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## Self-enhancement and belief perseverance

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### Abstract

Belief perseverance—the tendency to make use of invalidated information—is one of social psychology’s most reliable phenomena. Virtually all of the explanations proffered for the effect, as well as the conditions that delimit it, involve the way people think about or explain the discredited feedback. But it seems reasonable to assume that the importance of the feedback for the actor’s self-image would also influence the tendency to persevere on invalidated feedback. From a self-enhancement perspective, one might ask: Why would people persist in negative self-beliefs, especially when the basis for those beliefs has been discredited? In the present study, actors and observers completed a word-identification task and were given bogus success or failure feedback. After success feedback was discredited, actors and observers persevered equally in beliefs about the actor’s abilities. However, following invalidation of failure feedback, actors provided significantly higher performance evaluations than observers, thus exhibiting less perseverance on the negative feedback. These results suggest that the motivation to maintain a relatively favorable self-image may attenuate perseverance when discredited feedback threatens an important aspect of the self-concept.

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People believe many things that turn out to be untrue but are not always able or willing to revise their beliefs. Superstitions abound, and they require only sporadic reinforcement to be held tenaciously (Skinner, 1948). Furthermore, numerous studies show that believing occurs more automatically than revising (Gilbert, 1991), which helps to explain why many beliefs outlive the data that discredit them.

The steadfastness of beliefs in the face of invalidating evidence is a topic that traverses many research areas in psychology including correspondence bias (Gilbert & Malone, 1995; Jones & Harris, 1967), psycho-legal studies of inadmissible evidence (e.g., Johnson & Seifert, 1994; Kassin & Sommers, 1997; Sue, Smith, & Caldwell, 1973; Thompson, Fong, & Rosenhan, 1981), and basic research on impression formation (Schul & Burnstein, 1985; Schul & Goren, 1997; Wyer & Unverzagt, 1985). But the research

area that addresses this tendency most directly is called “belief perseverance”. Ross, Lepper, and Hubbard (1975), following up an earlier study by Walster, Berscheid, Abrahams, and Aronson (1967), conducted the experiments that stimulated widespread interest in this phenomenon. Participants in their studies evaluated the genuineness of suicide notes in what they believed was a study on physiological responses during decision making. After being connected to electrodes and making their judgments, participants received bogus feedback which indicated that they had succeeded or failed at the task. Participants were subsequently told that the feedback was fictitious and that the purpose of the study was to assess physiological responses to success and failure feedback. They then estimated their actual performance. Despite having been told that the feedback was fabricated, participants who received success feedback continued to evaluate themselves more favorably than those who received failure feedback. Parallel effects were obtained from observers who witnessed the feedback being administered and saw it discredited.

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Ross et al. argued that perseverance occurs because people spontaneously construct causal stories to explain the original feedback. These explanations become highly accessible and autonomous from the information on which they were based, and contain new inferences that are relatively impervious to invalidation. According to this view, someone who succeeds or fails imagines various causal factors that could have produced this outcome, and when the original feedback is discredited, these new causal inferences inadvertently affect the person's attributions. This assumption is consistent with the general conclusion that considering alternative hypotheses corrects numerous social judgment biases (e.g., Koriat, Lichtenstein, & Fischhoff, 1980; Lord, Lepper, & Preston, 1984). Numerous experiments have supported these assumptions (e.g., Anderson, 1982, 1983; Anderson, Lepper, & Ross, 1980; Anderson, New, & Speer, 1985; McFarland, Cheam, & Buehler, 2007), although there is some question as to whether the generation of causal explanations is always required for belief perseverance (Wegner, Coulton, & Wenzlaff, 1985).

Although competing explanations continue to be proffered for belief perseverance (see also, Anderson & Lindsay, 1998; Anderson & Sechler, 1986; Lieberman & Arndt, 2000; Nisbett & Ross, 1980; Smith, 1982), there is little doubt that the tendency to adhere to initial feedback is one of the most reliable effects in the social judgment canon. In fact, belief perseverance is so powerful that to date, researchers have reported relatively few factors that moderate its strength. Among the moderating factors identified is explicitly informing participants about the processes underlying perseverance (Ross et al., 1975), increasing self-awareness (Davies, 1982), having participants generate alternatives to the feedback (Anderson, 1982; Anderson & Sechler, 1986; Massad, Hubbard, & Newton, 1979), and telling participants that both the feedback and the test from which it was generated are bogus (McFarland et al., 2007).

