



# Self-Regulation to Maintain Moderate Self-Views: Prior Self-Regulation Increases Biases Related to Self-Esteem

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## Abstract

High self-esteem is associated with biases in which the person overestimates their positivity, whereas low self-esteem is associated with underestimations of one's positivity. The current study examined whether these biases emerge more strongly when self-regulation is impaired. Participants first completed a task that either did or did not require self-regulation. They later interacted with another participant and indicated the extent to which they viewed themselves as having behaved positively during the interaction and to which the other participant viewed them positively. Higher self-esteem predicted a greater bias in overestimating the extent to which the other person viewed one positively, but this relationship was the strongest among participants who had completed the self-regulatory task. Past work has found that self-regulating impairs self-regulation later on. These findings therefore suggest that self-regulation is a mechanism through which personal biases are avoided and moderate views are maintained.

## Keywords

Self-Esteem, Self-Views, Self-Control, Self-Regulation, Ego Depletion

Subject Areas: Psychology, Sociology

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## 1. Introduction

Self-esteem is associated with a host of interpersonal biases that may not be reflected in objective reality (e.g., having better social skills) [1] [2]. The current work examined the extent to which biases related to self-esteem are moderated by self-regulation (or self-control). In particular, we examined whether impaired self-regulation would increase biases in self-esteem related to being viewed positively by others.

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High self-esteem is associated with viewing oneself favorably across many domains, yet objective evidence indicates that these favorable self-views do not match reality. For instance, people with high self-esteem tend to view themselves as more physically attractive than people with low self-esteem [3]. Others' ratings of physical attractiveness, however, show that people with high self-esteem are equally attractive as those with low self-esteem [4] [5]. Similarly, high self-esteem is associated with a bias to view oneself as being thinner than objective evidence indicates [6]. People with high self-esteem also tend to think of themselves as being smarter than people with low self-esteem, yet objective intelligence tests show no differences based on self-esteem [5].

The current work examined biases in being perceived positively by others. People with high self-esteem believe they are more likeable or popular than people with low self-esteem [7]-[9], but their beliefs are not confirmed by objective measures [10] [11]. One study, for instance, found that popularity ratings of students by their teachers showed no relationship to self-esteem [12]. In studies in which participants interacted with one another, people with high self-esteem indicated that they were more liked or viewed more positively by others than did people with low self-esteem, yet likeability and positivity ratings showed no differences based on self-esteem [13] [14].

The current work examined whether biases in positivity are influenced by self-regulation.

Self-regulation is the capacity to control one's thoughts, emotions, and behaviors. One common belief is that people should maintain moderate views [15] and avoid viewing themselves either as largely superior or inferior to others. We reasoned that biased views emerge from time to time, but that self-regulatory processes operate to enable people to view themselves in more realistic or moderate terms. Biased views regarding the self should become stronger if self-regulation is impaired.

Ample work demonstrates that using self-regulation impairs self-regulation afterwards [16]-[19], likely because self-regulating can deplete glucose in the bloodstream needed for later self-regulation [20]-[22]. To the extent that personal biases are moderated by self-regulation, they should be influenced by prior self-regulatory acts. Indeed, some work has found that self-regulating caused later increases in personal biases, including narcissistic views [15] and the self-serving bias (*i.e.*, taking credit for good outcomes and avoiding blame for bad outcomes) [23]. In the current work, we hypothesized that biases in perceived self-positivity would be stronger among people with high self-esteem and weaker among people with low self-esteem when self-regulation was impaired by prior use.

Another basis for the hypothesis is that self-regulating increases confirmatory information processing [24]. After having self-regulated, people with high self-esteem may increasingly seek out information that confirms their self-perceived greatness, whereas people with low self-esteem may seek out information that confirms their negative self-views.

A competing hypothesis, however, is that self-regulation is used to maintain positive illusions [25]. One therefore might expect self-regulation to be influential among people with low self-esteem—who might use self-regulation to maintain positive views—but not among people with high self-esteem.

Participants first completed a task that either did or did not require self-regulation and then interacted with another participant. After the interaction, they indicated the extent to which they viewed positively their interaction partner and to which they perceived their partner as having viewed them positively. We predicted that participants with high self-esteem would overestimate how positively they were viewed, whereas participants with low self-esteem would underestimate how positively they were viewed, but that this relationship would be stronger among participants who had (*v.* had not) self-regulated.

## 2. Method

Thirty-two (20 women, 12 men) college undergraduates participated in fulfillment of a course requirement. Participants completed a measure of self-esteem [26] during a mass testing session at the start of the semester. The Rosenberg Self-Esteem Scale contains 10 items (e.g., "On the whole, I am satisfied with myself") answered on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Higher scores on this measure indicate higher self-esteem.

Participants attended a laboratory session later in the semester. They first completed a task that either did or did not require self-regulation. Specifically, participants watched a 6-minute video of a woman talking (without sound) in which neutral words appeared in the corner of the screen. Participants and interaction partners randomly assigned to the attention control condition were asked to avoid looking at the words and to focus their attention on the woman's face. Attention orients automatically to novel stimuli appearing in the environment [27],

and so the task required the self-regulation of attention to avoid looking at the words. Participants and interaction partners randomly assigned to the watch normally condition were asked to watch the video as they would normally, which required little or no self-regulation. After the video ended, participants completed the Brief Mood Introspection Scale (BMIS) [28]. The BMIS contains 20 items indicative of mood (e.g., happy, sad) and arousal (e.g., peppy, drowsy). Participants rated each item to indicate how they were feeling at the present moment, using a scale from 1 (*definitely do not feel*) to 7 (*definitely feel*).

