

Boasts Are a Boost: Achievement Prime Self-Reactivity Predicts Subsequent Academic Performance

Richard H. Gramzow
Syracuse University

Camille S. Johnson
San Jose State University

Greg Willard
Harvard University

The present research tests the hypothesis that *self-reactivity* following an achievement prime reflects the strength of achievement goals and is a predictor of future goal-relevant performance. In Studies 1–3, undergraduates reported their grade-point averages (GPAs) following either an achievement goal prime or a control prime. Academic exaggeration (higher self-reported than official GPA) was the indicator of self-reactivity to the prime. Study 1 involved a direct achievement goal prime, whereas Studies 2 and 3 involved indirect priming techniques. In all 3 experiments, greater academic exaggeration following the achievement goal prime (but not the control prime) predicted better academic performance a semester later (based on official records). Study 4 demonstrated that the magnitude of students' GPA goals mediated the association between academic exaggeration and subsequent performance (1 year later). The fact that self-reactivity to a single achievement goal prime in the lab predicted later performance in "real life" suggests that individual differences in reactivity to a specific prime can signal much broader motivational orientations related to the primed goal.

Keywords: goals, achievement, self, implicit cognition

Daily life includes a steady stream of reminders about one's goals and aspirations. Some of these reminders are explicit and direct. For example, a formal performance review may require an employee to list her goals for the year and indicate whether she has accomplished them successfully. She might also be asked to identify her goals for the upcoming year or describe her "five year plan." Other reminders of one's goals may be more subtle and activate those goals indirectly. For example, a chance encounter with the company president may stimulate the employee's general achievement motive and indirectly activate her specific goal for promotion.

Not all people respond to the activation of particular goals in the same way, and initial psychological responses to the activation of a given goal may have implications for subsequent behaviors relevant to that goal. For example, how an employee responds to an encounter with the company president could reveal something about that employee and her career goals. If an employee responds to the meeting by envisioning herself as being on an upward trajectory, then she might be ambitious and have high aspirations. In addition, the chance encounter and the resulting boost in self-views could lead her to increase her efforts to achieve promotion.

However, if an employee does not respond with a heightened self-appraisal, this may indicate that she has more modest aspirations and is less ambitious. In other words, individual differences in the momentary response to career goal activation in a specific situation might reveal an employee's broader career aspirations and may even predict her long-term career success.

The purpose of the present research was to examine the possibility that how people respond to primes can be a predictor of goal-related behavior *outside* of the priming context because such responses reveal important individual differences in goal orientation. In particular, we focus on *self-reactivity* in response to goal-activating primes. The term *self-reactivity* refers to the degree to which a person's immediate reports, perceptions, or judgments about the self are influenced by the prime. Our main question is whether individual differences in self-reactivity predict subsequent goal-relevant performance.

Self-Reactivity

It is well established in the literature that cognitive primes can influence self-related judgments, or the *active self-concept* (Wheeler, DeMarree, & Petty, 2007). Importantly, there can be considerable individual variation in the degree to which self-related judgments are affected by primes. For example, the impact of a prime on self-judgment can vary as a function of individual differences in personality variables, such as private self-consciousness (Hull, Slone, Meteyer, & Matthews, 2002) and self-monitoring (DeMarree, Wheeler, & Petty, 2005). Self-reactivity also can vary as a function of individual differences in structural and dynamic components of the self-concept (DeSteno & Salovey, 1997; Gramzow, Sedikides, Panter, & Insko, 2000),

Richard H. Gramzow, Department of Psychology, Syracuse University; Camille S. Johnson, Silicon Valley School of Management, San Jose State University; Greg Willard, Department of Psychology, Harvard University.

Correspondence concerning this article should be addressed to Richard H. Gramzow, Department of Psychology, Syracuse University, 430 Huntington Hall, Syracuse, NY, 13244. E-mail: rgramzo@syr.edu

such as self-certainty (Pelham & Wachsmuth, 1995; Rios Morrison, Johnson, & Wheeler, 2012) and self-ambivalence (DeMarree, Morrison, Wheeler, & Petty, 2011).

Such variance is important because the degree to which an individual's self-judgments are influenced by a prime can predict immediate behavior. This pattern was demonstrated recently in an experiment examining self-reactivity following the priming of stereotypes of the elderly (Wyer, Neilens, Perfect, & Mazzoni, 2011). In this experiment, the more participants' self-ratings on elderly stereotypic traits (e.g., *wise* and *grumpy*) increased following the prime, the greater their tendency to engage in elderly stereotypic behavior (e.g., walking more slowly). Potential reasons for the individual differences in reactivity to the prime were not investigated; however, the authors speculated that focus of attention (self vs. other) influences whether a prime affects the self-concept.

We argue that individual differences in self-reactivity to a prime are indicators of three things. First, we suggest that the degree of self-reactivity in response to a goal prime can be an indicator of chronic individual differences in the strength of goals related to that prime. Second, we argue that self-reactivity may represent an opportunity to experience a sense of movement or progress toward goal attainment. Third, we argue that because self-reactivity following exposure to a prime signals one's general motivational orientation toward the primed goal, self-reactivity should predict subsequent goal-relevant behaviors and outcomes *outside* of the context of the priming experience. Given that people are constantly encountering goal-related primes in their daily lives, understanding how people respond to them, and the significance of that self-reactivity, is important. In the present research, we examine these basic hypotheses about self-reactivity within the domain of academic performance.

Academic Exaggeration as Self-Reactivity

At least in Western societies, there is a tendency for self-evaluations to be overly positive (Dunning, Heath, & Suls, 2004; Greenwald, 1980; Taylor & Brown, 1988). This tendency is particularly common in achievement-related domains, such as academics. For example, university students tend to exaggerate their grade-point averages (GPAs). But, not all students exaggerate, nor do they do so to the same degree. Several individual-difference measures predict greater levels of academic exaggeration, including need for achievement (Gramzow, Elliot, Asher, & McGregor, 2003) and *performance-approach* goals related to academic performance (Elliot & Church, 1997; Willard & Gramzow, 2009).

There are many reasons why biases in self-evaluation occur. For example, at times self-evaluation biases may reflect performance motivations, and at other times reflect self-enhancement or protection motivations (Alicke & Sedikides, 2011; Hepper, Gramzow, & Sedikides, 2010). In the case of academic performance, although academic exaggeration typically is associated with stronger performance-approach goals, it too can be linked to different processes in different contexts (Gramzow, 2011). For example, when public self-focus is high (e.g., due to the presence of a video camera), academic exaggeration reflects individual differences in *public* social desirability concerns rather than the strength of *private* performance-approach goals (Willard & Gramzow, 2009). Likewise, context can determine whether or not academic exaggeration

reflects a person's general tendency to self-enhance across many different domains (i.e., trait self-enhancement). When people have been self-affirmed (and self-esteem concerns presumably have been satisfied), trait self-enhancement no longer predicts exaggeration, and even people who typically self-enhance via academic exaggeration report their academic performance more accurately (Gramzow & Willard, 2006). This latter finding suggests that exaggeration can, at times, reflect a broader self-enhancement or protection motive rather than one's private academic achievement goals.