So far, the factors that have been shown to moderate belief perseverance have all involved the way participants attend to, think about, or explain the feedback they receive. But there is another class of moderating factors that could plausibly affect the tendency to be influenced by discredited feedback, namely, the importance of the feedback for people's self-concepts. Abundant research suggests that people generally strive to maintain the most favorable self-image that reality constraints will allow (Alicke & Govorun, 2005; Sedikides & Gregg, 2003). From this vantage, the tendency to persevere on discredited feedback (particularly unfavorable feedback) is puzzling. If people are concerned with maintaining reasonably favorable self-views, why don't they seize the opportunity to restore positive self-evaluations when they are given every reason to believe that the unfavorable feedback was false?

The main reason, we suspect, lies in the sheer strength of the perseverance effect, which constrains the operation of self-enhancement. Still, it seems reasonable to assume, based on the voluminous self-enhancement literature, that

there would be circumstances in which the desire to eschew negative information about oneself would moderate belief perseverance. However, belief perseverance studies have not typically been designed to evoke self-enhancement concerns. For one thing, many of these studies assess judgments of other people rather than oneself (e.g., Anderson, 1982; Anderson et al., 1980). In studies that do include self-related judgments (e.g., Ross et al., 1975; Wegner et al., 1985), investigators do not usually portray the task as an important one for diagnosing personal characteristics, and thus the chances of activating self-enhancement motives is minimized. In the study described below, we compare actors' and observers' perseverance tendencies following feedback on a task that they are explicitly told involves an important characteristic, namely, intelligence.

Until now, the only belief perseverance studies that employed actor–observer paradigms were the original ones by Ross et al. (1975) and those reported by Wegner et al. (1985). Neither of these studies revealed perseverance differences between actors and observers. However, these researchers were primarily interested in establishing the perseverance effect and testing competing explanations, and did not emphasize the importance of the performance outcomes for any particular abilities or traits. In fact, participants in their studies were led to believe that the experimenters were interested in physiological responses during performance and that the performance outcome information itself was relatively unimportant. Our goal in the present study was to show that when the performance dimension is explicitly described as one that measures intelligence—an attribute that is presumably important to most college students—actors will exhibit a reduced tendency relative to observers to persevere on negative feedback.

### The present study

Participants were told that they would complete a test of mental acuity that measured a fundamental aspect of intelligence. Actors actually took the test, which involved their ability to detect subliminal stimuli, and received feedback indicating that they had performed very well or very poorly. Observers saw the actor take the test and also learned of the favorable or unfavorable outcome. Experimenters then told actors that they had applied the wrong answer key to their performance, which resulted in the actor receiving incorrect feedback. Performance ratings were obtained at three separate times: before participants began the task, after the initial feedback was received, and after the feedback was discredited. Initial ratings were used as a covariate for post-discredit ratings.

Consistent with prior research, we expected to obtain perseverance effects from both actors and observers such that a significant difference between favorable and unfavorable feedback conditions would remain in their performance judgments even after the feedback was discredited. We further expected, however, that the magnitude of perseverance effects would differ between actors and observers.

Because self-enhancement is generally stronger on negative than on positive response dimensions (Alicke, Klotz, Breitenbecher, Yurak, & Vredenburg, 1995), we were more confident of obtaining differential perseverance following negative than positive feedback. Evidence of self-enhancement would be revealed by actors evaluating themselves more favorably than observers following the receipt and subsequent invalidation of negative feedback.

## Method

### *Participants*

Participants were 122 (47 male, 75 female) undergraduate students whose participation partially fulfilled a requirement for introductory psychology.

### *Procedure*

Participants completed the experiment individually. Upon arrival, they were seated in front of a computer and asked to complete the consent form which contained the basic instructions. The study was described as one that investigated mental acuity, defined as one of three primary components of intelligence.

