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MIXED EVIDENCE FOR NAME PRIMING EFFECTS AS A MEASURE OF IMPLICIT SELF-ESTEEM: A CONCEPTUAL REPLICATION OF KRAUSE ET AL. (2012)

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Krause et al. (2012) demonstrated that evaluative responses elicited by self-related primes in an affective priming task have incremental validity over explicit self-esteem in predicting self-serving biases in performance estimations and expectations in an anagram task. We conducted a conceptual replication of their experiment in which we added a behavioral and an affective outcome and presented names instead of faces as self-related primes. A heterogeneous sample (N = 96) was recruited for an online data collection. Name primes produced significantly positive and reliable priming effects, which correlated with explicit self-esteem. However, neither these priming effects nor explicit self-esteem predicted the cognitive, affective, or behavioral outcomes. Despite the lack of predictive validity of the implicit measure for affective and behavioral outcomes, the positive and reliable priming effects produced by name primes warrant the further investigation of the validity of the affective priming paradigm as a measure of implicit self-esteem.

Keywords: implicit self-esteem, affective priming task, replication

Two decades ago, Greenwald and Banaji (1995) introduced the concept of implicit self-esteem (ISE) that was later conceptualized as an evaluative association with a hypothetical self-node in semantic memory (Greenwald et al., 2002). In trying to measure the strength and valence of said supposed implicit association multiple measures were developed. However, due to a lack in reliability of most of these measures (Bosson et al., 2000) only the Implicit Association Test (IAT; Greenwald et al., 1998) and the Name Letter Task (NLT; Kitayama & Rarasawa, 1997; Koole et al., 2001) are since widely used. Despite their acceptable reliability, they

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have been criticized for their questionable validity. For example, in a comprehensive review, Buhrmester et al. (2011) found no robust evidence that the two measures were related to each other, to directly measured explicit self-esteem (ESE), or to covariates of ESE. While most literature on ISE still uses these measures, the search for a valid measure of implicit self-esteem still continues.

A notable contender is the Affective Priming Task (APT; Fazio et al., 1995). In this paradigm, respondents categorize target stimuli as pleasant or unpleasant. Adopting the APT to the assessment of implicit self-evaluations (SE-APT), self- and other-related stimuli are presented as primes, which depending on their evaluative associations differentially facilitate or inhibit the evaluative categorization of pleasant or unpleasant target stimuli. That is, if a self-related prime automatically activates a positive evaluation (high ISE), respondents are assumed to react faster and more accurately to pleasant targets compared to unpleasant targets. Non-self-related primes should elicit less or no evaluations and serve as a baseline to control for differences in responding to pleasant and unpleasant targets. While on average this prediction was shown to hold true, with self-related primes on average facilitating evaluative responses to positive compared to negative targets, Bosson et al. (2000) found poor reliability for their implementation of affective priming, which renders it an unsuitable measure for and assessment of individual differences in ISE. However, adapted procedures have been published since then, which render ISE indicators extracted from an SE-APT much more reliable and valid (Krause et al., 2011, 2012, 2016; Wentura et al., 2005). Compared to the SE-APT used by Bosson et al. (2000), Krause et al. (2011) drastically increased the trial number, presented trials in a fixed random order (Banse, 1999), used faces instead of words as primes (Back et al., 2009), implemented a response window (Draine & Greenwald, 1998; Wentura et al., 2005) and calculated an ISE estimator only based on error rates. These changes resulted in the SE-APT being as reliable as the NLT and the IAT. What is more, the ISE estimator extracted from such an SE-APT demonstrated its validity by being able to predict self-serving bias, the perception of being liked, and self-confident behavior over and above ESE (Back et al., 2009; Krause et al., 2012, 2016).

In light of this development, more basic research on the validity of the SE-APT as an ISE measure is warranted. In the present study, we modified the study design of Krause et al. (2012)—referred to as the original study from here on—to test the validity and generalizability of their findings. We asked 96 students to complete two ESE measures and the SE-APT. Afterward, participants completed an anagram task and had to estimate their performance multiple times during the task. Estimates of ESE and ISE were then used to predict self-serving biases in the performance estimations of participants. We found that an ISE estimator extracted from the SE-APT was able to predict the criteria over and above ESE. We will replicate this design with the following modifications.

Prime Materials. In the original study, primes in the APT were neutral portrait photographs of participants and unknown others. Vandromme et al. (2011) found that this kind of material produced priming effects that were less predictive of self-confident behavior (gaze avoidance) than the effects produced by name primes.

