Social Psychological and Personality Science
00(0) 1-8

DOI: 10.1177/1948550612471827
http://spps.sagepub.com
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# Consistency Over Flattery: Self-Verification Processes Revealed in Implicit and Behavioral Responses to Feedback

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## Abstract

Negative social feedback is often a source of distress. However, self-verification theory provides the counterintuitive explanation that negative feedback leads to less distress when it is consistent with chronic self-views. Drawing from this work, the present study examined the impact of receiving self-verifying feedback on outcomes largely neglected in prior research: implicit responses (i.e., physiological reactivity, facial expressions) that are difficult to consciously regulate and downstream behavioral outcomes. In two experiments, participants received either positive or negative feedback from interviewers during a speech task. Regardless of self-views, positive compared to negative feedback elicited lower self-reported negative affect. Implicit responses to negative feedback, however, depended on chronic self-views with more negative self-views associated with lower blood pressure reactivity, lower facial negativity, and enhanced creativity. These findings point at the role self-verification may play in long-term coping and stress regulation.

## Keywords

self-verification, self-esteem, blood pressure, creativity, emotion

> Accuracy is, in every case, advantageous to beauty.
>
> ~ David Hume

> The sweetest sound of all is praise.
>
> ~ Xenophon

Self-verification and self-enhancement are widely recognized as two of the most fundamental motives driving people's reactions to positive and negative self-evaluations. According to a recent meta-analysis, cognitive reactions (i.e., accuracy perceptions) to feedback are heavily influenced by self-verification strivings, while affective reactions are mostly driven by self-enhancement strivings (Kwang & Swann, 2010). Here, we argue that this conclusion may be premature due to prior research focusing exclusively on self-reported affect (i.e., explicit affect), which is consciously regulated and vulnerable to response biases. As such, one of our primary goals was to examine the impact of self-verification motives on affectively driven responses in channels that are less consciously regulated (i.e., implicit affect) and less vulnerable to self-presentational biases. A second goal was to examine the consequences of self-verifying feedback on behavior in novel situations that fall outside of the feedback context. Such spillover effects have received relatively little research attention (cf. Swann, Kwan, Polzer, & Milton, 2003) despite their importance in elucidating how self-verification may affect well-being and life outcomes at a broader level and over time.

## *Self-Verification Theory and Prior Research*

The basic premise underlying self-verification theory is that people desire subjective accuracy and consistency in their self-views, and hence prefer partners and information that verify their beliefs about the self, even when such beliefs are negative (see Swann, 2011, for a review). Therefore, a unique prediction of the theory is that people with negative self-views should prefer negative over positive feedback, which stands in contrast to the prediction of self-enhancement theory that people should prefer positive feedback (regardless of their self-views) resulting from a motivation for positive self-regard (see Leary, 2007; Sedikides, Gaertner, & Toguchi, 2003; Sedikides & Gregg, 2008).

Self-verification theory has found broad support across dozens of studies. To summarize, people prefer feedback and interaction partners who confirm their self-views (e.g., Swann & Read, 1981; Swann, Stein-Steroussi, & Giesler, 1992; Swann, Wenzlaff, Krull, & Pelham, 1992), perceive

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self-view consistent feedback to be more accurate, accept more responsibility for such feedback (Jussim, Yen, & Aiello, 1995), show greater commitment to self-verifying marital partners (Swann, De La Ronde, & Hixon, 1994), and derive health benefits from life experiences (e.g., success and failure) that are self-view consistent (Brown & McGill, 1989; Shimizu & Pelham, 2004; Wood, Heimpel, Newby-Clark, & Ross, 2005).

Despite this wealth of evidence, however, self-verification effects have been difficult to demonstrate with respect to affective reactions (e.g., feeling negative or positive affect in response to the feedback; liking or disliking of the evaluator). Indeed, a recent meta-analysis (Kwang & Swann, 2010) has revealed that although the self-verification effect is robust for cognitive processes (effect size $r = .30$), it is not significantly different from zero for affective responses. Kwang and Swann conclude that affective reactions to feedback seem to be better explained by the self-enhancement motive.