After the consent form was completed, further instructions were delivered by computer and recited orally by the experimenter. The instructions explained that mental acuity involved the ability to quickly identify, discriminate, and categorize information in one's perceptual field. Participants were told that previous research has shown that those who score high on tests of mental acuity also tend to score high on tests of overall intelligence.

Participants were randomly assigned to the actor and observer roles. Observers were told that through computer networking, they would observe the task as another participant completed it from another room. They were told that once the actor completed the task, they would see the actor's score and be asked to complete a questionnaire regarding his or her performance.

The task comprised a series of 25 words that would be flashed individually on the computer screen for 11 ms. After each word was shown, participants were asked to record the word they believed had been flashed on the screen. They were told that at the end of the 25 trials, a composite score would be calculated and presented, and that a short questionnaire would follow. Participants were then instructed to begin the task.

Words used in the experimental task ranged in length from 4–6 letters, appeared in 22 point Times New Roman font, and were flashed on the screen for 11 ms. Each word was preceded by a masking row of 8 asterisks for 135 ms to focus participants' attention on the center of the screen. The same 135 ms mask was added following each word. Participants were given five practice trials to familiarize themselves with the procedure before beginning the actual experimental task. Actors were given as much time as nec-

essary to provide a response. On each trial, observers saw "Participant Response" on their screens for 3 s between trials. The experiment was conducted using MediaLab (Jarvis, 2004a,b) and Direct RT software.

### *Feedback manipulation*

After the 25 trials were completed, participants were randomly assigned to receive either positive or negative performance feedback. In the positive feedback condition, actors and observers learned that the actor had correctly identified the word on 20 of the 25 trials, which placed them at the 93rd percentile. In the negative feedback condition, actors and observers learned that the actor had correctly identified the word on 12 of the 25 trials, which put them at the 36th percentile.

### *Discrediting of feedback*

After participants had completed the task, the experimenter returned and informed them that there had been an unfortunate mistake. The experimenter explained that there were different versions of the task, each with its own answer key, and that by accident he (she) had paired the participant's task with the wrong answer key. Consequently, their test had been scored incorrectly, and the feedback they had been given did not reflect their actual performance or intelligence. Furthermore, because responses were anonymous, participants were told that there was no way to recover their test and determine their actual score.

### *Response measures*

Pre-task ratings were obtained after the experimental instructions had been given but prior to the start of the task. Participants were asked to estimate, based on the description of mental acuity and the experimental task, how many items they believed that they (or if they were in the observer role, the actor) would answer correctly, how mentally acute they thought they were (the actor was), and also at what percentile of the general population (0–100) they believed their (the actor's) mental acuity lied. Performance estimations could range from 0–25 and mental acuity ratings were made on 1–10 scales (0 = extremely low, 10 = extremely high). These same judgments were made a second time after the initial feedback was administered. Here, participants were asked to make ratings based on the feedback they received. Finally, ratings were obtained a third time after the initial feedback had been discredited.

## Results and discussion

Nine participants were excluded from the analysis because they failed to complete the primary response measures. Means and standard deviations for estimates of how

many items the actor answered correctly, the actor's mental acuity, and the actor's percentile standing, are displayed in Table 1 for each of the three time frames.

A preliminary 2 (actor vs. observer)  $\times$  2 (positive vs. negative feedback)  $\times$  3 (pre-feedback vs. post-feedback vs. post-discredit) analysis of variance (ANOVA), with the first two variables being between subjects factors and the third measured within subjects, revealed a significant three-way interaction for ratings of actor mental acuity,  $F(2, 108) = 8.71$ ,  $p < .0001$ ,  $\eta^2 = .139$ , and percentile rank,  $F(2, 108) = 5.14$ ,  $p < .007$ ,  $\eta^2 = .087$ , but was non-significant for estimates of number correct ( $p > .05$ ).

