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Multidimensional Self-esteem and Test Derogation after Negative Feedback

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Abstract

The present study advances the literature on self-esteem and self-enhancement by examining the joint impact of global, academic, and physical ability self-esteems on self-serving biases after students receive negative feedback on a word association test. We hypothesized that global self-esteem and academic self-esteem would be *positively* correlated with test derogation after negative feedback, and physical ability self-esteem would be *uncorrelated* with test derogation after negative feedback. Three samples of undergraduate students ($N = 203$; $N = 134$; $N = 132$) completed multidimensional self-esteem questionnaires. In samples 1 and 2, participants then received negative feedback (a poor word association test score) and were given an opportunity to self-enhance by derogating the test. In sample 3 ($N = 132$) participants viewed a difficult test, but did not receive feedback. Students with high academic self-esteem engaged in more test derogation in all three samples. Physical ability and global self-esteems were unrelated to test derogation. These results held when results were combined across all three samples using meta-analysis. Results for academic and physical self-esteem were consistent with theory on self-threat; however, results for global self-esteem were anomalous. Future research might use experimental methods or examine other key covariates to explore these findings more fully.

Multidimensional Self-esteem and Test Derogation after Negative Feedback

When faced with a poor grade, students will often attribute failure to external sources (Schmidt et al., 2004). The self-threat model suggests students make self-serving attributions about poor exam performance because it threatens their generally positive academic self-worth (Campbell & Sedikides, 1999). The self-threat model posits that (a) people are generally motivated to protect and maintain a positive self-concept; and (b) when a person's positive self-concept is threatened, challenged, or questioned, that person will act in ways to minimize the threat. People high in self-esteem tend to self-enhance (minimize flaws and promote desirable traits), particularly when favorable self-views are challenged or contradicted (Baumeister, Heatherton, & Tice, 1993; Brown, Dutton, & Cook, 2001; Taylor & Brown, 1988). Prior tests of this hypothesis often rely on global, undifferentiated models of self-esteem rather than multidimensional models. The present study advances the literature on self-esteem and self-enhancement by examining the impact of global, academic, and physical ability self-esteems on self-serving biases after students receive negative feedback on a word association test.

Despite a long history, self-esteem measurement remains controversial. Multidimensional self-esteem models are thought to be hierarchical in nature, with global self-esteem occupying the top of the hierarchy, and domain-specific measures nested within global self-esteem (Marsh & Craven, 2006). Global self-worth measures (global self-esteem) are historically the most popular choice. However, research often shows domain-specific self-esteem measures (e.g., academic self-esteem) have greater predictive power for outcomes such as academic performance (Marsh & O'Mara, 2008). Thus, many self-concept researchers have shifted focus from global to domain-specific measures.

People high in global self-esteem tend to have a stronger self-serving bias (the tendency to take credit for personal success, but blame external factors for personal failure; Campbell & Sedikides, 1999). Taylor and Brown (1988) argue the overly positive self-evaluations and unrealistic sense of optimism associated with high global self-esteem are "positive illusions" which may promote and maintain mental health. Baumeister et al. (1993) found people with high global self-esteem have unrealistically positive self-conceptions, and set inappropriately high goals after self-threat. Other research finds those high in global self-esteem claim to possess socially desirable traits and respond to failure by denying they have undesirable traits (Brown et al., 2001), experience less emotional distress when they encounter negative outcomes (Brown, 2010), and tend to engage in self-enhancement strategies to deal with self-threat (Hepper, Gramzow, & Sedikides, 2010). Together, these studies suggest people high in global self-esteem will react in defensive, self-enhancing ways when their positive self-conceptions are challenged. However, specific self-esteem domains have not yet been clearly linked to self-serving biases. Self-threat theory was not originally tested using multidimensional self-esteem measures; however, Campbell & Sedikides (1999) note that specific, relevant forms of self-esteem should operate similarly to global self-esteem. Indeed, it seems to be a logical extension of prior theory that people high in relevant and global self-esteems will tend to self-enhance after negative feedback, whereas irrelevant self-esteem will be unrelated to self-enhancement.

In the present research, we provide a threat to academic self-esteem by administering an extremely difficult "intelligence test" to participants (McFarlin & Blascovich, 1984). After earning a poor grade, participants were given an opportunity to derogate the test's validity. Based on self-threat theory, we hypothesized that global self-esteem and relevant self-esteem (academic self-esteem) would be *positively* correlated with test derogation after negative feedback, and

irrelevant self-esteem (physical ability self-esteem) would be *uncorrelated* with test derogation after negative feedback.

Method

Participants

This study used three separate undergraduate samples collected from the psychology subject pool (*Ns* = 203; 134; 132). Participants were predominantly female (68.5%; 70.1%; 63.6%) and relatively young (*M* = 21.4, *SD* = 4.1; *M* = 21.0, *SD* = 2.6; *M* = 21.5, *SD* = 3.7). Participants were born in Canada (72.9%; 83.6%; 75.8%), Asia (15.3%; 9.0%; 9.1%), Africa (4.9%; 3.0%; 1.5%) or another country (6.9%; 4.5%; 13.6%). Participants identified as Caucasian (68%; 72.4%; 71.2%), Asian (16.7%; 10.4%; 12.1%), Black (9.4%; 9.7%; 7.6%), or another ethnicity (5.9%; 7.5%; 9.1%).