After the video task, participants were introduced to their interaction partner (another participant). They were given five topics (*i.e.*, academic majors, origins and family, stress, a happy memory, and self-change) to discuss during a 5-minute conversation with one another. After the conversation, participants completed (in individual rooms) a questionnaire in which they evaluated themselves and their partner on various dimensions. The questionnaire asked participants to rate themselves and their interaction partner on the extent to which they were self-centered, arrogant, friendly, nice, polite, judgmental, and unfriendly during the interaction, using a scale from 0 (*not at all*) to 10 (*extremely*).

### 3. Results

#### 3.1. Positivity

We created a measure of positively biased self-evaluation by creating composite measures of ratings (*i.e.*, self-ratings of friendly, nice, and polite, and—reverse scored—self-centered, arrogant, judgmental, and unfriendly) for the extent to which participants viewed themselves positively ( $\alpha = 0.82$ ) and to which they were viewed positively by their interaction partner ( $\alpha = 0.87$ ). The difference between these two composites (*i.e.*, self-positivity—partner-positivity) indicated one's positivity bias, with larger scores indicating larger overestimations of the extent to which one was viewed positively.

Self-esteem scores correlated with the extent of positivity bias,  $r(32) = 0.39$ ,  $p < 0.05$ . Higher self-esteem was associated with overestimating the extent to which the self was rated positively, whereas lower self-esteem was associated with underestimating the extent to which the self was rated positively. This finding is consistent with past work showing biases in self-perception based on self-esteem [7]–[9].

To examine whether the positivity bias differed as a function of self-esteem, we conducted a regression analysis that predicted positivity bias from self-esteem scores, video condition (attention control v. watch normally), sex, and all higher-order interactions. Sex was included because self-esteem scores were found to differ by sex in one condition. The analyses indicated a significant interaction between self-esteem scores and video condition,  $\beta = 4.18$ ,  $t = 2.15$ ,  $p < 0.05$ . Correlational analyses (controlling for sex) indicated that the relationship between positivity bias and self-esteem scores was significant in the attention control condition,  $r(11) = 0.86$ ,  $p < 0.001$ , but not in the watch normally condition,  $p > 0.21$ . The correlations in the two conditions were significantly different from each other,  $z = -2.11$ ,  $p < 0.05$ . Thus, the positivity bias was stronger among participants who had previously self-regulated.

#### 3.2. Mood Valence and Arousal

Mood valence and arousal did not differ by video condition,  $F_s < 0.20$ ,  $p_s > 0.65$ . Moreover, the relationship between positivity bias and self-esteem scores was significant in the attention control condition even when also controlling for mood valence and arousal,  $r(9) = 0.84$ ,  $p < 0.001$ , but not in the watch normally condition,  $p > 0.15$ . This suggests that the obtained results were not attributable to the video task having influenced mood or arousal.

### 4. Discussion

The current study found that self-esteem predicted biases in estimating the extent to which others viewed oneself positively, but that this relationship was strongest among participants who had previously self-regulated. High self-esteem was associated with overestimating the extent to which another person ascribed positive traits to the person, whereas low self-esteem was associated with underestimating ascribed positivity, yet this tendency was stronger after participants had self-regulated. These findings suggest that self-regulation is used to maintain moderate views about the self. When self-regulation is impaired by prior use, biases emerge, as people return to their dominant, habitual modes of thought. People high in self-esteem might regulate their self-views to avoid

being arrogant or narcissistic [15], whereas people low in self-esteem might regulate their views so as to avoid being unrealistically negative about the self (e.g., following societal standards to avoid derogating the self and view the self positively).

Some work indicates that self-regulation is used to maintain positive views [25]. Consistent with this work, people with low self-esteem had more negative self-views after having self-regulated. People with high self-esteem, however, exhibited increased positivity after having self-regulated. When energy is reduced, such as after having self-regulated [22], biases can emerge so that activities requiring energy seem more effortful [29]. Prior work examined mostly positive illusions regarding the capacity of the self (e.g., subjective control, perceptions of one's abilities), and likewise linked the energy-depleted state to perceptions of a weaker self. The current work differs because it examined perceptions of self-positivity.

Past work on the aftereffects of self-regulation has found that individual differences moderate the effects of self-regulation upon later self-regulation, when those differences are related to the domain of self-regulation [16]. Specifically, past work has shown moderation by eating restraint for eating consumption [30] [31], the motivation to respond without prejudice for stereotype suppression [32], the temptation to drink alcohol for alcohol consumption [33], sex drive for sexual restraint [34], and attachment style for interpersonal functioning [15]. The current work indicates that self-esteem moderates self-views following self-regulation.

The aftereffects of self-regulation appear attributable to decreases in blood glucose levels [20] [22]. This suggests that biases related to self-esteem might emerge more strongly after people have self-regulated because glucose is lower. It is therefore possible that low glucose might increase biases related to self-esteem. When glucose is low, people lack the metabolic energy needed to maintain moderate, socially appropriate self-views.

Many studies have linked low glucose or problems with glucose to an increased likelihood of depression [21]. There are strong links between depression and low self-esteem [35]. It is possible that people with depression view themselves negatively because of low glucose or problems with glucose, consistent with the current finding that self-regulating increases negative self-views among people with low self-esteem. This effect could worsen or prolong depressive symptoms.

The amount of metabolic energy that can be used during any given amount of time is limited [36]. Energy used by one process (e.g., reproduction) therefore can divert energy away from and impair other processes (e.g., self-control) [37]-[40]. If the current effects are indeed linked to low glucose, then metabolic demands that deplete glucose (e.g., the growth of cancer cells, immune defense, excessive physical exercise) could increase biases related to self-esteem. Maintaining moderate views requires glucose for self-regulation that cannot be diverted to other processes without impairment.

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