## The Current Research

The meta-analytic findings summarized above nevertheless leave unanswered the question of why affect may be predominantly driven by the self-enhancement motive whereas responses in other domains, particularly the cognitive domain, seem governed by self-verification strivings. Two possibilities come to mind. First, self-report measures of negative affect may be influenced by self-report bias to a greater extent than cognitive measures; for example, people may report how they *believe* they should feel rather than what they actually feel (e.g., success should bring happiness). In contrast, cognitive measures may not be as strongly governed by normative beliefs about appropriate responding, leading individuals to be more willing to express disagreement with inconsistent evaluations. Second, people may not be aware of their affective reactions and may thus be unable to report on them. Both possibilities suggest that self-verification effects for affect might become evident when examining implicit, less consciously controlled responses, such as physiological reactivity (i.e., blood pressure [BP] reactivity) and nonverbal affect (i.e., facial expressions and bodily posture). To our knowledge, there is no study to date that has examined this hypothesis. One of our goals was to address this gap.

We acknowledge from the outset that physiological reactions and nonverbal affect are not "pure" measures of implicit affect. BP responses are known to tap into both cognitive appraisals of and affective reactions to situations (Mendes, 2009). Similarly, nonverbal affect may be driven as much by cognitive agreement with the feedback as from one's emotional reactions to it. Nevertheless, to the degree that these responses are not under conscious control, they are less subject to obstacles associated with self-reported affective reactions.

Physiological responses, particularly those linked to stress processes, may additionally provide insight into possible downstream health effects of self-verification. Therefore, we examined BP reactivity given its link to negative affect (Gallo, Smith, & Kircher, 2000), vigilance (Smith, Ruiz, & Uchino, 2000), distress (Matthews, Woodall, & Allen, 1993), and long-term health, especially coronary heart disease (e.g., Chobanian et al., 2003; Matthews, 2005).[1]

Finally, we extended our questions to explore the behavioral consequences of self-verification in a new situation not directly relevant to the feedback domain. Recent research shows that feedback inconsistent with one's self-views leads to regulatory efforts to reconcile the discrepancy, resulting in resource depletion (Stinson et al., 2010). Thus, failure to self-verify may lead to poorer performance on a subsequent task. To examine this prediction, we measured performance on a creativity task previously shown to require effort, concentration, and persistence (e.g., Amabile, 1996). Swann, Kwan, Polzer, and Milton (2003) provided indirect evidence for the link between self-verification and creativity by showing that in small group settings, receiving self-verifying feedback from team members was associated with earning higher scores on a test that required creative problem solving. In the current study, we probed this link more directly, in an experimental setting.

We examined these hypotheses in two experiments with different samples (Berkeley and Harvard) but that followed largely similar procedures in which participants delivered speeches in front of two interviewers who provided positive or negative feedback. Dependent variables across both studies included self-reported affect and continuous BP. Nonverbal affect and creativity task data were available only in the Berkeley and Harvard samples, respectively.

## Method

### Participants

Participants were (a) University of California, Berkeley students who received course credit or \$15 for their participation ($N = 82$, 67% female, 48% Caucasian, 52% Asian American) and (b) Harvard University students who received \$25 for their participation ($N = 69$, 73% female, 54% Caucasian, 20% Asian American, 4% African American, and 22% other/unidentified). One participant with extremely poor English proficiency and three who omitted the self-esteem (SE) questionnaire were excluded from the analyses.

### Procedure

The procedures at each site were the same except as noted below. Participants first completed the Rosenberg Self-Esteem scale (RSE; Rosenberg, 1965). They were then connected to a BP monitor and rested while baseline BP data were collected for 5 min. Subsequently, they were introduced to a Trier Social Stress Task (TSST; Kirschbaum, Pirke, & Hellhammer, 1993) modified to include the delivery of explicit evaluative feedback (see Akinola & Mendes, 2008). Participants were told that they would first deliver a 5-min speech in front of interviewers in a simulated job interview followed by a 5-min Q&A session and that the interviewers would give them explicit feedback regarding their performance. After a brief, private preparation period (5 and 2 min, at Berkeley and Harvard, respectively) participants rated their current affect (prefeedback assessment) on the positive and negative affect schedule (PANAS; see measures for details).