The Present Research

In the present research, we build on and extend previous findings on prime reactivity and on academic exaggeration by examining the degree of GPA exaggeration (self-reactivity) following the priming of academic goals as it relates to subsequent performance. In four studies, we tested the proposition that the exaggeration that occurs following exposure to an academic goal prime is a form of self-reactivity that reflects the strength of private academic goals and, thus, predicts academic performance beyond the priming context. In contrast, exaggeration that occurs in the *absence* of an achievement goal prime is expected to reflect a variety of additional psychological processes (e.g., social desirability or self-protection concerns) that would not necessarily be coordinated with subsequent performance. Whereas previous research on GPA exaggeration has always examined exaggeration within an experimental context that activated goals (e.g., by having participants complete achievement motivation measures), in the first three studies in the present research, we explicitly manipulated achievement activation in order to distinguish between the implications of exaggeration following a prime and exaggeration under other circumstances.

It is well established that, in the short term, behavior and judgments about the self can be influenced by priming. Yet, there has been considerably less focus on differences in the degree to which individuals respond to a specific prime, and essentially no research on the longer term behavioral implications of these individual differences in reactivity. For example, no one has investigated how individual differences in self-reactivity in response to a specific prime in the lab illuminates how people respond when that goal is activated in the real world.¹

In the present research, we addressed these issues by manipulating the salience of academic goals using priming techniques and examining whether individual differences in self-reactivity (academic exaggeration) to these primes predict longer term perfor-

¹ Previous research has demonstrated that priming intelligence in the lab can affect subsequent test performance (Lowery, Eisenberger, Hardin, & Sinclair, 2007). However, there are some important differences conceptually and methodologically between this work and that reported in the present article. First, Lowery et al. (2007) focused on the main effect of the prime on subsequent performance, whereas we are focusing on individual differences in reactivity to the prime as a predictor of subsequent performance (i.e., we are not predicting that the prime itself will predict subsequent performance). Second, Lowery et al. found that the intelligence prime affected performance on a practice exam immediately after the prime exposure and that it was performance on the practice exam that mediated the effect of the prime on subsequent performance on the actual exam (1–4 days later). Without the intervening practice exam, this one specific prime may have had no direct effect on actual exam performance days later.

mance. We are *not* arguing that academic goal priming should necessarily increase levels of academic exaggeration; some participants may exaggerate their academic performance in the absence of an achievement goal prime for a variety of other reasons. Instead, we are arguing that the level of exaggeration that occurs *in response* to the priming of academic goals provides a means of identifying and gauging individual differences in the strength of those goals that may be related to downstream academic performance outcomes.

Two related hypotheses are fundamental to the present research. First, the degree of self-reactivity in response to a specific prime is predicted to be an indicator of chronic differences in the strength of goals and motives related to the primed goal or construct. In other words, a person with stronger goals related to the prime is predicted to have a stronger reaction to the prime, as reflected in his or her self-reports of current performance. Second, given that self-reactivity to a specific prime signals a person's goals and motives more generally, it is expected to predict subsequent goal-relevant performance outside of the laboratory.

In four studies focusing on the academic domain, we examine whether individual differences in the degree of academic exaggeration *in response to these primes* (self-reactivity) predict later academic performance. In Study 1, activation occurred by asking participants to explicitly report their goal GPA immediately prior to reporting their current GPA. In this achievement prime condition, exaggeration of current performance was expected to significantly predict subsequent actual performance, compared with a condition in which achievement goals were not primed prior to the opportunity to exaggerate current performance. In Studies 2 and 3, academic goals were activated less explicitly. In Study 2, we primed the general concept of achievement using a word-search task, whereas in Study 3 we primed goals in general using an open-ended future self manipulation. In Study 3, we also assessed feelings of progress toward goal attainment. Finally, we examined in Study 4 whether the magnitude of the academic goal mediates the exaggeration–performance link, based on a reexamination of previously collected data in which all participants were primed. Across all four studies, exaggeration that arose as a response to a prime that activated academic goals was expected to be associated with better academic performance outcomes in the future, whereas exaggeration that arose in the absence of such a prime was not.

Study 1

In Study 1, we tested the primary hypothesis that self-reactivity (exaggeration of GPA following a prime) in response to a reminder of one's academic goals would predict subsequent academic performance outside of the lab. Academic goals were primed in as explicit a way as could be imagined by asking students in the prime condition to report the GPA that they hoped to attain upon graduation immediately *before* reporting their current GPA. Students in the control condition simply reported their current GPAs (only after which they reported their goal GPAs). When goals were primed, we predicted an association between magnitude of GPA exaggeration and actual improvement and that this association would be stronger in the prime condition than when goals were not primed.

Method

Participants. Undergraduate students (58 men, 107 women) from a large eastern, private university participated in the experiment as part of a psychology course option. Students' ages ranged from 18 to 23 ($M = 18.98$). Two participants who did not self-report their GPAs and one who had an actual GPA of 4.0 (and, thus, could not exaggerate) were excluded from the analyses, resulting in an effective sample of 162.

Procedure. The survey was computer administered in small groups of one to four participants, each shielded from any others by partitions. At the onset of the study, participants provided demographic information, including age, gender, ethnicity, and current year in college. Participants then responded to several questions about their academic goals and their current academic performance. The prime was embedded in this generic questionnaire.

Goal-priming manipulation. In the *goal prime* condition, participants ($n = 79$) stated their goal GPAs ("What GPA do you hope to achieve by graduation?") as a means of activating achievement goals. After this prime, they self-reported their current GPAs ("What is your actual GPA as of the end of the previous semester?"). In the control condition, participants ($n = 83$) self-reported their current GPAs without first reporting their goal GPA; therefore, self-reported GPA was obtained in the absence of any explicit reminder of their academic goals. (Control participants did report their goal GPA later in the survey.)

Official academic performance. Consent to access student records was obtained from participants at the end of the study. Official GPAs were obtained from the university registrar immediately after the study (to assess exaggeration of current actual performance) and at the end of the semester (to assess changes in official academic performance). Specifically, for each student, we subtracted official current GPA at the time of the study from self-reported current GPA to index academic exaggeration, and we subtracted official current GPA at the time of the study from official GPA at the end of the semester to index changes in actual performance.

Results

Preliminary analyses. The average official GPA at the time of the study was 3.18 ($SD = .52$), whereas the average self-reported GPA was 3.21 ($SD = .50$). Consistent with previous research, students exaggerated their GPAs by a small but significant margin ($M_{diff} = .03$, $SD = .09$), $t(161) = 3.43$, $p = .001$. The goal-priming manipulation did not influence mean levels of academic exaggeration ($F < 1$). Participants in both conditions self-reported GPAs (control $M = 3.24$, $SD = .50$; prime $M = 3.17$, $SD = .51$) that, on average, were .03 points higher than their official GPAs (control $M = 3.21$, $SD = .52$; prime $M = 3.14$, $SD = .53$). In summary, students who first reported their goal GPAs before self-reporting their current GPAs (prime condition) did not exaggerate their current GPAs significantly more or less than did students who did not state their goal before reporting their current GPAs (control condition).