Materials

Principal components analysis using parallel analysis to select the number of factors suggested all measures listed below were unidimensional both when aggregated across all three samples and when each sample was analyzed separately. Alpha reliabilities ranged from .80-.94, suggesting good to excellent internal consistency for all measures (Table 1).

Multidimensional self-esteem. The Self-Description Questionnaire III (Marsh & O'Neill, 1984) was used to measure global (12 items), academic (5 items), and physical ability (10 items).[1] Items were measured using 8-point likert scales ranging from 1 (*Definitely False*) to 8 (*Definitely True*). Subscales were averaged into total scores. Sample items are: "Overall, I have

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[1]Principal component analyses across all three samples suggested academic self-esteem had two dimensions: Academic interest (items 9, 22, 35, 74, 100), and prior academic success (items 48, 61, 87, 113, 126). We report results only for the 5 prior academic success items, as academic interest was not predictive for any sample, but results including this subscale, and all academically related items, are available upon request.

a lot of self-confidence" (global self-esteem); "I am good at most academic subjects" (academic self-esteem); and "I am a good athlete" (physical ability self-esteem). These subscales exhibit excellent reliability, construct validity, and convergent validity (Byrne, 1996).

Remote Associates Test (RAT). In Samples 1-2, negative performance feedback was provided with a difficult RAT that virtually all students fail (McFarlin & Blascovich, 1984). Participants were given the following instructions:

"The Remote Associates Test is a measure of general intelligence and academic ability. You will be presented with three words. Please provide the word that best links all three items together. For example, the answer to "Head Street Dark" would be "Light" (headlight, street light, the opposite of dark is light). *There will be 10 questions total. This is a timed task – you will be given 10 minutes to answer these questions. Each question will be presented one at a time for exactly one minute each before automatically moving on to the next question. Please write your answers on the blank sheet of paper provided. You will be asked to score your results at the end.*"

Participants were provided with an answer key and self-scored their test immediately after completing it. Thus, all participants were aware of their poor performance.

The Remote Associates Task was modified in Sample 3 to see if results held when students were given a less salient self-threat. Sample 3 had the following modified instructions, replacing the italicized portion above:

"For this study, do not attempt to solve these word problems. Instead, you are just going to read the questions briefly (they will be displayed for 5 seconds each). After viewing each of the 10 questions, you will be asked to fill out a short questionnaire which will ask for your opinion about qualities of the Remote Associates Test."

Participants viewed questions for five seconds each to minimize their ability to mentally solve the problems while reading them. They were not provided correct answers to questions to minimize performance feedback. Instead of self-scoring the test, participants were asked: "Assuming you had enough time to think about and solve the questions on the RAT, how many of the 10 questions do you think you would get correct?"

Test derogation. Test derogation was measured using a 3-item measure adapted from Shepperd (1993). The three items were: (a) "The Remote Associates Test is a valid predictor of academic success"; (b) "The Remote Associates Test is a good predictor of aptitude or ability"; and (c) "The Remote Associates Test provides a valid measure of intelligence." Items used a 7-point scale ranging from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). Items were reverse-coded and averaged, with high scores indicating higher test derogation.

Procedure

This study was reviewed by the research ethics board at Saint Mary's University. Excepting the noted procedural alteration in Sample 3 (see Materials), the procedure was identical for every sample. Participants completed all tasks in the same order at a private computer. They first completed demographic and multidimensional self-esteem questionnaires. Next, participants completed the RAT, followed by the test derogation measure. Finally, participants were debriefed and compensated 2.0 bonus points towards a psychology course. All participants completed all measures; there were no missing data.

<div align="center">

Results

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As shown in Table 1, participants reported moderately high levels of self-esteem. Self-esteem measures were generally inter-correlated in all samples (*r*s .13-.46). As predicted, test derogation was positively correlated with academic self-esteem (*r*s .24; .34; .23) and

uncorrelated with physical ability self-esteem (rs -.01; .04; -.03). Contrary to predictions, global self-esteem was not correlated with test derogation (rs -.06; .13; -.02).

Weighted mean correlations and 95% confidence intervals were calculated using Field and Gillett's (2010) SPSS macro for random-effects meta-analysis which combines across all samples. This analysis showed test derogation was significantly correlated with academic self-esteem, $r = .27$ [.07, .44], but not with physical ability $r = .01$, 95% CI [-.19, .21] or global self-esteem $r = .01$, 95% CI [-.23, .25]. Using the weighted mean correlations, a comparison of dependant correlations (Zou, 2007) showed the academic-derogation correlation was significantly larger than the physical-derogation correlation, $r_{diff} = .26$, 95% CI [.16, .36] and global-derogation correlation, $r_{diff} = .26$, 95% CI [.16, .36].

