

Self-Esteem and Threats to Self: Implications for Self-Construals and Interpersonal Perceptions

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In 4 studies, the authors examined interpersonal perceptions as a function of self-construals and ego threats for those with high and low self-esteem. Previous research (T. F. Heatherton & K. D. Vohs, 2000a) found that after threat, high self-esteem people were rated as less likable by an unacquainted dyad partner, whereas low self-esteem people were rated as more likable. Study 1 showed that after threat, high self-esteem people seek competency feedback, whereas low self-esteem people seek interpersonal feedback. Study 2 showed that high self-esteem people become more independent after threat, whereas low self-esteem people become more interdependent. Study 3 linked differences in independence versus interdependence to interpersonal evaluations. Study 4 found that differences in independent and interdependent self-construals statistically accounted for differences in likability and personality perceptions of high and low self-esteem people after threat. Thus, the combination of threat and self-esteem alters people's focus on different self-aspects, which consequently leads to different interpersonal appraisals.

Differential emphasis on personal versus social aspects of self has meaningful consequences for psychological and interpersonal functioning, including investment in interpersonal relationships, attributions about life outcomes, intergroup behavior, and sources of identity (e.g., Baumeister & Leary, 1995; Crocker & Luhtanen, 1990; Cross & Madson, 1997; Diener & Diener, 1995; Gardner, Gabriel, & Lee, 1999; Heine, Lehman, Markus, & Kitayama, 1999; Heine, Takata, & Lehman, 2000; Kitayama, Markus, Matsumoto, & Norasakkunkit, 1997; Markus & Kitayama, 1991; Oishi, Wyer, & Colcombe, 2000; Rusbul & Van Lange, 1996; Suh, Diener, Oishi, & Triandis, 1998; Tajfel & Turner, 1986; Trafimow, Triandis, & Goto, 1991; Triandis, 1989, 1995). In the 1990s, empirical and theoretical work differentiating personal ver-

sus interpersonal self-aspects surged and has continued to flourish. Indeed, some theorists contend that most research in social and personality psychology would benefit from considering differences in how people think about the self in relation to others (see Heine et al., 1999). Specifically, in this article, we investigate two related goals: to assess the effects of ego threat and self-esteem on relative emphasis given to personal versus interpersonal self-aspects and to examine the effects of emphasizing different self-aspects on interpersonal appraisals.

In a recent examination of the interpersonal consequences of threats to the self, Heatherton and Vohs (2000a) demonstrated that in the context of a dyadic interaction, high self-esteem people are seen as less likable after ego threat, whereas low self-esteem people are seen as more likable. Moreover, after ego threat, high self-esteem people were rated higher on a personality factor called Antagonistic, which consisted of the traits arrogant, fake, uncooperative, rude, and unfriendly. In the absence of ego threat, however, high and low self-esteem people were viewed as equally likable and were rated as having similar personality traits. In the current article, we propose that differences in likability after threat can be conceptualized as variations in thinking about the self in relation to others. In two studies, we tested the hypothesis that ego threat leads high self-esteem people to focus on personal aspects of self and low self-esteem people to focus on interpersonal self-aspects. In a third study, we tested the prediction that relative emphasis on personal versus interpersonal self-aspects influences perceptions of likability and personality traits as rated by an interaction partner. In a fourth study, we tested the full process model by assessing the effects of self-esteem and ego threat on self-ratings of personal and interpersonal self-aspects and on per-

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ceptions of likability and personality traits as rated by an interaction partner. The findings are interpreted with respect to theories of the self and interpersonal consequences of threat.

Likability of High and Low Self-Esteem People

Despite the fact that self-rated likability differs as a function of self-esteem (e.g., Brockner & Lloyd, 1986), high and low self-esteem people are seen as equally likable under neutral conditions (e.g., Brockner & Lloyd, 1986; Friedman, 1976; Heatherton & Vohs, 2000a). Perceptions of acceptance differ as a function of self-esteem (e.g., Leary & Baumeister, 2000). For instance, a study of reactions to social feedback found that people with high self-esteem perceived social acceptance, even after having been personally rejected by their peers. Conversely, low self-esteem people perceived social rejection even after they had been told they were personally accepted (Nezlek, Kowalski, Leary, Belvins, & Holgate, 1997).