It is important also to note that the goal-priming manipulation did not affect the mean level of goal GPA reported by students, with reports of goal GPA by participants in the control condition ($M = 3.59$, $SD = .27$) not significantly differing from the prime

condition ($M = 3.59$, $SD = .33$) ($F < 1$; total sample $M = 3.59$, $SD = .30$). Also, as would be expected, the priming manipulation (to which participants were randomly assigned) was not associated either with official current GPA at the time of the study (means reported in previous paragraph) or with official GPA one semester later (control $M = 3.19$, $SD = .48$; prime $M = 3.15$, $SD = .46$; $F_s < 1$).

Self-reactivity and subsequent performance. The critical question was whether goal priming moderated the relationship between academic exaggeration and changes in official academic performance. Multiple regression was used to test the hypothesis that the tendency to exaggerate current performance in response to an explicit goal prime (self-reactivity) predicts subsequent performance in that domain and that this association differs between the goal prime and control conditions (Aiken & West, 1991). The regression model included the goal-priming condition (0 = control, 1 = primed), mean-centered GPA exaggeration difference score, and the Prime \times Exaggeration interaction term, predicting changes in official academic performance (i.e., the difference score representing changes in official GPA from the time of the study to one semester later).

In addition, as appropriate controls, we included actual current GPA (mean centered) and the Prime \times Actual GPA interaction as covariates in the regression model. We statistically controlled for actual current GPA in all analyses in all four studies because there is a tendency for lower actual GPAs to be associated with greater exaggeration (a feature of nearly all difference scores). The patterns of effects were essentially the same when either (a) raw difference scores were used to index performance change from Time 1 to Time 2 without controlling for Time 1 actual GPA as a predictor or (b) residual scores were saved and used to index performance change (i.e., the residual when Time 2 actual GPA was regressed onto Time 1 actual GPA).²

Figure 1 depicts the overall pattern. As expected, the goal-priming effect was not significant ($b = .03$, $SE = .03$, $\beta = .06$), $t(156) = 0.86$, $p = .391$, indicating (as in the preliminary analyses above) that the priming condition to which participants were assigned had no effect on later official academic performance. Importantly, however, the expected Prime \times Exaggeration effect was significant ($b = .71$, $SE = .33$, $\beta = .26$), $t(156) = 2.14$, $p = .034$. In the no-prime control condition, GPA exaggeration and performance changes were not significantly related ($\beta = -.13$, $p = .276$; see Figure 1, dashed line). However, when academic

goals were explicitly primed, the association between exaggeration and changes in official academic performance was significant and positive ($\beta = .21$, $p = .036$; see Figure 1, solid line). In other words, when students responded to goal activation with greater self-reactivity (exaggeration of their current GPA), they had higher official GPAs at the end of the semester (controlling for their initial official GPAs at the time of the study). However, when students exaggerated their current performance in the absence of the goal prime, this did not predict how well they performed in the future.

Discussion

Study 1 demonstrated that academic exaggeration predicted later academic performance, but only among participants whose academic goals were activated at the time they self-reported their current GPAs. This pattern is consistent with our hypothesis that the degree of self-reactivity to a prime reflects individual differences in goal strength. It also supports our contention that individual differences in self-reactivity to the academic goal prime in the laboratory context reflect more general academic motivations that benefit performance outcomes in the future, even in the broader university context. In contrast, academic exaggeration in the control condition did not predict subsequent official performance. This supports our contention that academic exaggeration in the absence of salient academic goals is not necessarily related to individual differences in performance goal strength (e.g., it could reflect public social desirability concerns) and, thus, is not predictive of goal-relevant behavior.

The prime used in Study 1 was focused on (and framed specifically in terms of) the eventual performance measure (GPA). It is plausible that first stating one's goal GPA could provide an upward anchor toward which subsequent self-reports of one's current GPA would be adjusted. Alternatively, identifying one's goal prior to reporting one's current GPA could lead individuals to correct for the goal or otherwise lead to a more grounded and accurate self-report. However, we found no significant differences in exaggeration between students in the goal-prime condition and the control condition in Study 1. Likewise, we did not find that the prime led to significantly higher (or lower) reported GPA goals.

Study 1 provided an initial demonstration that academic exaggeration following an explicit goal prime predicts higher actual performance a semester later, whereas exaggeration without a goal prime did not predict changes in actual performance. In Studies 2 and 3, we expanded on these findings by examining individual differences in self-reactivity to alternative methods of priming academic goals.

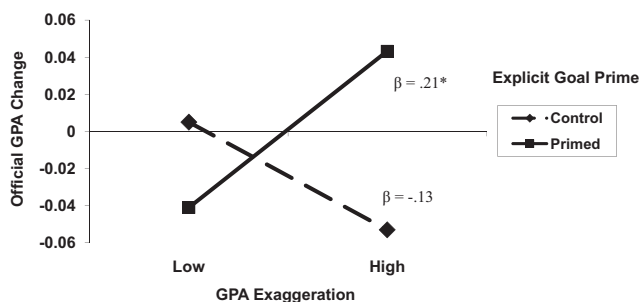


Figure 1. Study 1: Association between grade-point average (GPA) exaggeration and changes in actual (official) GPA as a function of explicit goal prime condition. * $p < .05$.

² Some readers might find it curious that we controlled for one of the components of a difference score (self-reported GPA – actual GPA). Why not just compute a residual score by partialing actual GPA from self-reported GPA? In terms of statistical inference tests, the results would be identical. This is because the residual when controlling for actual GPA when the difference score is the dependent measure is perfectly correlated with the residual when controlling for actual GPA when self-reported GPA alone is the dependent variable. All that differs is the scale of the dependent measure. We believe that scaling the dependent variable in terms of a difference score aids interpretation when focusing on exaggeration (and actual improvement). Finally, it is important to note that the patterns of effects are essentially the same when raw difference scores are used without controlling for actual GPA.

Study 2

In Study 2, we used a well-validated procedure for activating the general concept of achievement, which has been shown to activate achievement-related goals below the level of conscious awareness (Bargh, Gollwitzer, Lee-Chai, Barndollar, & Trötschel, 2001). Priming the concept of achievement should activate goals in important achievement-related domains, which for university students should include academic performance. Thus, GPA exaggeration following an achievement prime should reflect a similar self-reactivity process as did exaggeration in the context of the explicit GPA goal prime used in Study 1. Therefore, replicating Study 1, we predicted that individual differences in the degree of GPA exaggeration in the achievement prime condition (but not a control condition) should predict subsequent official GPA performance.

Method

Participants. Participants were 134 undergraduate students at a large eastern, private university (57 women) who completed the study as part of a psychology course option.

Procedure. Participants signed up for what they were told were two separate studies and were seated in individual cubicles for the entirety of the experiment. The first study was described as a pilot test of stimuli for a future experiment.

Achievement prime. Participants were randomly assigned to complete one of two word-search puzzles that previously have been shown to prime achievement (Bargh et al., 2001, Experiment 1). In the prime condition, the puzzle contained eight achievement-related words (e.g., *attain*, *achieve*, and *master*) and eight neutral words (e.g., *lamp*, *ball*, and *turtle*). In the control condition, the puzzle contained 16 neutral words. Participants were given 5 min to circle as many of the words as they could find.