Next, a male and a female confederate trained in giving scripted feedback entered the room. At this point, participants were randomly assigned to receive either positive ($n_{\text{Berkeley}} = 40$; $n_{\text{Harvard}} = 34$), or negative ($n_{\text{Berkeley}} = 39$; $n_{\text{Harvard}} = 35$) feedback. Initial feedback was delivered both verbally and nonverbally during the speech task and continued via nonverbal channels during Q&A. Participants rated their current affect (postfeedback assessment) on the PANAS again between speech and Q&A. The TSST ended with a 5-min rest (recovery) period.

Subsequently, the Berkeley participants were debriefed and compensated, whereas the Harvard sample completed a creativity task. They were instructed to make a collage using a 10" x 15" cardboard piece, bottles of glue and glitter, and 54 pieces of felt and paper in various shapes, sizes, and colors. They were given 10 min to complete the collage (one participant declined), followed by debriefing and compensation.

## Measures and Materials

*Feedback type.* In the positive feedback condition, evaluators started smiling and nodding 30 s into the participant's speech. A minute later, they stopped the participant and provided verbal feedback (e.g., *You are very clear and manage to put your personality across*). In the negative feedback condition, the interviewers first started to shake their heads and frown, and then stopped the speech and gave verbal feedback (e.g., *I felt that you could be much clearer and more articulate*) following the same timeline. During Q&A, interviewers continued giving nonverbal feedback as originally assigned.

*Self-views.* We measured valence of self-views with global SE. Sociometer theory (e.g., Leary, Tambor, Terdal, & Downs, 1995) posits that because social acceptance has survival value, the SE system has evolved to detect individuals' level of acceptance and rejection. According to this model, the SE system experiences a drop when individuals experience social rejection. Low SE is, in turn, assumed to motivate individuals to behave in ways that elicit acceptance by the social group. Because the manipulations used in our experiments had social acceptance and rejection embedded in them, we chose to operationalize self-views with global SE where lower levels of SE tap into more negative self-views regarding one's competence and likability in social interactions.

To assess SE, participants rated themselves (1 = *does not describe me at all* to 6 = *describes me very well*) on the RSE (Rosenberg, 1965). SE was unrelated to experimental condition in both samples ($F$s < 1).

*Self-reported affect.* Participants completed the PANAS (Watson, Clark, & Tellegen, 1988) with respect to their current affect (1 = *not at all*, 5 = *a lot*) before and after feedback (in the speech task). Negative and positive items were averaged to create negative and positive affect indices, respectively ($\alpha$s $\geq$ .85). One Berkeley participant omitted this questionnaire. We created an overall affect index by subtracting positive affect from negative affect scores (higher scores = higher negativity).

*Nonverbal affect.* Two coders rated participants' nonverbal affect (0 = *very negative*, 1 = *somewhat negative*, 2 = *neutral*, 3 = *somewhat positive*, 4 = *very positive*) from their facial expressions (e.g., smiles) and bodily posture (e.g., closed vs. open) using videotape data available in the Berkeley sample. Coders, who were blind to condition, watched the videotapes without sound, and made global judgments about participants' affective state during participants' speech after feedback delivery. We coded for nonverbal affect during the initial speech task (but not the Q&A) on the assumption that such reactions would be the most visible right after participants received verbal feedback. Videotapes of four participants were uncodeable due to low quality. Ratings were reverse-scored with higher scores indicating more negative affect and averaged across the judges ($\alpha$ = .84).

Coders also evaluated emotional expressiveness of the participants' face (0 = *not emotionally expressive*, 6 = *extremely emotionally expressive*) for the period of speech preceding the delivery of feedback. This index of baseline expressiveness was used to control for individual differences in emotional expressivity (e.g., Gross & John, 2003), which may influence how accurately participants' nonverbal affective responses to feedback could be coded. Coders' ratings ($\alpha$ = .67) were averaged for the final analysis ($M$ = 3.81, $SD$ = .64).