Therefore, in this replication full names of participants were used as self-related primes to optimize the procedure. In addition, we used non-self-related primes instead of other-related primes as a control category. Using other-related primes might introduce variance into the APT that confounds the effect, namely the implicit evaluation of unknown other individuals. The original study found an average neutral evaluation of the other-related primes but because of general response tendencies, an objective neutral point on the scale of priming effects is hard to establish. In addition, evaluations of the other-related primes showed just as much variance as those of self-related primes. To get an estimation of the pure response bias, thereby establishing a neutral baseline and avoiding the introduction of construct irrelevant variance, we replaced other-related stimuli with non-self-related random strings and added nonprimed trials (i.e., trials without primes, see below for details) that the prime effects of primed trials can be compared against.

Sample and Setting. The sample of the original study consisted of college students who were tested in a laboratory setting. To assess the generalizability of the findings to a more heterogeneous sample and a setting closer to everyday life we recruited a diverse German-speaking sample who completed the assessment at home via online data collection.

APT Procedure. Instead of implementing the response-window technique used in the original study, we used a response deadline. This Error Based Affective Priming Task (EB-APT) procedure is easier to instruct, less prone to possible imprecisions in reaction time measurements in an online study, and has been shown to produce effects that are similar with regard to reliability and validity (Krause et al., 2016).

Criteria. Taking into account criticism on the sole usage of outcome measures that are based on self-report (Baumeister et al., 2007), we added a behavioral dependent variable in our design, namely the choice to abort or continue the anagram task in a high-stakes context. Additionally, we investigated the validity of self-esteem indicators in predicting the affective reaction to failure feedback. To this end, we used an established measure of affect (see below) instead of the mood adjective scale used in the original study.

In sum, by applying these changes to the design of the original studies and using the same analytical strategies we aimed to get further insights into the validity of the SE-APT as an ISE measure. We tested the following directional hypotheses:

1. Self-related name primes elicit (a) a positive response bias, which is (b) stronger than for both non-self-related primes and nonprimed trials.
2. The size of the priming effect in the SE-APT (indicator of ISE, for computational details, see below) and directly measured ESE (a) positively and (b) independently predict self-serving biases in performance expectations and performance estimations as well as self-confident behavior and affective reactions in the face of failure.

METHODS

PARTICIPANTS AND PROCEDURE

Ninety-six German native speakers (59 male, 37 female) were recruited via prolific (prolific.co) to take part in a single-session study and were compensated financially for their participation. The mean age of participants was 31.94 years (*SD* = 10.98). Participants first completed the SE-APT, followed by two explicit self-esteem scales. Lastly, participants completed an anagram task. Before and after the anagram task affect was measured. In the end, participants were debriefed about all deceptions in the study and its purpose. This procedure was approved by the Ethical Commission of the Faculty of Social and Behavioral Sciences (reference number FSV 20/036). Materials were administered via a PsychoJS script (Peirce et al., 2019) hosted on Pavlovia (pavlovia.com). This kind of implementation has been shown to produce adequate precision in presentation times of visual stimuli (Anwyl-Irvine et al., 2020; Bridges et al., 2020). A minimum monitor frame rate of 30 Hz was deemed necessary for accurate presentation times of primes (67 ms) and inter stimulus intervals (33 ms). Only one subject ran the experiment with a lower frame rate and was not excluded. Eighty percent of participants used a Windows PC, 16% used an Apple Mac, and 4% used a Linux-based system.

The sample size of $N = 96$ was chosen to ensure adequate power (> .80) to detect effects of a size equal to the smallest effect in the original study involving an error-based APT with one-tailed tests. The power to detect a correlation of .26 with a one-tailed test and $\alpha = .05$ was calculated to be .84 for $N = 96$ with G*Power (Faul et al., 2009). Applying the same exclusion criteria as in the reference study, no participant was excluded.