Academic performance (self-reported and official). The second study was described as a personality survey. This computerized survey began with an anagram task that served as a distractor and time delay to increase the influence of the earlier prime (Bargh et al., 2001). Next, participants self-reported their current academic performance (cumulative GPA at the end of the previous semester) as part of a generic demographic section of the survey. Consent to access student records was obtained from participants at the end of the experiment. Official GPAs were obtained from the university registrar immediately after the experiment (to assess exaggeration of current official performance) and at the end of the semester (to assess changes in official performance).

Results

Preliminary analyses. The average official GPA at the time of the study was 3.04 ($SD = .49$), whereas the average self-reported GPA was 3.13 ($SD = .41$). Consistent with previous research, on average, students exaggerated their GPAs by a significant margin ($M_{diff} = .09$, $SD = .25$), $t(133) = 4.33$, $p < .001$.

The mean levels of academic exaggeration in the achievement prime and control conditions are shown in Figure 2. As the 95% confidence intervals indicate, the magnitude of exaggeration was significantly different from zero in each condition. Unexpectedly, participants primed with achievement exaggerated their current

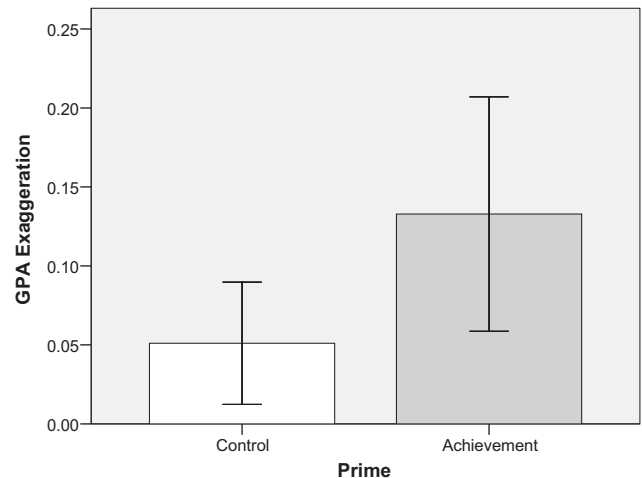


Figure 2. Study 2: Mean level of grade-point average (GPA) exaggeration as a function of achievement prime condition. Error bars represent 95% confidence intervals within condition.

GPAs significantly more than did those in the control condition, $F(1, 131) = 5.18$, $p = .025$. That is, activation of achievement goals using this priming technique increased the tendency to exaggerate self-reports of current academic performance.

However, as in Study 1, and as expected given random assignment, the achievement prime manipulation was not associated with official current GPA at the time of the study or with official GPA one semester later ($F_s < 1$; for the latter, total sample $M = 3.05$, $SD = .45$).

Self-reactivity and subsequent performance. Using the same analysis strategy as in Study 1, multiple regression was used to examine whether academic exaggeration was associated with subsequent academic performance, and whether this association differed across the priming conditions. The regression model included the achievement prime condition (0 = control, 1 = achievement), mean-centered GPA exaggeration, and the Prime \times Exaggeration interaction term, predicting changes in academic performance. As in Study 1, we included actual current GPA (mean centered) and the Prime \times Actual GPA interaction as covariates in the regression model.

Figure 3 depicts the overall pattern. As expected, and replicating Study 1, the achievement prime effect was not significant ($b = .05$, $SE = .04$, $\beta = .10$), $t(128) = 1.22$, $p = .224$, indicating that the priming condition to which participants were assigned had no effect on later official academic performance. Importantly, however, the Prime \times Exaggeration effect was significant ($b = .47$, $SE = .21$, $\beta = .27$), $t(128) = 2.24$, $p = .027$. Above and beyond the effect of prime on exaggeration, priming determined when exaggeration predicted later performance. In the no-prime control condition, the association between GPA exaggeration and performance changes was not significant ($\beta = -.03$, $p = .476$; see Figure 3, dashed line). However, in the prime condition, the association between exaggeration and changes in official academic performance was significant ($\beta = .24$, $p = .031$; see Figure 3, solid line).

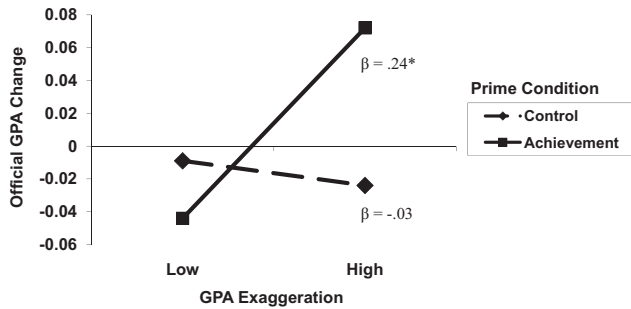


Figure 3. Study 2: Association between grade-point average (GPA) exaggeration and changes in actual (official) GPA as a function of achievement prime condition. * $p < .05$.

Discussion

In summary, self-reactivity in the form of exaggeration of current GPA following priming with achievement predicted higher official GPAs at the end of the semester (controlling for initial official performance). This pattern is consistent with findings from Study 1 and with our hypothesis that individual differences in exaggeration in response to an achievement prime in one context reflect a more generalized response to achievement situations outside the lab. In addition, Study 2 demonstrated that GPA exaggeration predicted subsequent academic performance even when the general concept of achievement was primed, rather than a direct prime of students' specific GPA goals.

Study 3

The purpose of Study 3 was to replicate the pattern of results from the first two studies using an alternative means of priming academic goals by asking students to think about themselves in the future versus the present. We predicted that, among university students participating in an experiment linked to one of their academic courses, future goals would include goals for academic achievement. Therefore, like reactivity to the primes used in Study 1 and Study 2, self-reactivity when thinking about the future self should reflect individual differences in the strength of activated goals and the degree to which one feels one is making progress toward attaining those goals. If so, it should predict subsequent improvements in actual academic performance. In contrast, thinking about the current self could activate academic goals, but could also emphasize one's actual current academic performance and, therefore, that one has yet to achieve the loftier goal.

Method

Participants. Participants were 71 undergraduate students (42 women) at a western, public university completing the study online for partial course credit. Students who had yet to establish an actual GPA ($n = 7$) or failed to provide a self-reported GPA ($n = 2$) were omitted.

Procedure.

Self-focus manipulation. Participants were asked to write a brief essay that served as the manipulation of goal activation. Students randomly assigned to the *future self* condition were given the following instructions:

We are interested in learning more about you. Who are you becoming while in college? In this questionnaire, we are asking you to describe yourself. Please take a few minutes to tell us about who you may become in the future. Please focus on the person you are in the process of developing into. We are interested in you telling us about who you may become in the future.

In contrast, students assigned to the current self condition were given the following instructions:

We are interested in learning more about you. Please take a few minutes to tell us about who you are right now. Please focus on defining who you are in terms of the things you have not yet accomplished in your life and the things you have not yet achieved. We are interested in you telling us about who you are right now.

Academic performance (self-reported and official). Participants then completed a questionnaire that contained a request for their current academic performance (cumulative GPA at the end of the previous semester). Consent to access student records was obtained from participants at the end of the experiment. Official GPAs were obtained immediately after the experiment (to assess exaggeration of current official performance) and at the end of the semester (to assess changes in official performance).