*Blood pressure.* At Berkeley, we used a Medwave BP monitor (St. Paul, MN) that estimates BP responses approximately every 15 heartbeats. At Harvard, we used the Colin 7000 (San Antonio, TX), which estimates BP continuously. Nevertheless, both instruments use the tonometry method, which estimates BP from the radial artery attached to the wrist of the nondominant arm (see Mendes, 2009 for details). The signals were recorded with Acqknowledge software (Biopac Systems, Inc, Santa Barbara, CA) and then data were visually inspected offline for artifacts. BP responses were averaged across 1-min epochs. We report mean arterial pressure (MAP) as systolic and diastolic measurements yielded similar results when they were analyzed separately.

Consistent with past research using similar paradigms (Blascovich, Mendes, Hunter, & Salomon, 1999), we focus our BP analyses on the second (Q&A) task. The rationale is that whereas the speech task established the feedback manipulation, the Q&A task allowed us to examine physiological responses in response to a "new" task that was still uncertain.

Some physiological data could not be scored due to faulty sensors, loss of signal, or noisy signals, leaving 119 participants. This attrition was not statistically related to SE or the feedback condition in either sample, all $t$s < 1. Furthermore, statistical outliers were defined as BP responses greater or less than 2.6 $SD$ from the mean and were winsorized (assigned a unit value 1% higher or lower than the next closest value).

**Table 1.** Descriptive Statistics and Zero-Order Correlations Among Key Variables

| | | 1. SE | 2. Affect | 3. MAP | 4. Creativity |
|---|---|---|---|---|---|
| Variables | 1. SE | — | −.26* | .14 | .04 |
| | 2. Self-reported affect | −.40** | — | −.11 | −.04 |
| | 3. MAP reactivity | .06 | .04 | — | −.11 |
| | 4. Nonverbal affect during speech | .05 | .24* | .17 | — |
| *M* (*SD*) | Berkeley | 5.21 (.95) | .79 (1.19) | 18.47 (18.94) | 2.51 (.68)[a] |
| | Harvard | 4.77 (.84) | −.99 (1.27) | 8.37 (22.25) | 7.27 (1.87) |

*Note.* MAP = mean arterial pressure; *SD* = standard deviation; SE = self-esteem.
$^{**}p \leq .01$. $^{*}p \leq .05$.
*Note.* Correlations below and above diagonal are from the Berkeley and Harvard, respectively.
[a]Numbers refer to *M* and *SD* for nonverbal affect in the Berkeley sample.

Using this standard, less than .012% of the total data were recoded.

Baseline MAP did not differ significantly as a function of feedback condition or SE in either sample, *t*s < 1. Therefore, MAP reactivity values were calculated by subtracting baseline MAP (the last minute of the baseline period) from the average MAP during Q&A.

*Creativity.* Six professional artists were recruited to judge the creativity of the collages following the consensual assessment technique guidelines (Amabile, 1982). Each collage was rated on 21 dimensions, which were assessed by having the judges mark an X on an-18-mm line anchored from low to high creativity with a midpoint labeled "medium." Exploratory factor analysis with varimax rotation showed that 13 of the 21 dimensions loaded high on one factor (factor loadings > .30). Therefore, we created a single index of collage creativity per participant averaged across judges and across the 13 dimensions ($\alpha$ = .95, *M* = 7.27, *SD* = 1.87).

## Results

Table 1 presents descriptive statistics and zero-order correlations among key variables separately by sample. Preliminary analyses indicated that the Berkeley sample was higher than the Harvard sample in SE, MAP reactivity, and self-reported affect (variances did not differ by sample). However, such mean differences are not theoretically relevant to our hypotheses and the key findings reported below were not significantly moderated by sample. Furthermore, because sample (Berkeley vs. Harvard) and SE were correlated, we did not want to confound sample with SE by using raw scores. Therefore, all variables were standardized within sample and sample was dropped from further consideration.