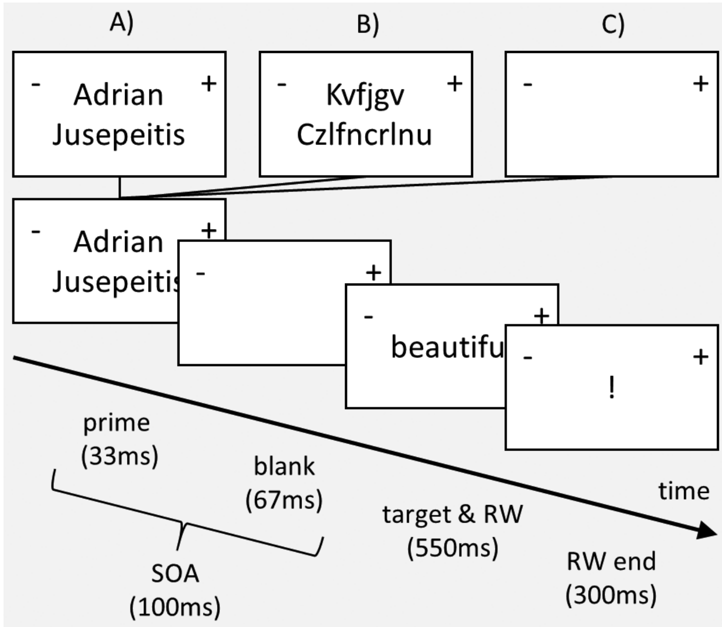
MEASURES

Explicit Self-Esteem

The Multidimensional Self-Esteem Scale (MSES; Schütz & Sellin, 2006) and the Self Attributes Questionnaire (SAQ; Pelham & Swann, 1989) were used as measures of explicit self-esteem. The MSES is a German adaptation of the Self-Rating Scale (Fleming & Courtney, 1984) that allows for a computation of a sum score from 32 items, each measured on a 7-point Likert Scale ranging from 1 (never) to 7 (always). The SAQ asks respondents to compare their abilities in 10 domains with the ability of individuals of their sex and age. Participants can estimate their standing on an 11-point scale from 0th percentile (very low) to 100th percentile (very good).

Self-Esteem Affective Priming Task

An error-based version of the Self-Esteem Affective Priming Task (SE-APT) was adapted from Krause et al. (2016). After two demonstration trials, participants



Note. (A) self-related prime, (B) non-self-related prime, (C) nonprimed trial.
RW = Response Window.

FIGURE 1 Sequence of events per trial in the SE-APT.

completed two practice blocks and five test blocks of this sequential priming paradigm (see Figure 1 for a graphical illustration of the sequence of events in each trial). In each trial, a target adjective (see Appendix A) had to be classified as being pleasant or unpleasant before the presentation of a red exclamation point for 300 ms signaled the end of the response window. Preceding each target a prime was presented for 67 ms followed by a blank screen for 33 ms (prime-target SOA = 100 ms). Three types of trials were presented. First, trials with a self-related prime consisting of the full name of the participant that was presented in two lines (the first name was shown in the upper line, and the last name in the lower line). Second, trials with a neutral non-self-related prime consisting in a random string that was matched for length with the name prime and presented in the same manner. Third, nonprimed trials in which the prime was replaced by a blank screen (only showing response labels). The presentation time of the target and therefore the width of the response window (RW) was adaptive to the performance of the respondents (see Figure 1). If a response occurred in the RW, the exclamation mark (RW end) was not displayed.

Each test block contained each possible combination of trial type and target word once (total number of trials = 3 trial types × 10 targets × 5 blocks = 150). The initial response deadline was 550 ms. In the test blocks, it was adapted to the performance of the participant to ensure the transfer of priming effects into error rates and reduce variance due to different speed-accuracy trade-offs across participants (for details, see Krause et al., 2016). The inter-trial interval (ITI) was 1,000 ms. An immediate error feedback was only given in the first practice block. At the end of each block feedback on the rate of correct and late responses was displayed and participants were instructed to react as fast as possible while maintaining an average error rate of 20% to 30%. For each participant, a positivity index was calculated for each of the three trial types by subtracting the error rate for pleasant targets from the error rate for unpleasant targets respectively. Comparing the positivity indices allowed for conclusions about the response primed by each prime type, see below.

ANAGRAM TASK

In the anagram task, participants were asked to solve 20 five-letter anagrams (Egloff & Krohne, 1996), 5 of which were supposedly easy to solve and 15 of which were difficult to solve (Krause et al., 2012). To heighten the stakes of failing this task, it was introduced as a test of verbal intelligence. Each anagram was presented for seven seconds, after which participants had five seconds to enter their solution. Afterward, the correct solution was presented, and the correctness of their entry was signaled for three seconds (each anagram had only one German word as a correct solution; see Appendix B). Following an ITI of one second, the next trial started. Participants first completed four practice anagrams, two of which were supposedly very easy and two supposedly very hard to solve. To produce an experience of failure, they were then falsely informed that on average participants were able to solve ten out of the following 20 anagrams. The actual average was found to be 5 in the original study. Participants were then asked to estimate how many anagrams they would be able to solve (*pre-task expectancy*). After completing the task, they were asked to estimate how many anagrams they had solved correctly (*perceived performance*) and how many they expected to solve in a subsequent block of the same difficulty (*post-task expectancy*). They were then given the option to continue to a next block and be paid 1€ if they were able to surpass their previous performance or lose 1€ of their payment if they performed worse. Alternatively, they could skip the block and finish the experiment with their current account. Regardless of their choice, the anagram task terminated at this point and the reward remained unchanged. To evaluate the affective reaction to the experience of failure, affect was measured before and after the anagram task with a German version of the Positive Affect Negative Affect Schedule (PANAS; Breyer & Bluemke, 2016; Watson et al., 1988).