Manipulation checks. Participants also responded to several questions created to assess the effects of the manipulations. One question simply asked whether the task activated goals in general ("Writing the description made me think about the goals I need to achieve") on a scale ranging from 1 (*Disagree Completely*) to 7 (*Agree Completely*). Five questions asked participants whether they believed they were making progress toward achieving their goals (e.g., "I am moving towards my goals as quickly as I would like" and "I feel like I am making good progress towards achieving my goals"). The goal progress questions were responded to on scales ranging from 1 (*Not at all true*) to 6 (*Extremely true*). Responses to the latter five items were averaged into an overall measure of a sense of goal progress or momentum ($\alpha = .85$).

Results

Manipulation checks. There was no significant mean difference in the degree to which focusing on the current self ($M = 5.46$, $SD = .95$) versus the future self ($M = 5.62$, $SD = 1.23$) influenced participants' reports that they were led to think about their goals in general, $t(60) = 0.55$, $p = .583$. However, participants in the future self condition reported that they believed they were making greater progress toward their goals ($M = 4.24$, $SD = .67$) than did participants in the current self condition ($M = 3.74$, $SD = .67$), $t(60) = 2.69$, $p = .009$. Therefore, the self-focus task led participants in both conditions to think about their goals, but participants in the future self condition reported experiencing a greater sense of progress toward achieving their goals than did participants in the current self condition.

Preliminary analyses. The average official GPA at the time of the study was 2.63 ($SD = .73$), whereas the average self-reported GPA was 2.72 ($SD = .77$). Consistent with previous

research, on average, students exaggerated their GPAs by a significant margin ($M_{diff} = .09$, $SD = .31$), $t(59) = 2.20$, $p = .032$.³

The mean levels of exaggeration in each of the conditions are shown in Figure 4. As the 95% confidence intervals indicate, the magnitude of exaggeration was only significant in the future self condition. In addition, participants in the future self condition exaggerated significantly more than did those in the current self condition, $F(1, 59) = 4.06$, $p = .048$. Therefore, students who were led to focus on the future self (the person they are becoming in college) tended to exaggerate their current academic performance (i.e., self-reactivity). In contrast, students who were led to focus on their actual current self (the person they are right now) did not show a significant tendency to inflate their academic performance. We return to this finding in the Study 3 Discussion.

As in the first two studies, the future versus current self manipulation was not associated with official current GPA at the time of the study or with official GPA one semester later ($F_s < 1$; for the latter, total sample $M = 2.66$, $SD = .62$).

Self-reactivity and subsequent performance. Similar to the first two studies, we used multiple regression to examine whether individual differences in academic exaggeration (self-reactivity to the prime) was associated with subsequent academic performance and whether this association varied across the self-focus conditions. The regression model included the self-focus condition (0 = current, 1 = future), mean-centered GPA exaggeration, and the Self-Focus \times Exaggeration interaction term, predicting changes in official academic performance. In addition, as in Studies 1 and 2, we included actual current GPA (mean centered) and the Self-Focus \times Actual GPA interaction as covariates in the regression model.

Figure 5 depicts the overall pattern. The self-focus effect was not significant ($b = .05$, $SE = .10$, $\beta = .05$), $t(54) = 0.46$, $p = .645$, indicating that the focus condition to which participants were assigned had no effect on later official academic performance. Importantly, however, the Self-Focus \times Exaggeration effect was significant ($b = .82$, $SE = .36$, $\beta = .38$), $t(54) = 2.27$, $p = .027$. There was not a significant association between GPA exaggeration

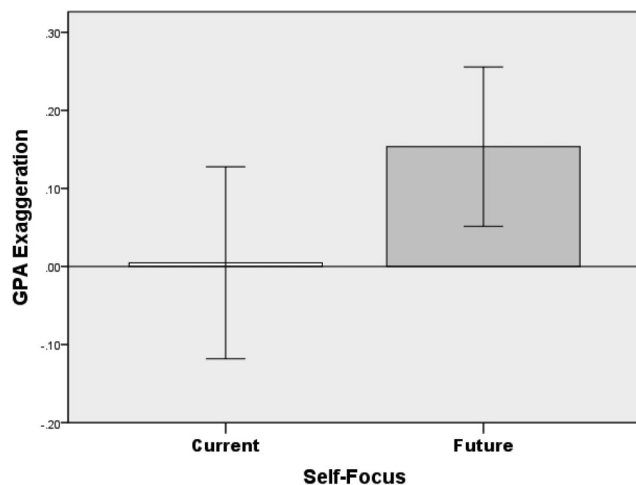


Figure 4. Study 3: Mean level of grade-point average (GPA) exaggeration as a function of mind-set condition. Error bars represent 95% confidence intervals within condition.

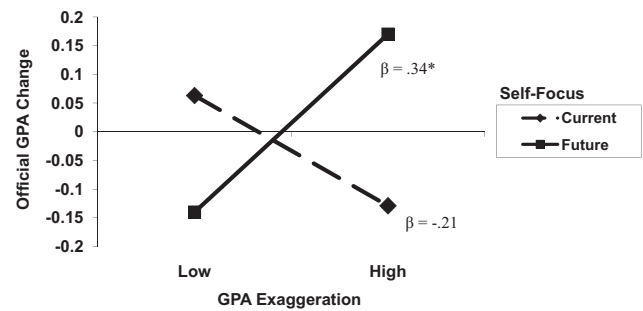


Figure 5. Study 3: Association between grade-point average (GPA) exaggeration and changes in actual (official) GPA as a function of self-focus condition. * $p < .05$.

and performance changes in the current self condition ($\beta = -.21$, $p = .215$; see Figure 5, dashed line). However, the association between exaggeration and changes in official academic performance was significant and positive in the future self condition ($\beta = .34$, $p = .05$ see Figure 5, solid line).

Discussion

Study 3 demonstrated that exaggerated self-reports of academic performance when focusing on one's future self predicted actual improvements in academic performance over time. Future selves are goal constructs that are likely to include outcomes contingent upon or related to performance (Markus & Ruvo, 1989). In a university sample, these undoubtedly include academic achievement outcomes. Therefore, this pattern is consistent with our hypothesis that individual differences in self-reactivity to goal primes reflect a more generalized response to achievement situations related to the primed goals outside the lab.

Although the self-focus task led participants in both conditions to think about their goals, participants in the future self condition reported experiencing a greater sense of progress toward achieving their goals than did participants in the current self condition. This sense of progress could be a key aspect of self-reactivity to a prime: It reflects and perhaps generates a sense of psychological momentum (Markman & Guenther, 2007). Importantly, in the present study, we demonstrated that self-reactivity in the presence of psychological momentum predicted actual future performance.

Unlike the first two studies, participants in the Study 3 control condition (the current self condition) did not demonstrate a significant tendency to exaggerate their academic performance. This contributed to a main effect for self-focus on exaggeration. Although we did not anticipate a reduced tendency to exaggerate in the current self condition, this pattern does make sense in retrospect. Participants in this condition did report thinking about their current goals (including, presumably, academic goals); however, unlike students in the future self condition, they did not report

³ Average GPA was considerably lower in Study 3 than in the other studies largely because it was conducted at a different university. Studies 1, 3, and 4 were conducted at a highly selective private university, whereas Study 3 was conducted at a large public university with a higher percentage of commuter and part-time students and a lower retention rate. It is noteworthy that the pattern of effects is similar in these different academic environments and with different levels of baseline performance.

feeling a strong sense of progress toward achieving those goals. Thus, their self-reports appear to have been more strongly tethered to their actual current level of performance, rather than being drawn upward toward their goals and aspirations for the future.