Heatherton and Vohs (2000a) found that differences in interpersonal evaluations of high and low self-esteem people emerge under conditions of ego threat. Studies of responses to ego threat as a function of self-esteem may explain differential evaluations. After ego threat, high self-esteem people derogate others by rating generalized others and even their friends less favorably (Brown, 1986; Brown & Gallagher, 1992; Fein & Spencer, 1997). Beaugard and Dunning (1998, Study 2) found that after threat, high self-esteem people increased self-ratings of intelligence and decreased ratings of a target's intelligence. Schneider and Turkat (1975) found that high self-esteem people who also expressed high needs for social approval presented themselves more favorably following negative feedback than following positive feedback (see also Baumeister, 1982). Dodgson and Wood (1998) found that among high self-esteem people, failure feedback increased accessibility of personal strengths and suppressed accessibility of personal flaws. In sum, those with high self-esteem respond to threats by derogating others and emphasizing their positive features.

Conversely, low self-esteem people decrease the positivity of self-ratings after failure feedback (Schneider & Turkat, 1975), including self-attributes unrelated to the threat (Baumeister, 1982). Low self-esteem people overgeneralize failure feedback by decreasing accessibility of personal strengths and increasing accessibility of personal flaws (Dodgson & Wood, 1998). Moreover, Baldwin and Sinclair (1996) found that when low self-esteem people were primed with failure words (e.g., *lose*, *incompetent*), they were more responsive to social rejection words (e.g., *disliked*, *ridiculed*). In sum, people with low self-esteem respond to threats with self-degradation and heightened activation of social exclusion fears.

Thinking About the Self in Relation to Others

Everyone has the capacity to think about the self as autonomous and separate from others or as "a single thread in a richly textured fabric of relationships" (Kondo, 1990, p. 33), although people can and do vary in the relative weight of each perspective (Heine et al., 1999; Markus & Kitayama, 1991; Oishi et al., 2000; Trafimow et al., 1991; Triandis, 1989, 1995). We hypothesize that after ego threat, high self-esteem people emphasize personal aspects of the self, such as personal goals, traits, and accomplishments, whereas

low self-esteem people emphasize interpersonal aspects of the self, such as group memberships and relationships with others. Several findings from the self-esteem literature support these predictions.

Brown, Collins, and Schmidt (1988) found that people with high self-esteem engaged in direct self-enhancement by rewarding their own group's performance, whereas low self-esteem people engaged in indirect self-enhancement by rewarding a group with which they were affiliated but were not personally involved. More important, this result was obtained only after negative feedback. Cialdini, Finch, and DeNicholas (1990) and Abersson (1999) noted that people with low self-esteem seek out successful others to "bask in the reflected glory" of their accomplishments. This research suggests that high self-esteem people feel good about themselves by emphasizing their own performance whereas low self-esteem people emphasize their affiliations with others.

Studies of attachment style have found that people with an avoidant attachment style, who have high self-esteem (Collins & Read, 1990), focus on work in an attempt to avoid interpersonal interactions (Hazan & Shaver, 1990). In contrast, people with an anxious-ambivalent style, who have low self-esteem (Collins & Read, 1990), report that romantic relationships interfere with work. Furthermore, low self-esteem people's behavior suggests that they are motivated to work primarily to gain interpersonal acceptance (Hazan & Shaver, 1990).

Schütz and Tice (1997) found that when describing themselves, high self-esteem participants claimed more positive self-aspects than did low self-esteem participants and especially emphasized their abilities and high level of competence. By contrast, when low self-esteem participants spoke well of themselves, they focused on their positive social qualities. Furthermore, those with high self-esteem made downward comparisons when comparing themselves with their romantic partners, whereas low self-esteem people made upward comparisons. Schütz and Tice paraphrased responses by high self-esteem participants as, "He is good and I am even better, so I am great" (p. 271) and responses by low self-esteem participants as, "He is wonderful and he adores me, so I am good" (p. 271).

An investigation of belongingness needs (e.g., those needs met through interpersonal relationships) versus self-esteem needs (e.g., those needs met through achievement) also revealed differences as a function of self-esteem (Rudich & Vallacher, 1999). This research found that high self-esteem people first seek to satisfy esteem needs (i.e., they desire positive, self-affirming feedback) and later satisfy belongingness needs. That is, high self-esteem people prefer to interact with someone who evaluates them favorably, regardless of whether the person wants to form a relationship. In contrast, low self-esteem people prefer an interaction partner who wants to form a relationship, regardless of how favorably the person views them.