Because this analysis yields numerous effects, many of which are irrelevant to our primary hypotheses, we have organized the analysis below around the primary questions we sought to address. The main questions in this study were (1) whether traditional perseverance effects occurred, and (2) whether actors persevered more on positive feedback, and less on negative feedback, than observers. Before addressing these questions, it was necessary to show that actors' and observers' perceptions of the actors' abilities

did not differ prior to the receipt of the feedback, and also to show that the feedback was effective in altering actors' and observers' initial perceptions.

#### *Were there initial actor–observer differences?*

Subsequent analyses would be difficult to interpret if actors and observers differed in their initial estimates of actors' abilities. If there were initial differences, then the tendency for actors to persevere more than observers on positive feedback or less on negative feedback might simply reflect actors' more favorable performance expectations rather than a desire to maintain a relatively favorable self-view. Because previous belief perseverance studies have not been concerned primarily with self-related judgments, pre-feedback ratings have been less crucial and not included in this research.

A 2 (actor vs. observer)  $\times$  2 (positive vs. negative feedback) ANOVA was conducted on pre-feedback ratings to determine whether actors and observers differed in their perceptions of actors' mental acuity or abilities prior to the experimental task. This analysis yielded no actor–observer differences on estimates of how many items the actor would answer correctly ( $F < 1$ ), on initial ratings of the actor's mental acuity ( $F < 1$ ), or on estimates of the actor's percentile standing ( $F < 1$ ). Clearly, therefore, actors and observers did not differ in their perceptions of the actor's ability prior to the administration of performance feedback. Thus, subsequent findings cannot be explained in terms of differences in initial performance expectations.

#### *Were actors and observers influenced by the feedback?*

Before analyzing the main factors of interest, it was also necessary to show that the positive and negative feedback had their intended effects. We expected participants in the positive feedback condition to increase their evaluations of the actor following feedback administration, and those in the negative feedback condition to decrease their evaluations. To this end, a 2 (actor vs. observer)  $\times$  2 (positive vs. negative feedback)  $\times$  2 (pre-feedback vs. post-feedback) analysis was conducted with the first two factors measured between subjects and the third measured within subjects. Changes in actor evaluations in the positive and negative feedback conditions are indicated by the interaction between the repeated factor (before feedback evaluations, after feedback evaluations) and positive vs. negative feedback. This interaction was significant on estimates of how many items the actor answered correctly,  $F(1, 109) = 65.62$ ,  $p < .0001$ ,  $\eta^2 = .376$ , ratings of the actor's mental acuity,  $F(1, 109) = 124.81$ ,  $p < .0001$ ,  $\eta^2 = .534$ , and estimates of the actor's percentile standing,  $F(1, 109) = 247.92$ ,  $p < .0001$ ,  $\eta^2 = .695$ . No other interactions were significant. As Table 1 shows, both actors and observers in the positive feedback condition increased their evaluations when the initial feedback was received, while

Table 1  
Means and standard deviations for actor-ratings: before feedback, after feedback, and after feedback is discredited

Measure	Positive		Negative	
	Actors	Observers	Actors	Observers
<i>Estimated number correct</i>				
Before feedback				
<i>M</i>	17.00	17.89	17.50	17.39
<i>SD</i>	3.10	7.69	4.54	3.92
After discredit				
<i>M</i>	19.16	19.68	15.00	13.04
<i>SD</i>	2.93	1.42	3.20	2.34
<i>Ratings of mental acuity</i>				
Before feedback				
<i>M</i>	6.39	6.07	6.50	6.04
<i>SD</i>	1.33	0.98	1.39	0.90
After feedback				
<i>M</i>	7.55	8.46	4.69	4.21
<i>SD</i>	1.34	0.96	2.26	1.29
After discredit				
<i>M</i>	7.10	7.86	6.15	5.00
<i>SD</i>	1.27	1.14	1.67	0.78
<i>Percentile estimate</i>				
Before feedback				
<i>M</i>	68.67	69.32	73.04	65.32
<i>SD</i>	12.83	13.46	12.41	12.12
After feedback				
<i>M</i>	89.32	87.75	31.42	33.11
<i>SD</i>	11.78	17.50	15.10	15.25
After discredit				
<i>M</i>	82.42	87.07	55.75	42.96
<i>SD</i>	12.85	8.54	20.85	16.26

Note. Estimations for number correct could range from 0 to 25. Ratings of mental acuity were made on an 11-point scale ranging from 0 to 10. Estimations of percentile rank could range from 0 to 100.



those in the negative feedback condition decreased their evaluations when the initial feedback was received. Thus, the bogus feedback did have the intended effects of raising evaluations of the actor's ability in the positive feedback condition and lowering them in the negative feedback condition.