We conducted multiple regression analysis on each outcome variable. SE (continuous), evaluative feedback condition (2: negative [−1] vs. positive [1]), and the interaction between them were entered simultaneously as between-subjects predictors. When appropriate, covariates were included in the analysis and are described below. Standardized parameter estimates from all analyses are presented in Table 2. Graphical illustrations (Figures 1–3) are based on these estimates.

**Table 2.** Standardized Coefficients From Regression Analyses

| Dependent Variables | *n* | Covariate | SE | Feedback | SE × Feedback |
|---|---|---|---|---|---|
| Self-reported affect[a] | 147 | .77** | −.08 | −.34** | .01 |
| MAP reactivity | 115 | — | .14 | .01 | −.23* |
| Nonverbal affect[b] | 75 | −.21* | .09 | −.36** | −.23* |
| Creativity | 68 | — | −.04 | −.10 | .28* |

*Note.* MAP = mean arterial pressure; SE = self-esteem.
[a]Covariate is prefeedback affect.
[b]Covariate is baseline expressiveness.
$^{**}p \leq .01$. $^{*}p \leq .05$.

We focused on the presence of a main effect of feedback to evaluate self-enhancement motives and on an interaction between self-views and feedback, "such that the preference for positivity (or aversion to negativity) is stronger among people with positive as compared to negative self-views," (Kwang & Swann, 2010, p. 265) to evaluate self-verification motives. When the interaction term was significant, we conducted simple slope analyses (Aiken & West, 1991) to further understand the meaning of the interaction pattern (see Figures for simple slopes).

### Self-Reported Negative Affect (PANAS)

Prefeedback affect was significantly predicted by SE in the theoretically expected direction, $F(1,144) = 25.04$, $p < .0001$, $\beta = -.39$ (Feedback and SE × Feedback interaction, *F*s < 1.78). These findings indicated that higher SE people reported lower levels of negative affect before they received any feedback (as would be expected) but did so to a similar extent in the negative and positive feedback conditions (indicating successful random assignment to condition). Prefeedback affect is a covariate in the analysis reported below.

Consistent with prior research, regression analysis postfeedback affect revealed a main effect of feedback condition, $F(1,142) = 52.69$, $p < .0001$, $\eta_p^2 = .11$ such that self-reported affect was more negative following negative feedback, $M = .25$, $SD = 1.07$, than positive feedback, $M = -24$, $SD = .85$. Neither the main effect of SE, $F(1, 142) = 2.59$,

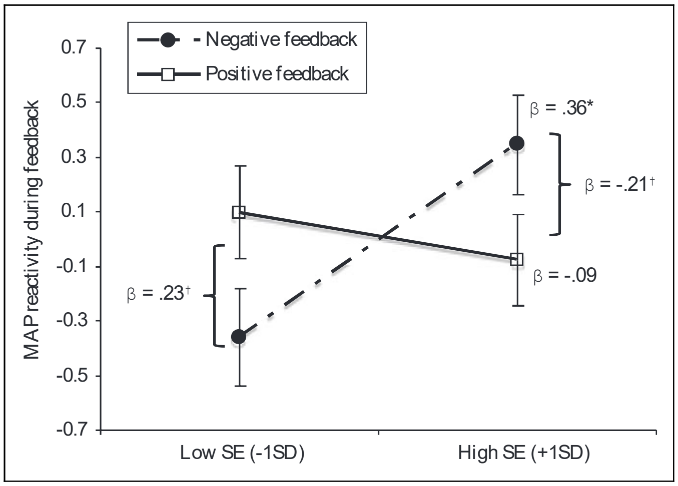


**Figure 1.** Study 1: Mean arterial blood pressure reactivity as a function self-esteem and feedback condition. *Note.* **$p \leq .01$. *$p \leq .05$. $^{\dagger}p \leq .10$.