Current Studies

We propose that perceptions of threatened high self-esteem people as less likable and antagonistic result from their heightened emphasis on personal traits, goals, and accomplishments. When threatened, people with high self-esteem, who possess a positive self-view, use compensatory strategies to negate the negative feedback and reaffirm the self (Baumeister, 1998; Steele, 1988; Swann, 1996). For instance, increased accessibility of positive self-

attributes and decreased accessibility of negative self-attributes (Dodgson & Wood, 1998) are considered compensatory mechanisms. Further, high self-esteem people have a self-enhancing orientation that is especially discernible under threats to the self (Baumeister, Tice, & Hutton, 1989). Last, ego threats do not arouse concerns of interpersonal inclusion among high self-esteem people because they presume to be socially accepted (Baldwin & Sinclair, 1996; Leary, Tambor, Terdal, & Downs, 1995). Accordingly, high self-esteem people are predicted to respond to ego threats with a focus on personal self-aspects and conceptualize the self as independent and autonomous (tested in Studies 1, 2, and 4). Moreover, an emphasis on personal self-aspects is predicted to account for decreased likability and less favorable personality perceptions (tested in Studies 3 and 4).

Conversely, we propose that increased likability after ego threat among low self-esteem people is the result of heightened emphasis on interpersonal self-aspects. For low self-esteem people, negative feedback is consistent with a negative self-view and serves to confirm already-ingrained self-doubts (Swann, 1996). However, low self-esteem people lack the skills or resources to refute, discount, or negate negative feedback (Baumeister, 1998; Steele, 1988). For instance, low self-esteem people fail to regulate or counteract a negative affective state; instead, they recruit negatively valenced cognitions (Smith & Petty, 1995) and overgeneralize negative feedback (Dodgson & Wood, 1998). Moreover, low self-esteem people automatically link personal failure with interpersonal rejection (Baldwin & Sinclair, 1996). Accordingly, ego threats are hypothesized to increase awareness of their perceived indeterminate acceptance status. Thus, low self-esteem people are predicted to focus on interpersonal relationships after threat and conceptualize the self as interdependent and connected to others (tested in Studies 1, 2, and 4). Moreover, an emphasis on interpersonal self-aspects is predicted to account for increased likability and more favorable personality perceptions (tested in Studies 3 and 4).

Study 1

In Study 1, we investigated the hypotheses that after ego threat, high self-esteem people focus on their own personal competencies, goals, and accomplishments, whereas low self-esteem people focus on their relationships with others. In Study 1, we tested these hypotheses by giving participants the opportunity to request different types of information about themselves after ego threat or control conditions. We predicted that only in the ego-threat condition would self-esteem predict preference for different types of feedback, with higher self-esteem predicting a greater interest in competence feedback and lower self-esteem predicting a greater interest in interpersonal feedback. In the absence of ego threat, we expected no differences in interest for either type of feedback.

Method

Participants

Forty-nine male undergraduates participated in exchange for extra course credit.

Procedure

Approximately 2 weeks prior to participation, participants completed a standard measure of self-esteem (Fleming & Courtney, 1984, based on

Janis & Field, 1959). Self-esteem scores ranged from 84 to 176 ($M = 126.8$, $SD = 22.6$).

Participants were told that they were taking part in an experiment to test different types of intelligence and personality tests. They were told that some of the tests would be paper-and-pencil tests and some would be electronic assessments. They were also told that they would be given feedback after some, but not all, measures. Participants' first task was to complete a paper-and-pencil test. They were given an easy or difficult version of the Remote Associates Test (RAT; Mednick, 1968), which served as the manipulation of control versus ego-threat conditions. Participants in the ego-threat condition were told that the RAT predicted numerous life outcomes, including academic achievement and future earning potential. After the purported time limit of 4 min had elapsed, the experimenter entered and scored the test in front of the participant. She used a red pen to mark the incorrect answers and acted surprised at the low score. As she left the room, she left the answer sheet so the participant could "take a look at the correct answers," thereby providing the answers and also false normative statistics indicating that their peers achieved an average score of 9 correct (participants scored quite poorly; the mode for the ego-threat version of the RAT was 1 correct out of 12). Participants in the control condition were told that the RAT was a pilot test for a different experimenter. They did not receive a time limit on the task and were not given information on their performance or normative statistics. After completing the RAT, participants rated their mood using a 24-item mood scale (see Heatherton & Vohs, 2000a) and their state self-esteem using the State Self-Esteem Scale (Heatherton & Polivy, 1991).