#### *Did perseverance occur?*

Our first primary research question was whether traditional perseverance was observed. Perseverance is usually defined in terms of differences in evaluations between positive and negative feedback conditions even after research participants are told that the feedback was bogus or erroneous. Following this traditional methodology, a 2 (actor vs. observer)  $\times$  2 (positive vs. negative feedback) ANOVA was conducted to compare post-discredit ratings made by participants in the positive and negative feedback conditions. Consistent with previous research, we expected participants in the positive feedback condition to provide significantly more favorable actor evaluations than those in the negative feedback condition. Results supported this prediction. A main effect of feedback was obtained whereby participants given positive, discredited feedback estimated that the actor got more items correct,  $F(1, 109) = 125.14$ ,  $p < .0001$ ,  $\eta^2 = .534$ , provided higher ratings of actors' mental acuity,  $F(1, 109) = 63.81$ ,  $p < .0001$ ,  $\eta^2 = .369$ , and estimated actors' mental acuity to lie at a higher percentile,  $F(1, 109) = 154.05$ ,  $p < .0001$ ,  $\eta^2 = .586$ , than did participants who had been given negative, discredited feedback, thus replicating the usual belief perseverance findings.

#### *Actor–observer perseverance differences in positive and negative feedback conditions*

The final and most important question we addressed was whether actors persevered more on positive discredited feedback than observers, and less on negative discredited feedback, after controlling for initial evaluations. The fact that there were no differences in initial evaluations, of course, suggests that covarying these evaluations should have little effect on the results.

As previously discussed, because self-enhancement is generally stronger on negative than on positive response dimensions (Alicke et al., 1995), we were more confident of obtaining differential perseverance between actors and observers in the negative feedback condition. Results of a 2 (actor vs. observer)  $\times$  2 (positive vs. negative feedback) analysis of covariance (ANCOVA) on post-discredit evaluations, controlling for initial ratings, confirmed this assumption. Significant interactions, each revealing a similar pattern, were obtained for estimates of how many items the actor answered correctly,  $F(1, 108) = 6.30$ ,  $p < .014$ ,  $\eta^2 = .055$ , ratings of the actor's mental acuity,  $F(1, 108) = 21.24$ ,  $p < .001$ ,  $\eta^2 = .164$ , and estimates of the actor's percentile standing,  $F(1, 108) = 7.02$ ,  $p < .009$ ,

$\eta^2 = .061$ . Following the receipt of positive, discredited feedback, actors and observers provided virtually identical estimates of the number of items the actor answered correctly and the percentile rank of his or her performance ( $F_s < 1$ ). There were actor–observer differences in ratings of mental acuity,  $F(1, 108) = 11.99$ ,  $p < .001$ ,  $\eta^2 = .100$ , but it was the observer ratings that were more positive than actor ratings. Thus, there was no evidence of self-enhancement in positive feedback conditions.

By contrast, significant differences between actors and observers for attributions regarding negative discredited feedback were obtained on each measure. After controlling for initial evaluations, actors who received negative feedback that was later discredited estimated that they had answered more items correctly,  $F(1, 108) = 7.92$ ,  $p < .006$ ,  $\eta^2 = .068$ , that they possessed more mental acuity,  $F(1, 108) = 9.14$ ,  $p < .003$ ,  $\eta^2 = .078$ , and also estimated that their performance fell at a higher percentile,  $F(1, 108) = 6.39$ ,  $p < .013$ ,  $\eta^2 = .056$ , than did observers. Thus, differential perseverance was obtained in the negative feedback condition, as actors tended to inflate their self-evaluations and persevere to a lesser extent than did observers.