The dependent variables extracted from this task were: (1) The pre-task expectancy bias, calculated by subtracting the actual performance (number of correctly solved anagrams) from the pre-task expectancy; (2) the perceived performance bias, calculated by subtracting the actual from the perceived performance; (3) the post-task expectancy bias, calculated by subtracting the actual from the perceived performance post-task expectancy; (4) the decision to continue the task coded as a binary variable; and (5) the affect shift, calculated by subtracting the difference of positive and negative affect ratings before the task from the same difference after the task. These five variables are operationalizations of self-serving bias, self-confident behavior, and affective reactions in face of failure, respectively.

RESULTS

The used syntax and the raw data (Jusepeitis & Rothermund, 2020) can be accessed at the Open Science Framework (https://osf.io/6awqn/). Data preparation procedures and analyses closely replicated the original study. For this reason, a preregistration was considered redundant. Amendments to the analyses of the original study will be explained in detail. All variables that were measured are reported in this article.

EXPLICIT SELF-ESTEEM SCALES

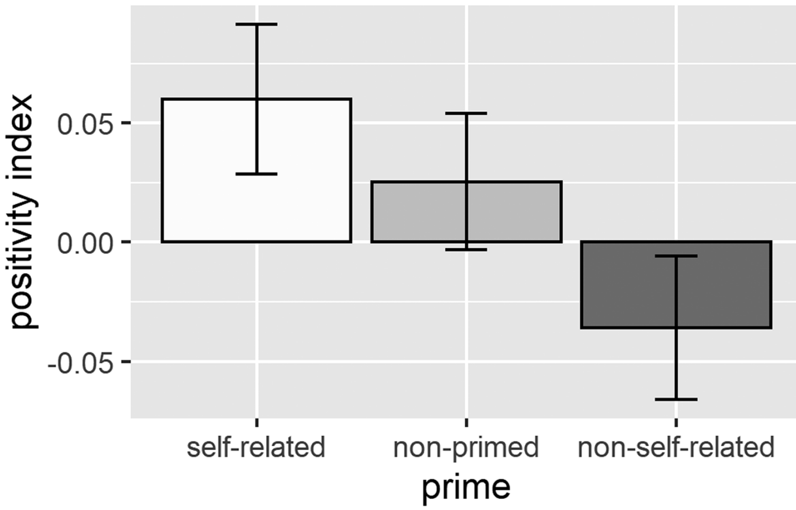
An ESE indicator was produced by averaging the standardized scores of the SAQ ($M = 5.88$, $SD = 1.27$) and the MSES ($M = 3.15$, $SD = 1.09$), which were strongly correlated ($r = .74$, $p < .001$).

SE-APT

The implementation of the adaptive response deadline was successful in producing an average error rate of 23%, $SD = .09$. The differences of error rates for pleasant and unpleasant targets for each prime type were treated as the respective positivity index—see Figure 2. Positive values indicated a tendency to respond with "pleasant" after presentation of each prime. The positivity index for self-primes, $M = 0.06$, $SD = 0.15$, was significantly larger than the one for non-self-related primes, $M = -0.04$, $SD = 0.15$, $t(95) = 5.62$, $p < .001$, $d = 0.57$, and the one for nonprimed trials, $M = 0.03$, $SD = 0.14$, $t(95) = 1.67$, $p < .05$ (one-tailed), $d = 0.17$. The positivity index for non-self-related primes was significantly smaller than for the nonprimed trials, $t(95) = -3.20$, $p < .01$, $d = 0.33$.

The positivity indices for self-primes and non-self-related primes were positively correlated, $r(94) = .39$, $p < .001$, suggesting that both conditions were influenced by an overall response bias. The positivity index for nonprimed trials, however, correlated with neither of the two, both $r \leq .17$, both $p > .05$. This suggests that the nonprimed trials were not subjected to the same response bias shared by the other two trial types.