Across Studies 1–3, the presence of an achievement prime determined whether self-reactivity predicted future outcomes. The interactive effect of prime and self-reactivity was significant in all three studies, even though the main effects of priming on exaggeration varied. That the determining role of achievement priming is significant, regardless of whether the main effect is significant, attests to the robustness of this interaction effect.

Study 4

Studies 1–3 supported our primary hypotheses about academic goal priming, exaggeration, and subsequent performance using three different priming techniques. It is not clear, however, why a person who is highly self-reactive to goal primes is also a better performer down the line. Previous research has highlighted other individual-difference measures that are associated with greater exaggeration (e.g., performance-approach orientation), but the relations among goal activation, self-reactivity, and goal strength have not been directly examined. To address these issues, in Study 4 we examined the role of goal strength. To do so, we present an analysis of previously unexamined data that were collected during a study that was included in a previous publication (Willard & Gramzow, 2009). This analysis directly examines whether academic exaggeration reflects goal magnitude (i.e., how high a GPA a student is aspiring to achieve). Goal magnitude is an important indicator of goal strength and, thus, should predict subsequent goal-relevant behavior. For example, it has been demonstrated in a wide variety of goal-setting contexts that high and concrete goals typically lead to better performance than do low or vague goals (Locke & Latham, 1990, 2002). In Study 4, we tested whether goal magnitude (i.e., a high GPA goal) mediates the association between academic exaggeration and actual improvement (observed in the prime conditions in Studies 1–3).⁴

In Study 4, we examined changes in overall GPA over a full academic year (rather than one semester), and all participants in Study 4 were primed explicitly with achievement by completing an achievement motivation measure immediately before self-reporting their GPAs. Therefore, unlike Studies 1–3, there was not a control prime condition. Goal magnitude was measured as the specific GPA students aspired to obtain by graduation (i.e., their goal). This allowed us to test for purposes of the present research the prediction that goal magnitude accounts for the association between GPA exaggeration and improvement.

Method

Participants. As part of a larger research investigation, 150 undergraduate students (69 men, 81 women) participated in a survey as part of an introductory psychology course option. Students' ages ranged from 18 to 25 ($M = 19.20$). Excluded from the present analyses were six students who dropped out of college before follow-up data were collected, five students who failed to provide valid responses for their aspired GPAs, and one student who had an actual GPA of 4.0. The resulting effective sample was 138.

Procedure. The survey was computer administered. Each participant sat at one of four individual cubicles. At the onset of the study, participants reported demographic information, including age, gender, ethnicity, and current year in college.

Achievement prime. Before self-reporting their academic performance, all participants completed the Achievement scale from the Personality Research Form (Jackson, 1984). The scale is composed of 20 items reflecting one's general orientation toward achievement goals: 10 positively phrased (e.g., "I often set goals that are very difficult to reach") and 10 negatively phrased (e.g., "I have rarely done extra studying in connection with my work").

Self-reported GPA and GPA goal. Participants then were asked to report their current GPAs as in Studies 1–3. Next, they reported their academic achievement goal for the future: "Ideally, what GPA would you like to achieve by graduation?" This latter response was used as the measure of goal magnitude (i.e., how high a GPA the student aspires to achieve).

Actual academic performance. At the end of the study, all participants consented to our request to access their official academic records from the university registrar. Each participant's official college GPA was recorded at two times: once during the same term as the survey (reflecting current actual GPA) and a second time after the completion of two academic semesters (reflecting changes in actual GPA).

Results

Review of previously reported effects. As reported previously on this sample (Willard & Gramzow, 2009), a paired samples t test indicated that average self-reported GPAs ($M = 3.07$, $SD = .510$) were significantly higher than the actual current GPAs recorded by the registrar ($M = 3.01$, $SD = .548$), $t(137) = 2.88$, $p = .005$. Thus, students in this sample tended to exaggerate their current GPAs.

We next examined students' academic goals (i.e., the GPA they would like to achieve upon graduation). These analyses have not been reported previously. Two separate paired samples t tests indicated that students' goals for their eventual GPAs ($M = 3.54$, $SD = .287$) were significantly higher, on average, than either their actual current GPAs, $t(137) = 14.47$, $p < .001$, or their self-reported current GPAs, $t(137) = 14.43$, $p < .001$. This goal GPA was used as the potential mediator in the subsequent analyses.

Tests of current hypotheses: Self-reactivity, GPA goal, and subsequent performance. As reported previously (Willard & Gramzow, 2009), GPA exaggeration was a positive and significant predictor of GPA change in this sample ($b = .253$, $SE = .101$), $t(135) = 2.51$, $p = .013$. For purposes of the present research, we determined that GPA exaggeration also was a significant predictor of GPA goal magnitude ($b = .316$, $SE = .073$), $t(135) = 4.33$, $p < .001$. Thus, students who exaggerated their academic performance (after completing an achievement motivation scale) reported higher academic goals than did students who did not exaggerate.

Next, we determined that GPA goal magnitude predicted actual GPA change ($b = .320$, $SE = .111$), $t(135) = 2.89$, $p = .004$. That

⁴ This examination of goal magnitude as a mediator was not conducted previously because it was outside the scope and purpose of the previous publication (Willard & Gramzow, 2009).

is, students with higher GPA goals tended to perform better academically 1 year later.

These analyses established that GPA exaggeration predicted higher GPA goals and actual GPA improvement. In addition, higher GPA goals predicted subsequent GPA improvement. A test of statistical mediation (Baron & Kenny, 1986) examined whether goal magnitude accounted for the link between exaggeration and improvement. As shown in Figure 6, the initial bivariate effect of GPA exaggeration on GPA change was substantially reduced by the inclusion of GPA goal magnitude in the regression model and was no longer significant ($b = .173$, $SE = .106$, $t(134) = 1.63$, $p = .106$). By contrast, the association between GPA goal and improvement remained significant when exaggeration was included in the model ($b = .253$, $SE = .117$, $t(134) = 2.16$, $p = .033$). A test of the indirect effect of exaggeration on improvement through goal magnitude was assessed using the bootstrapping procedure and SPSS macro provided by Preacher and Hayes (2008). This analysis showed a significant indirect effect of GPA exaggeration on actual GPA change through GPA goal magnitude (95% CI [.011, .193]). In this way, the analysis supported the contention that the effect of exaggeration on performance was attributable to goal magnitude.

Discussion

Study 4 provides greater insight into the process underlying the relationship between academic exaggeration (following an achievement prime) and subsequent academic performance. Specifically, the finding that goal magnitude statistically mediated this relationship implies (a) that exaggerated self-reports of academic performance are associated with having goals that exceed one's current performance and (b) that higher goals have motivational utility, which translates into improved performance over time. In other words, self-reactivity reflects (at least partially) a discrepancy between where the student currently is, academically, and his or her goals for the future. But, it appears to be the high and unmet goals themselves that drive the improvement, rather than the exaggeration per se.