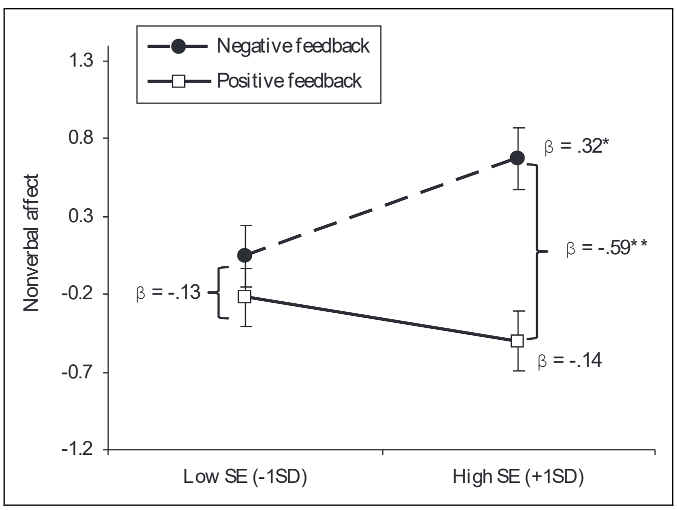


**Figure 2.** Study 1: Nonverbal affect as a function self-esteem and feedback condition. *Note.* **$p \leq .01$. *$p \leq .05$. $^{\dagger}p \leq .10$.

$p = .11$, $\eta_p^2 = .004$, nor the SE × Feedback interaction was significant, $F < 1$, $\eta_p^2 = .0002$.

## MAP Reactivity

Neither the main effect of feedback, $F < 1$, $\eta_p^2 = .00$, nor of SE, $F(1, 111) = 2.14$, $p = .15$, $\eta_p^2 = .01$, were significant predictors of MAP reactivity. However, consistent with self-verification theory, the SE × Feedback interaction was significant, $F(1,111) = 5.88$, $p = .017$, $\eta_p^2 = .05$, see Figure 1. Simple slopes analyses revealed that the MAP reactivity was significantly associated with SE only in the negative feedback condition—the higher the participants' SE, the higher their BP. Furthermore, positive (compared to negative) feedback elicited marginally lower MAP reactivity among high SE individuals whereas it elicited marginally higher levels of MAP reactivity among low SE individuals.[2,3]

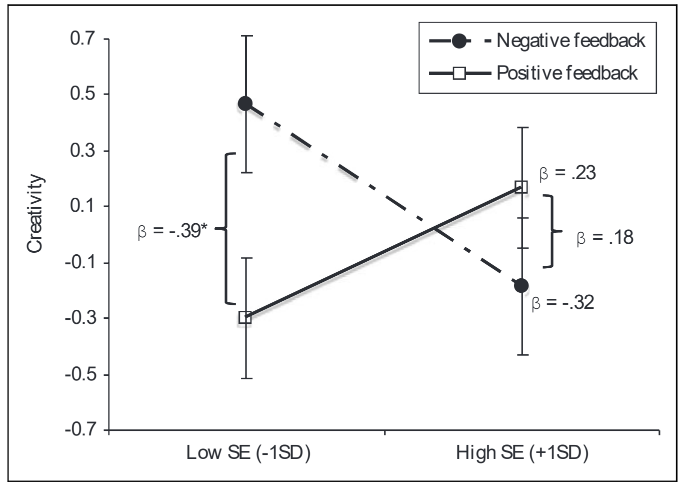


**Figure 3.** Study 1: Creativity as a function self-esteem and feedback condition. *Note.* **$p \leq .01$. *$p \leq .05$. $^{\dagger}p \leq .10$.