As in the original study, a single ISE index was calculated as the residual of the regression of the positivity index for self-related primes onto the positivity index of a neutral priming condition to correct for overall response bias. In light of the correlations reported above, we chose the non-self-related condition as a control condition. One reviewer argued that the residualization method in contrast to a simple difference might undercorrect for an overall response bias, which might be problematic in certain scenarios. However, the choice of method in calculating



Note. Positive values of the positivity index reflect a bias toward categorizing the target as pleasant following the respective prime. Error bars reflect 95% confidence intervals.

FIGURE 2 Average positivity index per trial type.

the ISE indicator did not change the results with one exception, which will be reported and discussed below. Hence, to ensure comparability with the original study we continue with the proposed method. Relevant findings for alternative methods and control conditions will be reported and discussed when of interest. A correlation table of positivity indices, different ISE indicators, ESE, and dependent variables can be found in Appendix C.

Applying the residualization procedure separately to the five test blocks allowed for the estimation of internal consistency of the ISE indicator. Cronbach's alpha was satisfactory compared to other implicit measures ($\alpha = .68$).[1]

ANAGRAM TASK

As intended, participants on average solved two anagrams in the practice block ($M = 1.98$, $SD = 1.19$) and five anagrams in the test block ($M = 5.21$, $SD = 3.49$).[2] They expected their performance to be significantly higher ($M = 8.17$, $SD = 3.34$) than their actual performance before the task, $t(95) = 7.57$, $p < .001$, $d = 0.77$. After the task, they significantly underestimated their performance ($M = 4.51$, $SD = 3.02$) compared to

1. Across the four possible ways to calculate the ISE index (residualization vs. difference × non-self-related vs. non-primed as control condition), the reliability ranged from .57 to .74 and was generally slightly higher when using non-primed trials as the control condition.

2. It has to be noted, however, that these averages were not produced by an obvious dichotomy in item difficulties as intended by the authors of the original study. The distribution of item difficulties was rather continuous and ranged from .21 to .73 in the practice phase and from .01 to .64 in the test phase (see Appendix B).

their actual performance, $t(95) = -4.53$, $p < .001$, $d = -0.46$. For the announced next block they expected their performance to not be significantly different from their actual performance ($M = 5.07$, $SD = 3.48$), $t(95) = -0.67$, $p = .51$, $d = 0.07$. Fifty-three percent of participants chose to continue the task. Positive affect decreased significantly from pre- to post-task measurement, $t(95) = -2.38$, $p = .02$, $d = 0.24$. Negative affect increased significantly, $t(95) = 5.30$, $p < .001$, $d = 0.54$. Thus, the average overall shift in affect was significantly negative, $t(95) = -4.89$, $p < .001$, $d = 0.50$.

VALIDITY OF THE SE-APT

Contrary to the original study, ISE and ESE indicators correlated positively, $r(94) = .18$, $p = .04$ (one-tailed).[3] When using latent variable analysis conducted with lavaan (Rosseel, 2012), this correlation became even more pronounced, $r(94) = .31$, $p = .04$ (for details, see Appendix D). However, neither ISE nor ESE indicators significantly predicted any of the dependent variables. All bivariate correlations between ISE/ESE and outcome measures were nonsignificant, and no significant regression coefficients were found in the multiple regression of the criteria on ESE and ISE (see Table 1).

Results for the different ISE calculation procedures were quite homogenous in that they all produced nonsignificant effects. A notable exception emerged for the difference between the self-related positivity index and nonprimed positivity index, which correlated significantly with pre-task expectancy bias, $r(94) = .19$, $p = .03$, and marginally significant with perceived performance bias $r(94) = .16$, $p = .06$, and which also predicted pre-task expectancy over and above ESE, $\beta = .18$, $p = .04$. However, as can be deduced from the correlations shown in Appendix C, this anomaly was produced by an unexpected negative correlation between the nonprimed positivity index and these dependent variables. Because of this, a prime effect for non-self-related primes calculated as the difference of the positivity indices of non-self-related trials and nonprimed trials produced the same results. It also correlated significantly with pre-task expectancy bias, $r(94) = .18$, $p = .04$, and marginally significant perceived performance bias, $r(94) = .13$, $p = .10$, and also predicted pre-task expectancy over and above ESE, $\beta = .18$, $p = .04$. Thus, the apparent validity of the difference between the self-related positivity index and nonprimed positivity index cannot be attributed to ISE.

