02 | .133 |
|  | Racism | -0.09 | -1.45 | 1.27 | 0.00 | -0.05 | 0.05 | .901 |
| *Sensitivity (d')* | |  |  |  |  |  |  |  |
|  | Intercept | 2.65 | 2.09 | 3.22 |  |  |  | <.001 |
|  | IAT condition | 0.02 | -0.10 | 0.14 | 0.02 | -0.1 | 0.15 | .741 |
|  | Racism | <0.01 | -0.03 | 0.04 | 0.01 | -0.11 | 0.14 | .823 |
| *Response bias (c)* | |  |  |  |  |  |  |  |
|  | Intercept | 0.07 | -0.11 | 0.25 |  |  |  | .446 |
|  | IAT condition | <0.01 | -0.03 | 0.04 | 0.01 | -0.11 | 0.14 | .840 |
|  | Racism | >-0.01 | -0.01 | 0.01 | -0.03 | -0.15 | 0.10 | .673 |

Table 4. *Self-reported evaluations (All experiments).*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  | 95% CI | |  | 95% CI | |  |
|  |  | *B* | lower | upper | β | lower | upper | *p* |
| *Experiment 1* | |  |  |  |  |  |  |  |
|  | Intercept | 5.77 | 5.26 | 6.28 |  |  |  | <.001 |
|  | IAT condition | -0.04 | -0.18 | 0.10 | -0.04 | -0.17 | 0.09 | .560 |
|  | Racism | -0.08 | -0.11 | -0.06 | -0.40 | -0.52 | -0.27 | <.001 |
| *Experiment 2* | |  |  |  |  |  |  |  |
|  | Intercept | 4.99 | 4.45 | 5.52 |  |  |  | <.001 |
|  | IAT condition | 0.10 | -0.02 | 0.22 | 0.10 | -0.01 | 0.21 | .089 |
|  | Racism | -0.04 | -0.07 | -0.01 | -0.14 | -0.25 | -0.03 | .013 |
| *Experiment 3* | |  |  |  |  |  |  |  |
|  | Intercept | 5.01 | 4.48 | 5.54 |  |  |  | <.001 |
|  | IAT condition | 0.19 | 0.08 | 0.31 | 0.18 | 0.08 | 0.28 | <.001 |
|  | Racism | -0.03 | -0.06 | >-0.01 | -0.11 | -0.22 | -0.01 | .034 |
| *Meta-analysis* | |  |  |  |  |  |  |  |
|  | Intercept | 5.3 | 4.99 | 5.61 |  |  |  | <.001 |
|  | IAT condition | 0.1 | 0.03 | 0.17 | 0.10 | 0.03 | 0.16 | .004 |
|  | Racism | -0.05 | -0.07 | -0.04 | -0.21 | -0.28 | -0.15 | <.001 |

1. Our original pre-registered criteria also excluded participants with 10% of trials on the AMP with reaction times < 300 ms. However, this criterion failed to take in to account the distribution of reaction times on the AMP and resulted in an unacceptably high attrition rate (47.9% of remaining sample). As such, this exclusion criterion was dropped. This analytic decision was made before the any hypothesis tests were run. [↑](#footnote-ref-1)