General Discussion

In daily life, people frequently encounter cues that activate their goals. Sometimes, people are aware that these cues have activated

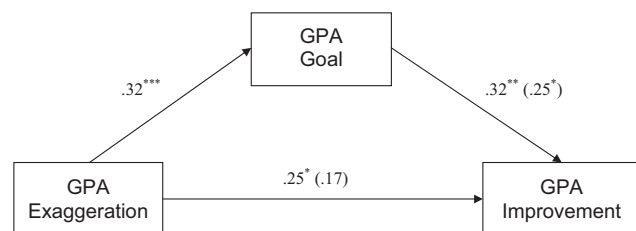


Figure 6. Study 4: Grade-point average (GPA) goal magnitude mediates the relation between exaggeration and improvement. Values outside of parentheses represent unstandardized estimates from bivariate regression models. Values within parentheses represent unstandardized estimates from a regression model with both GPA exaggeration and GPA goal entered as simultaneous predictors of GPA improvement (controlling for current actual GPA). * $p < .05$. ** $p < .01$. *** $p < .001$.

their goals, as when they complete a performance review in which they are asked explicitly to report their aspirations. Other times, the activation of goals by environmental cues can occur outside of awareness. In instances such as these, although people may be aware of the environmental cues (e.g., a word-search puzzle), they may not be aware of the influence of these cues on their goals. The present research demonstrated that, regardless of whether the influence of a cue is explicit or implicit, how people respond to such cues predicts long-term goal attainment.

Four studies demonstrated that responding to achievement primes with greater exaggeration of current GPA was associated with superior official GPAs one semester later. The association between academic exaggeration and subsequent performance was observed when exaggeration followed the direct, explicit priming of academic achievement goals (Study 1) and when exaggeration followed indirect, implicit priming of these goals (Studies 2 and 3). This pattern implies that self-reactivity to primes can be an informative individual-difference variable—one that not only predicts specific responses within the immediate context of the priming event but also signals the individual's broader motivational orientation related to the primed goal or construct.

Theoretical Implications

These findings have several important theoretical implications. First, they demonstrate that there is meaningful variance in individuals' self-evaluative responses to primed goals and constructs, which we refer to as self-reactivity. Although previous research has documented that explicit and implicit primes can alter immediate behavioral responses, this is among the first attempts to investigate the magnitude of the response to the prime as a potential predictor of long-term outcomes. Previous research has shown that a single instance of unconscious priming can be associated with levels of performance in the future (Lowery, Eisenberger, Hardin, & Sinclair, 2007). However, the prime and the performance measure were closely aligned in that research. Specifically, students who performed better on a practice test following an intelligence prime went on to perform better on an actual test that occurred 1–3 days later, suggesting a recursive process akin to self-affirmation effects (Sherman & Cohen, 2006). The present findings extend to less specified tasks and situations and model how, as people go through their daily routines, reactivity to goal primes can forecast their eventual goal-relevant outcomes. That self-reactivity in response to the prime in the lab may be an important indicator of a student's broader motivational orientation toward academics suggests that self-reactivity in response to other kinds of primes (e.g., construct primes like "hostile"; Wilkowski, Robinson, & Troop-Gordon, 2010) could be meaningful indicators of other motivations and individual differences that social psychologists are interested in measuring through implicit measures.

Second, these findings contribute to our broader understanding of goals and motivation. They extend research showing that priming unaccomplished goals increases goal-relevant motivation (Koo & Fishbach, 2008). In the present research, the tendency to project the self toward one's salient goals predicted actual performance improvements in the future. Intriguingly, whereas some theories might suggest that seeing oneself as closer to a desired end state would reduce goal pursuit and achievement (Carver & Scheier, 1998; Oettingen & Mayer, 2002), we found the opposite: Exag-

generation became reality. It is important to emphasize that the achievement primes themselves did not lead to longitudinal improvements in academic performance. (Indeed, there was no difference in subsequent official GPA across conditions in any of the three studies, $F_s < 1$.) Instead, it appears that the effects we observed in the lab opened a window into a more chronic process at the individual level. Students are exposed routinely to achievement-related stimuli that activate their academic goals. Our findings suggest that some students are self-evaluatively sensitive to such stimuli. It is possible that in response to such stimuli, successful individuals create a sense of psychological momentum (Markman & Guenther, 2007) by viewing themselves as closer to attaining those goals. Presumably, it is the habitual tendency to project the self toward one's goals (when activated) that benefits actual goal attainment.

Importantly, not all exaggeration predicted better performance. In previously published research (Gramzow et al., 2003; Gramzow, Willard, & Mendes, 2008; Willard & Gramzow, 2009), academic and achievement goals were always made salient to the participants prior to administration of exaggeration measures. Therefore, the necessity of goal activation could not be observed in those studies. Here, the manipulation of goal activation revealed that not all self-exaggerations reveal agentic aspects of the self. Rather, exaggeration only predicts better performance when it is a response to goal activation. This form of exaggeration, or self-reactivity, is an indicator of general motivations and goal orientation. Exaggeration that occurs without achievement goal activation could result from a host of other psychological process, such as public social desirability concerns (Willard & Gramzow, 2009).

Finally, these findings have practical implications. From previous research, one might have concluded that exaggeration about one's exploits is beneficial and that, in the process of selecting protégés, employees, and teams, those who exaggerate should be preferred. However, here we show that it is more informative to know how people respond to achievement situations than how they view themselves in general. As people and companies search for metrics for selecting employees, this research suggests that those who boost themselves when they contemplate their goals would be good to hire (although, not those who distort facts about themselves and their achievements publically).

Conclusion

Social-psychological researchers have spent several decades demonstrating that people have behavioral responses to cues whose influences they may not consciously perceive. Such research has largely focused on demonstrating the existence of these unconscious, implicit, or automatic responses and when they are likely to occur. The present studies focused not on whether people respond to primes, but on the individual differences that those responses may signify. It is clear that, at least in the academic context, individual differences in self-reactivity to a primed goal are prospectively diagnostic of ultimate goal attainment.

Returning to our initial analogy, for some individuals, a performance review or a chance encounter with the company president can lead to inspired performance in the short run and achieved success in the long run. When their goals are activated, some individuals tend to give themselves a psychological boost by inflating their reports of their current standing, and this boost is

associated with better performance outcomes down the line. Although this tendency becomes apparent through explicit bias in self-reports, we believe that the boosting effect is a relatively private or intrapsychic experience. That is, "functional exaggeration" does not amount to altering one's résumé or lying to colleagues about past achievements. Rather, it appears to reflect an internal motivation to achieve in the relevant domain. An employee who publically fabricates accomplishments during a performance review is likely to be out of a job. However, an employee who privately imagines herself in a higher position after the review may be ultimately more likely to gain that desired promotion.