DISCUSSION

We conducted a conceptual replication of the design of Krause et al. (2012), who—building on the findings of Wentura et al. (2005)—demonstrated the validity of implicit self-esteem indicated by self-priming effects in predicting self-serving biases in the face of failure in an anagram task over and above self-reported

3. Results for the different ISE calculation procedures differed slightly. The ISE-ESE correlations ranged from .10 to .20 and were overall higher for effect scores based on residuals than for differences. The latter finding can be explained by a higher weight of the self-positivity index in the ISE indicators when using residualization instead of differences (see Appendix C).

TABLE 1. Predictive Validity of Explicit and Implicit Self-Esteem Measures

	correlations						β in multiple regression					
	ESE			SE-APT			ESE			SE-APT		
dependent variable	**value**	**LB**	**p**	**value**	**LB**	**p**	**value**	**LB**	**p**	**value**	**LB**	**p**
pre-task expectancy bias	.132	.000	.10	.026	–.107	.40	0.131	–0.041	.11	0.002	–0.170	1.49
perceived performance bias	.096	–.037	.18	.002	–.130	.49	0.099	–0.074	.17	–0.016	–0.189	1
post-task expectancy bias	.041	–.091	.35	–.018	–.150	1	0.046	–0.128	.33	–0.027	–0.201	1
decision to continue	.039	–.094	.35	–.105	–.234	1	0.245	–0.242	.28	–0.473	–4.131	1
affect shift	–.014	–.146	1	–.075	–.206	1	0.000	–0.174	1	–0.075	–0.249	1

Note. ESE = Explicit self-esteem measures; SE-APT = Self-Esteem Affective Priming Task. For the binary dependent variable "decision to continue" biserial correlations and β's from a logistic regression are reported, all other effect measures are product-moment correlations and standardized coefficients in a multiple linear regression of the dependent variable on ESE and EB-APT, respectively. LB denotes the lower bound of the one-tailed 95% confidence interval of the effect. *P* values are 1 when the sign of the effect is not in line with the directional hypotheses.

self-esteem. We modified the priming paradigm with respect to materials and procedure, conducted the replication study in an online setting with a more heterogeneous sample, and added behavioral and affective criteria to the cognitive ones used in the original study. Overall, the results produced with these modifications did not fully correspond to those that were reported in the original study.

Comparing our results to those of the original study the following similarities and differences are relevant.

PRIMING EFFECTS

Nonprimed trials proved to be a problematic control condition in that their positivity index was not subjected to the same overall response bias and surprisingly correlated negatively with some dependent variables in this study. Non-self-related primes elicited a negative response bias in comparison to nonprimed trials and in comparison to the other-related primes in the original study. This might be explained by low-processing fluency regarding the random string of letters, which is known to produce affective and evaluative effects (e.g., Reber et al., 1998), especially when contrasted with the presumably high-processing fluency in reading one's own name. Alternatively, respondents might just have applied an overall negative response bias, which showed in the non-self-related condition and was overcome in the self-condition. A comparison with the nonprimed condition might be misleading since, as we argued above, these trials were not reflecting the overall response bias found in the self- and non-self-related conditions. These findings point to the importance and the difficulties in designing an adequate control category in this setup. Nonetheless, an ISE indicator produced by residualizing the self-positivity index by the non-self-related primes showed the same comparatively high reliability as in the original study.

ANAGRAM TASK

As in the original study, the anagram task effectively produced an experience of failure. The actual performance was lower than the performance that participants predicted in advance, and affect shifted toward negativity from pre- to post-task measurement.

SELF-SERVING BIAS

Participants in this study showed less self-serving biases. Their estimations and expectations regarding their performance were closer to their actual performance, sometimes even underestimating it.

VALIDITY OF ISE ESTIMATORS

Contrary to the original study, but in line with Wentura et al. (2005), ISE and ESE indicators were positively correlated. As Wentura et al. (2005) used initials and the present study used names as primes while Krause et al. (2012) used faces, one might speculate that abstract symbols representing the self automatically activate similar abstract self-evaluative processes as applied in explicit self-evaluation. Faces, on the other hand, confront the respondent with an immediate concrete experience of the self, which might activate different, more specific evaluative processes (e.g., evaluations relating mostly to physical appearance). Depending on the theoretical perspective the correlation of ISE and ESE can be interpreted as a sign of convergent validity (reductionist view; e.g., Fazio, 1990) or a lack of discriminant validity (dual attitudes view; e.g., Wilson et al., 2000) of the supposed ISE indicator. More importantly, however, the ISE indicator was not able to predict any of the criterion variables indicating self-serving bias, self-confident behavior, and affective reaction in face of failure, neither when considered in isolation nor when considered in combination with ESE. To qualify this finding it is important to note that self-reported ESE also did not predict these criterion variables. While most effects had the expected sign, none was statistically significant. When calculating an ISE index as the difference between self-related positivity index and the baseline positivity response bias in nonprimed trials (and thereby diverging from the original study) some effects in line with our hypotheses emerged. However, as pointed out above, this finding was explained by the negative correlation of the positivity response bias in nonprimed trials with the dependent variables and could be replicated by a prime effect that is completely independent of ISE, namely the difference between non-self-related positivity and nonprimed positivity. Hence, it cannot be attributed to ISE. This should inspire careful thought and research on the optimal control condition in the SE-APT. Since even apparently completely unrelated variables like baseline response bias and self-perception biases might be linked in an unexpected (i.e., negative) fashion, effects of ISE might be seen where they are not.