## Nonverbal Negative Affect

Baseline expressiveness was not significantly related to SE, experimental condition, or their interaction and was used as a covariate in examining postfeedback nonverbal affect during speech. The main analysis revealed that during speech, nonverbal negative affect was lower in the positive than in the negative feedback condition, illustrating a self-enhancement effect, $F(1,70) = 11.74$, $p < .001$, $\eta_p^2 = .13$. SE was not predictive of nonverbal affect, $F < 1$, $\eta_p^2 = .002$. However, consistent with self-verification motives, there was a significant SE × Feedback interaction, $F(1,70) = 4.80$, $p = .03$, $\eta_p^2 = .05$; see Figure 2. Following negative feedback, higher SE was associated with significantly more nonverbal negative affect. The slope of SE for positive feedback was not significant. At the same time, nonverbal affect was significantly different as a function of feedback condition among high (but not low SE) participants—high SE individuals displayed nonverbal negative affect to a lesser degree when receiving positive compared to negative feedback.

## Creativity

Only the SE × Feedback interaction was significant, $F(1,64) = 4.91$, $p = .03$, $\eta_p^2 = .07$; see Figure 3 (main effects: $F$s < 1). Higher SE was associated with greater creativity following positive feedback, but with lower creativity following negative feedback although neither simple slope reached statistical significance. However, low SE participants were significantly more creative following negative (vs.) positive feedback.[4]

# Discussion

Two experiments replicated the well-established finding for self-reported negative affect, which showed large and robust self-enhancement effects but no significant self-verification effects: all participants regardless of their SE reported greater negative affect following negative compared to positive feedback. Extending this prior literature, however, we also found significant self-verification effects in two channels of responding that are less consciously regulated—BP reactivity and negative affect in facial and bodily expressions. Participants' responses in these channels were more positive following positive than negative feedback if they held positive self-views whereas we observed the opposite pattern if they held negative self-views. These findings are consistent with the possibility that self-verification effects in self-reported affect may be masked by participants' unwillingness or inability to report fully on their affective reactions. Furthermore, because data were collapsed across two samples for MAP reactivity (with no significant sample differences), these studies provide an internal replication for self-verification effects for a physiological concomitant of negative affect. To our knowledge, these findings are the first in demonstrating how self-verification motives impact physiological stress responses to feedback.

Swann and colleagues (e.g., Swann, Hixon, Stein-Seroussi, & Gilbert, 1990) have argued that whereas self-enhancement depends on simple computations (e.g., determining the valence of the feedback), and therefore influences immediate, affective responses to feedback, self-verification requires more complex computations (e.g., determining valence and comparing it to the self-concept) and thus, shapes long-term cognitive responses. Current findings are the first to demonstrate that self-verification responses are evident even in the short term if they are assessed at the implicit level—a finding consistent with growing evidence showing how complex decisions can be executed more efficiently and rapidly by an implicit (vs. explicit) response system (e.g., Dijksterhuis & Nordgren, 2006).

The current study also adds to the relatively sparse body of work examining how self-verification strivings impact downstream behavior (Stinson et al., 2010; Swann et al., 2003). Consistent with self-verification theory, we demonstrated greater creativity among low SE individuals following negative feedback and among high SE individuals following positive feedback. Social feedback consistent with one's self-concept is processed more easily (Markus, 1977) whereas inconsistent feedback elicits compensatory efforts such as resistance (Swann & Hill, 1982) and can be depleting (Stinson et al., 2010). Therefore, following self-verifying feedback individuals may have greater resources to allocate to a subsequent task, such as the creativity task used in our research, which has been shown to require effort and persistence. Self-verification may also impact mechanisms other than availability of resources such as increased feelings of authenticity (Swann et al., 1994), psychological mindedness (Feist & Barron, 2003), or self-acceptance (Feist, 1998), which, in turn, may facilitate creativity. These possibilities should be explored in future research.

## *Implications of Self-Verification for Health Outcomes*

The present results open a window into the possible health consequences of accumulated experiences of failure to self-verify. Although generalizing from responses from a laboratory experiment to responses in the outside world requires caution, these data provide initial evidence that inconsistent information may be met with greater distress and pathophysiological responses than consistent information. If repeated over time and situations, these physiological profiles may lead to more physical health vulnerabilities (e.g., Matthews, 1986; Thayer & Lane, 2007).