References

- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.
- Alicke, M. D., & Sedikides, C. (2011). *The handbook of self-enhancement and self-protection*. New York, NY: Guilford Press.
- Bargh, J. A., Gollwitzer, P. M., Lee-Chai, A., Barndollar, K., & Trötschel, R. (2001). The automated will: Nonconscious activation and pursuit of behavioral goals. *Journal of Personality and Social Psychology*, 81, 1014–1027. doi:10.1037/0022-3514.81.6.1014
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173–1182. doi:10.1037/0022-3514.51.6.1173
- Carver, C. S., & Scheier, M. F. (1998). *On the self-regulation of behavior*. New York, NY: Cambridge University Press. doi:10.1017/CBO9781139174794
- DeMarree, K. G., Morrison, K. R., Wheeler, S. C., & Petty, R. E. (2011). Self-ambivalence and resistance to subtle self-change attempts. *Personality and Social Psychology Bulletin*, 37, 674–686. doi:10.1177/0146167211400097
- DeMarree, K. G., Wheeler, S. C., & Petty, R. E. (2005). Priming a new identity: Self-monitoring moderates the effects of nonself primes on self-judgments and behavior. *Journal of Personality and Social Psychology*, 89, 657–671. doi:10.1037/0022-3514.89.5.657
- DeSteno, D., & Salovey, P. (1997). Structural dynamism in the concept of self: A flexible model for a malleable concept. *Review of General Psychology*, 1, 389–409. doi:10.1037/1089-2680.1.4.389
- Dunning, D., Heath, C., & Suls, J. M. (2004). Flawed self-assessment: Implications for health, education, and the workplace. *Psychological Science in the Public Interest*, 5, 69–106. doi:10.1111/j.1529-1006.2004.00018.x
- Elliot, A. J., & Church, M. A. (1997). A hierarchical model of approach and avoidance in achievement motivation. *Journal of Personality and Social Psychology*, 72, 218–232. doi:10.1037/0022-3514.72.1.218
- Gramzow, R. H. (2011). Academic exaggeration: Pushing self-enhancement boundaries. In M. Alicke & C. Sedikides (Eds.), *Handbook of self-enhancement and self-protection* (pp. 455–470). New York, NY: Guilford Press.
- Gramzow, R. H., Elliot, A. J., Asher, E., & McGregor, H. A. (2003). Self-evaluation bias and academic performance: Some ways and some reasons why. *Journal of Research in Personality*, 37, 41–61. doi:10.1016/S0092-6566(02)00535-4
- Gramzow, R. H., Sedikides, C., Panter, A. T., & Insko, C. A. (2000). Aspects of self-regulation and self-structure as predictors of perceived emotional distress. *Personality and Social Psychology Bulletin*, 26, 188–205. doi:10.1177/0146167200264006
- Gramzow, R. H., & Willard, G. (2006). Exaggerating current and past performance: Motivated self-enhancement versus reconstructive memory. *Personality and Social Psychology Bulletin*, 32, 1114–1125. doi:10.1177/0146167206288600

- Gramzow, R. H., Willard, G., & Mendes, W. B. (2008). Big tales and cool heads: Academic exaggeration is related to cardiac vagal reactivity. *Emotion*, 8, 138–144. doi:10.1037/1528-3542.8.1.138
- Greenwald, A. G. (1980). The totalitarian ego: Fabrication and revision of personal history. *American Psychologist*, 35, 603–618. doi:10.1037/0003-066X.35.7.603
- Hepper, E. G., Gramzow, R. H., & Sedikides, C. (2010). Individual differences in self-enhancement and self-protection strategies: An integrative analysis. *Journal of Personality*, 78, 781–814. doi:10.1111/j.1467-6494.2010.00633.x
- Hull, J. G., Slone, L. B., Meteyer, K. B., & Matthews, A. R. (2002). The nonconsciousness of self-consciousness. *Journal of Personality and Social Psychology*, 83, 406–424. doi:10.1037/0022-3514.83.2.406
- Jackson, D. N. (1984). *Personality Research Form manual*. Port Huron, MI: Research Psychologists Press.
- Koo, M., & Fishbach, A. (2008). Dynamics of self-regulation: How (un) accomplished goal actions affect motivation. *Journal of Personality and Social Psychology*, 94, 183–195. doi:10.1037/0022-3514.94.2.183
- Locke, E. A., & Latham, G. P. (1990). *A theory of goal setting and task performance*. Englewood Cliffs, NJ: Prentice Hall.
- Locke, E. A., & Latham, G. P. (2002). Building a practically useful theory of goal setting and task performance: A 35-year odyssey. *American Psychologist*, 57, 705–717. doi:10.1037/0003-066X.57.9.705
- Lowery, B. S., Eisenberger, N. I., Hardin, C. D., & Sinclair, S. (2007). Long-term effects of subliminal priming on academic performance. *Basic and Applied Social Psychology*, 29, 151–157. doi:10.1080/01973530701331718
- Markman, K. D., & Guenther, C. L. (2007). Psychological momentum: Intuitive physics and naive beliefs. *Personality and Social Psychology Bulletin*, 33, 800–812. doi:10.1177/0146167207301026
- Markus, H., & Ruvolo, A. (1989). Possible selves: Personalized representations of goals. In L. Pervin (Ed.), *Goal concepts in personality and social psychology* (pp. 211–241). Hillsdale, NJ: Erlbaum.
- Oettingen, G., & Mayer, D. (2002). The motivating function of thinking about the future: Expectations versus fantasies. *Journal of Personality and Social Psychology*, 83, 1198–1212. doi:10.1037/0022-3514.83.5.1198
- Pelham, B. W., & Wachsmuth, J. O. (1995). The waxing and waning of the social self: Assimilation and contrast in social comparison. *Journal of Personality and Social Psychology*, 69, 825–838. doi:10.1037/0022-3514.69.5.825
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40, 879–891. doi:10.3758/BRM.40.3.879
- Rios Morrison, K., Johnson, C. S., & Wheeler, S. C. (2012). Not all selves feel the same uncertainty: Motivated assimilation to primes among high and low collectivists. *Social Psychology and Personality Science*, 3, 118–126. doi:10.1177/1948550611411310
- Sherman, D. K., & Cohen, G. L. (2006). The psychology of self-defense: Self-affirmation theory. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 38, pp. 183–242). San Diego, CA: Academic Press.
- Taylor, S. E., & Brown, J. D. (1988). Illusion and well-being: A social psychological perspective on mental health. *Psychological Bulletin*, 103, 193–210. doi:10.1037/0033-2909.103.2.193
- Wheeler, S. C., DeMarree, K. G., & Petty, R. E. (2007). Understanding the role of the self in prime-to-behavior effects: The active-self account. *Personality and Social Psychology Review*, 11, 234–261. doi:10.1177/1088868307302223
- Wilkowski, B. M., Robinson, M. D., & Troop-Gordon, W. (2010). How does cognitive control reduce anger and aggression? The role of conflict monitoring and forgiveness processes. *Journal of Personality and Social Psychology*, 98, 830–840. doi:10.1037/a0018962
- Willard, G., & Gramzow, R. H. (2009). Beyond oversights, lies, and pies in the sky: Exaggeration as goal projection. *Personality and Social Psychology Bulletin*, 35, 477–492. doi:10.1177/0146167208329631
- Wyer, N. A., Neilens, H., Perfect, T. J., & Mazzoni, G. (2011). Automatic and ironic behavior are both mediated by changes in the self-concept. *Journal of Experimental Social Psychology*, 47, 1300–1303. doi:10.1016/j.jesp.2011.05.008

Received April 14, 2012

Revision received November 8, 2013

Accepted December 6, 2013 ■