Our results demonstrate that regardless of the sample and modality of self-related primes, the error-based SE-APT procedure (Krause et al., 2016) yields significant priming effects of adequate reliability. In light of the wide range of psychometric quality of ISE measures found in the literature (Bosson et al., 2000), this finding encourages the further use of this paradigm. What is more, the positive correlation of priming effects and ESE indicators shows that the priming effect is not solely caused by the familiarity with one's name (i.e., mere exposure effect; Zajonc, 1968) but indeed captures aspects of self-evaluation. On the other hand, the lack of incremental validity of the priming effects in predicting the criteria over and above ESE casts doubt on the claim that the priming effects reflect an implicit evaluation of the self that shapes cognition and behavior independently of ESE as dual-process models would assume (Back et al., 2009; Gawronski & Bodenhausen, 2007; Greenwald et al., 2002; Strack & Deutsch, 2004). Final conclusions about the validity of priming effects as indicators of ISE, however, are impeded by the fact that ESE also was not predicting the criteria in our sample. Since self-serving biases can be assumed to specifically arise in protecting high self-esteem while processing negative self-relevant information (see self-evaluation maintenance model; Tesser, 1988), the reverse argument might be warranted—that the failure in the anagram task was less self-relevant to our sample than to the sample of the original study. This could be explained by the setting of the study (online vs. laboratory) as well as the sample demographics. Failing a supposed test of verbal intelligence might be a greater threat to self-concept and self-esteem for college students in a laboratory than for working individuals of higher age completing the study online. In light of all the reported findings, this conclusion seems more plausible than prematurely concluding that name priming effects are not a valid indicator of ISE. At the very least, however, our findings demonstrate the necessity of further research to evaluate the predictive validity and boundary conditions of the SE-APT as an indicator of ISE.

CONCLUSION

Our conceptual replication of Krause et al. (2012) demonstrated that name priming produces significantly positive and reliable priming effects in the error-based Self-Esteem Affective Priming Task (Krause et al., 2016). However, while explicit self-esteem and priming effects were positively correlated, both were not predictive of self-serving biases, self-confident behavior, and affective reaction in the face of failure. Hence, the validity of name priming effects as a measure of implicit self-evaluations needs to be further investigated in future research.

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APPENDIX A: STIMULI USED AS PRIMES IN THE EB-APT

pleasant adjectives		unpleasant adjectives	
German	English	German	English
schön	beautiful	feige	cowardly
fair	fair	neidisch	jealous
gesund	healthy	gemein	mean
ehrlich	honest	bösartig	malicious

APPENDIX B: ANAGRAMS USED IN THE ANAGRAM TASK IN ORDER

anagram	correct solution	difficulty
DERFE	FEDER	.21
LAFHP	PFAHL	.53
TAIZT	ZITAT	.51
EMULB	BLUME	.73
EAFLP	APFEL	.28
TWEES	WESTE	.45
PAILR	APRIL	.07
OLVEG	VOGEL	.49
KUREG	GURKE	.32
URZEK	KREUZ	.15
LMDEU	MULDE	.19
AABUN	ANBAU	.09
THAPU	HAUPT	.39
DRNEU	RUNDE	.25
REEFN	FERNE	.38
THIEZ	HITZE	.29
NIPZR	PRINZ	.34
BFREA	FARBE	.31
FKATR	KRAFT	.25
UARFN	ANRUF	.01
EGBTO	GEBOT	.64
SPIET	PISTE	.06
ALUEN	LAUNE	.16
ESURT	STREU	.09

Note. Difficulty denotes the rate of correct responses for the respective anagrams. The first four anagrams were presented in the practice block.