The present study, therefore, is the first of which we are aware to demonstrate actor–observer differences in attributions following discredited feedback. These differences were obtained, however, primarily following negative feedback. Specifically, actors showed less perseverance on negative feedback that was discredited than did observers. From the standpoint of self-enhancement, one might question why actors didn't also show an increased tendency to persevere on positive feedback relative to observers. One possibility is a simple ceiling effect. After positive feedback was discredited, the perseverance effect led both actors and observers to give the actor high ratings, leaving little room on the respective scales for actors to elevate their ratings above those of observers. Another explanation is that self-enhancement tendencies tend to be stronger on negative response dimensions than on positive ones (Alicke & Govorun, 2005; Chambers & Windshittl, 2004; Sedikides & Gregg, 2003). After the discrediting manipulation, actors and observers in the positive feedback condition gave actors relatively high ratings on mental acuity, estimated that the actor was correct on about 20 of 25 trials, and also estimated the actor's percentile rank to lie near the 85th percentile, so there was relatively little need for actors to exhibit further self-enhancement.

The experimental design of the present study also allowed us to eliminate a possible alternative explanation for the observed actor–observer differences. In virtually all published belief perseverance studies, participants' responses are obtained only after the initial feedback is discredited. The finding that actors evaluate themselves more favorably than observers after unfavorable feedback is discredited could simply reflect initial attributional differences. According to this interpretation, participants essentially ignore the feedback after it is discredited and revert to their

initial expectations, which are higher than those of observers. The present study, however, refutes this interpretation. No actor–observer differences were obtained before the feedback was administered, and therefore, controlling for initial evaluations did not influence the results. The absence of initial differences is consistent with the general finding that self-enhancement is minimized when actors expect to be evaluated on highly objective tasks (Alicke & Govorun, 2005).

Thus, the results of the study reported in this paper suggest that people do show decreased perseverance when the experimental task is described as one that measures an important self-component, which in the present studies, was represented as mental acuity—a purportedly vital aspect of intelligence. We believe that the data make a compelling argument that when the task is an important one, the desire to maintain a relatively favorable self-image leads actors to persevere less than observers on unfavorable feedback. This is a potentially important self-evaluation maintenance mechanism. Everyone receives negative feedback, and while it would be unwise simply to ignore objective evaluations, it is equally unwise to subscribe to negative feedback whose validity is questionable. Of the numerous mechanisms that people use to help maintain positive self-views, knowing how to handle negative feedback effectively may be among the most important.

People learn about themselves from various sources—by testing their skills vs. the environment or other people, by receiving scores on objective tests, and via verbal feedback provided in relatively formal (e.g., performance evaluations) or informal (e.g., comments by an acquaintance) circumstances. A difficult, but indispensable, aspect of self-evaluation requires people to assess the validity of these data sources. Some feedback is almost impossible to challenge, such as reading a stop watch to calculate one's running time, whereas other feedback, such as a performance evaluation from a non-expert source, may be eschewed as worthless.

In the belief perseverance paradigm, information that initially appears to be highly credible is subsequently called into question. It is important to note that although experimenters tell participants that the feedback was erroneous, the feedback may still provide the baseline from which they estimate their true performance. Thus, participants may believe that they are discarding the feedback without realizing that they are using it as a judgmental anchor. In our view, the main cause of belief perseverance is not that people fail to appreciate the invalidity of the initial feedback, or that they make new inferences in seeking to make sense of it, but rather, that they inadvertently use this feedback as an anchor from which to rate their abilities at the task.

The present findings add to the research literature that examines the interplay between cognitive and motivational factors in social judgment and behavior (Kunda, 1990). While there may be some aspects of judgment and behavior that are purely habitual or automatic, most interesting social phenomena contain chronic or situational goals that

the actor is trying to achieve, as well as cognitive processes by which those goals are pursued. In belief perseverance, actors' have to assess their ability at the task, and the way they do this is heavily influenced by the initial, invalidated feedback that they received. The present research is the first to show that this process is alterable when the task is described as an important one for the self-concept and actors, therefore, have the goal of maintaining a reasonable favorable self-view on the performance dimension.

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