Participants performed poorly on the RAT in the present data, with a low mean score out of 10 in all 3 samples ($M = 1.8$, $SD = 2.0$; $M = 2.0$, $SD = 1.9$; $M = 4.5$, $SD = 2.2$). Participants in Sample 3 rated their score higher on the Remote Associates Task when compared to the actual scores received by participants in Sample 1, ($t(197) = 12.06$, $p < .001$, $d = 1.75$) and Sample 2 ($t(133) = 12.07$, $p < .001$, $d = 1.94$), suggesting the methodological change provided a less salient self-threat. Self-esteem was not significantly correlated with scores on the RAT in all samples, weighted $r = .04$, 95% CI [-.02, .11].

Discussion

Across three samples, people higher in academic self-esteem tended to engage in self-serving biases after receiving negative feedback on a difficult word association test (Samples 1-2) and when briefly viewing a difficult word association test (Sample 3), supporting predictions. Physical ability self-esteem was unrelated to test derogation in all three samples. Contrary to expectations, global self-esteem was uncorrelated with test derogation.

Dutton and Brown (1997) found global self-esteem predicts emotional reactions for performance outcomes, while specific self-views predict cognitive reactions. Our primary outcome measure is a cognitive reaction; in this respect, our null findings for global self-esteem are congruent with Dutton and Brown's (1997) findings. Dutton and Brown's (1997) research suggest expectancies as a potential mechanism for academic self-esteem; that is, people high in academic self-esteem *expect* to do well, which in turn leads them to trivialize the test results when those expectations are violated. Future research might explore expectancies as a mediator.

Negative feedback about test performance was not necessary to induce a correlation between academic self-esteem and test derogation in sample 3. Given most participants estimated they would perform poorly on the RAT, and that mean levels of test derogation decreased in sample 3 (see Table 1), a weaker self-threat may have been induced when viewing the difficult test. A weaker self-threat may reduce the mean levels of the self-serving bias; however, given the lack of a dose-response relationship (i.e., the correlation did not shrink when self-threat decreased), results may imply a threshold effect for the correlation. When self-threat reaches a modest threshold, people higher in academic self-esteem may engage in more self-serving biases; however, this relationship does not appear to become stronger if threat exceeds this relatively small threshold.

This study would be more definitive with a control condition that included neutral or positive performance feedback, which would make it easier to determine if judgements of the RAT's validity are self-serving. Since self-affirmation theory suggests test derogation is not the only way a person might self-enhance after failure (Sherman & Cohen, 2006), providing an opportunity for self-enhancement in unthreatened domains (e.g., physical ability) could provide insights. In addition, by providing all participants a test derogation measure shortly after

completing or viewing a difficult test, we increased the odds participants would use that self-enhancement strategy. Other self-enhancement strategies should be studied in the future. Finally, academic self-esteem may be more centrally important to university students than physical ability self-esteem. Academic self-esteem might only predict increased self-serving biases when participants perceive academic pursuits as important. Future research might include perceived importance of each self-esteem domain as a moderating variable, or might look at samples who place greater importance on other self-esteem domains (e.g., athletes).

Consistent with theory, students responded to domain-specific self-threats by questioning the validity of the RAT to protect their generally positive academic self-conceptions (Baumeister et al., 1993). The research extends prior work by showing specific multidimensional self-esteem domains are especially important: The self-threat and self-esteem domain must be congruent for high self-esteem to predict test derogation. Though global self-esteem measures may often be sufficient to find effects (Campbell & Sedikides, 1999), the broad nature of global self-esteem may be too undifferentiated and imprecise to test many theories. Indeed, the present study did not find that global self-esteem predicts a tendency to question the validity of the RAT after failure. In sum, multidimensional measures of self-esteem appear to be a useful tool to understand the role of self-esteem when responding to self-threats.

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Table 1

Descriptives, bivariate correlations and internal consistencies

	1	2	3	4
Sample 1 (n=203)				
1. Global Self-esteem	(.94)			
2. Academic Self-esteem	.44***	(.84)		
3. Physical Self-esteem	.43***	.27***	(.94)	
4. Test Derogation	-.06	.24**	.01	(.91)
M	5.9	5.9	5.6	5.4
SD	1.3	1.2	1.6	1.5
Sample 2 (n=134)				
1. Global Self-esteem	(.95)			
2. Academic Self-esteem	.46***	(.87)		
3. Physical Self-esteem	.42***	.29**	(.95)	
4. Test Derogation	.13	.34***	.04	(.80)
M	6.2	5.9	5.9	5.6
SD	1.2	1.3	1.7	1.3
Sample 3 (n=132)				
1. Global Self-esteem	(.92)			
2. Academic Self-esteem	.13	(.83)		
3. Physical Self-esteem	.15	.32***	(.92)	
4. Test Derogation	-.02	.23**	-.03	(.81)
M	6.0	6.0	5.6	5.0
SD	1.1	1.2	1.6	1.3

Note. Numbers in parentheses indicate internal consistency (α).

*p<.05, **p<.01, ***p< .001