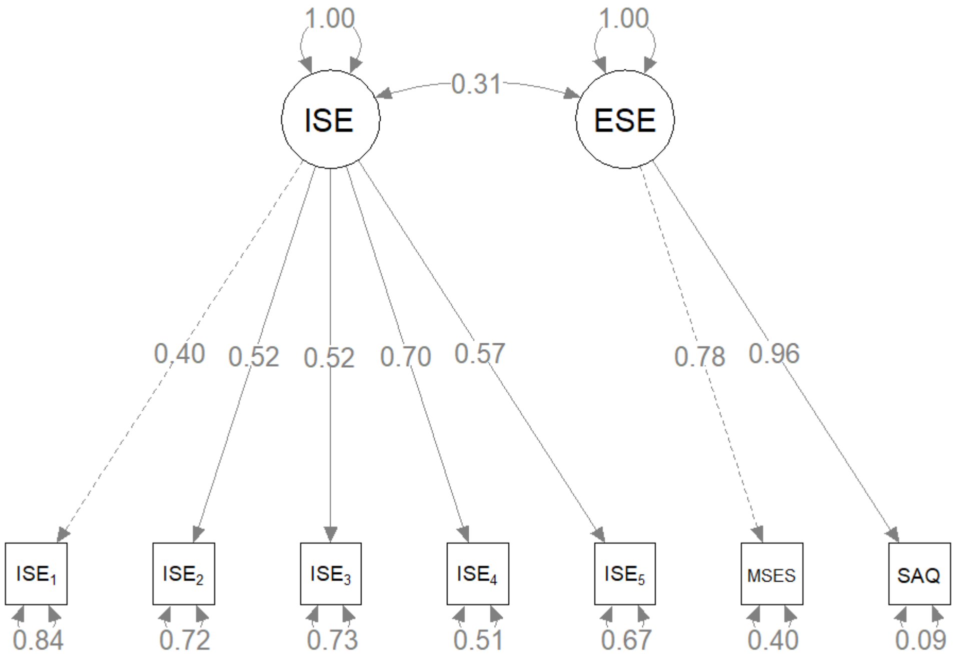
APPENDIX C: CORRELATIONS OF PRIMING PARAMETERS, ESE, AND DEPENDENT VARIABLES

	positivity indices			ISE indicators					ESE[a]	dependent variables[a]				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 PIself	1	1.39***	.07	.92***	1***	.58***	.72***	.26*	.20*	.02	–.03	–.09	–.13	–.12
2 PInon-self		1	.17	.00	.38***	–.52***	.19	.67***	.09	–.01	–.08	–.19	–.14	–.06
3 PIno prime			1	.00	.00	–.08	–.65***	–.62***	.03	–.25	–.26	–.07	.12	–.08
4 PIself residualized by PInon-self				1	.92***	.85***	.70***	.00	.18*	.03	.00	–.02	–.08	–.11
5 PIself residualized by PIno prime					1	.58***	.76***	.30**	.20*	.04	–.01	–.09	–.13	–.12
6 PIself - PInon-self						1	.50***	–.35***	.10	.03	.05	.08	.01	–.06
7 PIself—PIno prime							1	.64***	.13#	.19*	.16#	–.02	–.18	–.04
8 PInon-self—PIno prime								1	.05	.18*	.13#	–.09	–.21	.01
9 ESE									1	.13	.10	.04	–.01	.04
10 pre-task expectancy bias										1	.54***	.37***	–.25*	.23*
1 perceived performance bias											1	.54***	–.14	.13
12 post-task expectancy bias												1	.13	.15
13 affect shift													1	.17
14 decision to continue														1

Note. PI_{self} = positivity index for self-primes, $PI_{non\text{-}self}$ = positivity index for nonrelated primes, $PI_{no\ prime}$ = positivity index for nonprimed trials, ISE = implicit self-esteem, ESE = explicit self-esteem. # = $p < .10$, * = $p < .05$, ** = $p < .01$, *** = $p < .001$.

[a] correlations of dependent variables as well as ESE with all priming parameters were tested one-sided (H_1: $r > 0$) to ensure comparability, all other two-sided.

APPENDIX D: STRUCTURAL EQUATION MODEL FOR THE LATENT VARIABLE ANALYSIS OF THE ISE-ESE CORRELATION



Note. ISE (implicit self-esteem) and ESE (explicit self-esteem) are the latent variables measured by standardized ISE_i for SE-APT test blocks (i) 1 to 5 and standardized MSES (Multidimensional Self-Esteem Scale) and SAQ (Self Attributes Questionnaire) scores respectively. The model fit was good, $\chi^2(13) = 12.36$, $p = .50$.