It is also important to note that compared to individuals with positive self-views, people with negative (or less positive) self-views fare better physiologically when faced with negative feedback. Thus, as ironic as it may be, receiving schema confirming negative feedback may have initial affective and behavioral benefits, which presents an even greater challenge to mental health professionals attempting to modify tendencies of individuals who have negative self-schemas (see Brown & McGill, 1989; Townsend, Major, Sawyer, & Mendes, 2010). Importantly, the results caution that simply modifying elements of a target's environment without attempting to modify the entrenched negative self-views of the target might be counterproductive.

## *Caveats and Conclusions*

Several caveats need to be acknowledged. First, the valence of the feedback affected people with positive self-views more than those with negative self-views. Nevertheless, because many factors can influence the match between the self-view and the feedback (e.g., both the positive and negative feedback may be far more positive or negative than the self-views), the key finding for self-verification theory is the interaction between self-view and feedback and the pattern of slopes rather than the significance of any particular slope (Kwang & Swann, 2010). In this regard, our results consistently revealed such an interaction across implicit and behavioral measures.

Regarding our use of physiological responses, as previously noted BP reactivity can be altered via cognitive appraisals and/or affective reactions (Mendes, 2009). Similarly, nonverbal affective reactions of the kind that was coded may also be, at least partly, due to cognitive processes. For example, low SE participants may discount the credibility of positive feedback, leading them to experience less positive, more negative affect in response.

Although these considerations make us cautious in interpreting the results as an unequivocal demonstration of self-verification effects on implicit affect per se, they contribute to the literature by showing how self-verification processes can shape affectively driven responses that are difficult to control. They are also the first to link failures in self-verification to physiological outcomes related to the stress-disease pathway. As such, they invite both self-verification and self-enhancement researchers to pay close attention to affective concomitants of responses to feedback at the implicit level in future work.

Finally, we note that the findings were observed in a highly stressful performance paradigm in which participants were given face-to-face feedback. Therefore, the results are noteworthy in demonstrating the operation of self-verification processes in a setting high in ecological validity.

## Acknowledgments

We thank Serena Chen, Rodolfo Mendoza-Denton, and William Swann for their valuable feedback on earlier drafts of this article.

## Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## Funding

The author(s) disclosed receipt of the following financial support for the research, authorship and/or publication of this article: This research was supported by a Faculty Grant from the University of California, Berkeley to OA, and NHLBI grant (HL079383) to WBM.

## Notes

1. We focused on hemodynamic responses because the TSST takes place over a longer period of time than other acute stress reactivity paradigms for which sympathetic nervous system responses (inter-beat interval, Galvanic Skin Response (GSR), skin temperature) are typically useful.
2. MAP reactivity during speech was not predicted by the SE $\times$ Feedback interaction, $F(1, 105) = 2.50$, $p = .11$, but the effect was in the expected direction ($\beta = -.15$). The interaction term also predicted a composite measure of MAP reactivity across speech and Q&A, $F(1, 115) = 5.74$, $p = .018$. When MAP during Q&A was analyzed separately for each sample (using raw scores), the SE $\times$ Feedback interactions were of similar magnitude (Berkeley: $\beta = -.33$, $p = .11$; Harvard: $\beta = -.36$, $p = .08$).
3. The Berkeley sample included data on Interleukin-6 (IL-6) and tumor necrosis factor-alpha (TNF-$\alpha$), which are proinflammatory cytokines that increase in response to acute and chronic stress. In support of the idea that MAP increases are harmful, MAP reactivity during Q&A was significantly correlated with increases in both of these parameters from baseline to Q&A (IL-6: $r = .37$, $p = .008$; TNF-$\alpha$: $r = .35$, $p = .01$). Furthermore, the SE $\times$ Feedback interaction was at the trend level for IL-6 ($p = .11$) but not significant for TNF-$\alpha$. In both cases, the pattern of simple slopes was consistent with self-verification responses.
4. Analysis on standardized creativity ratings (i.e., different judges' ratings were standardized before averaging them), also yielded a significant SE $\times$ Feedback interaction, $F(1, 64) = 5.50$, $p = .02$.

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