Subsequently, participants were told they would be taking a computer-administered test that has the capability to assess and provide immediate feedback in a variety of domains. Participants were told that because of time constraints, they would not be receiving all possible feedback. Instead, they were given a list of 10 items and asked to indicate the type of feedback they would prefer to receive. Three of the items were options to receive performance-relevant feedback: "What areas of intellectual performance do I excel in?", "In what profession or professions will I be most competent?", and "How accurate are my intellectual insights?" Three items provided interpersonally relevant feedback: "How do others really see me?", "What is the nature of my intimate relationships?", and "Am I likely to be sought out as a friend?" The remaining 4 items were filler items that gave feedback in assorted areas: "How can I improve my life with religious/spiritual knowledge?", "What is my musical aptitude?", "What type of athletics am I best at?" and "How strong are my religious/spiritual beliefs?" Participants ranked the 10 selections on a scale of 1 (most interested in receiving feedback) to 10 (least interested). Rankings were used to obtain a more sensitive measure of feedback preference, given that comparisons of ranking versus rating scales show that the differentiation of rankings is greater than that of ratings (Arvey, 1979; Kerlinger, 1973; Krosnick & Alwin, 1988). Subsequently, participants were debriefed and thanked.

Results

Preliminary Analyses

To check the effectiveness of the manipulation of ego-threat versus control conditions, a series of regression analyses was used. Centered self-esteem scores, centered ego-threat condition (dummy coded as -1 and 1 for control and ego-threat conditions, respectively), and their two-way interaction were simultaneously entered to predict mood and state self-esteem scores. Confirming the effectiveness of ego-threat versus control conditions, these analyses revealed that relative to control condition participants, ego-threat participants reported decreased state self-esteem, $t(45) = 3.78$, $p < .001$; decreased positive affect, $t(45) = 4.13$, $p < .001$; and increased dysphoria, $t(45) = 3.22$, $p < .01$, hostility,

$t(45) = 4.14, p < .001$, and anxiety, $t(45) = 3.05, p < .01$. There was also a main effect of trait self-esteem for state self-esteem and anxiety, $t_s(45) = 3.27$, and $2.10, p_s < .04$, respectively, indicating that high trait self-esteem participants reported higher state self-esteem and lower anxiety than did those low in trait self-esteem. The interaction of trait-self-esteem scores and experimental condition did not predict state self-esteem scores or mood factors, all $t_s < 1.3$, with the exception of scores on the hostility factor, $t(45) = 1.74, p < .09$. Investigation of the means showed that low self-esteem participants in the ego-threat condition reported levels of hostility higher than participants in the other three conditions. However, this interaction was only marginally predictive and the other mood and state self-esteem scores were not predicted by the interaction.¹

Feedback Preference

Preference for feedback was reverse scored, such that participants' first choice was assigned a "10," second choice was assigned a "9," and so on. As mentioned, the 10 items were categorized a priori as interpersonal, competence, or miscellaneous feedback. Accordingly, the respective items were combined to form one variable for each type of feedback.

To test whether feedback preference was predicted by self-esteem and ego-threat condition, a multivariate multiple regression was conducted (see Davison & Sharma, 1990). Centered self-esteem scores, centered ego-threat condition (dummy coded, such that control condition = -1 and ego-threat condition = 1), and their two-way interaction were simultaneously entered into a model to predict all three categories of feedback: social, competence, and miscellaneous. This analysis revealed a multivariate effect of the interaction of self-esteem and ego-threat condition on overall feedback preference across all three measures, $F(3, 43) = 2.88, p < .05$. There were no multivariate effects of self-esteem or ego-threat condition, $F_s(3, 43) < 2.20, p_s > .10$. Univariate tests showed the predicted effect of the Self-Esteem \times Ego-Threat Condition interaction on preference for interpersonal, $t(45) = 2.01, p = .05, \beta = -.27$, and competence feedback, $t(45) = 2.46, p < .02, \beta = .34$; also as predicted, the Self-Esteem \times Ego-Threat Condition interaction did not predict preference for miscellaneous feedback, $t(45) < 1$. There was also a main effect of self-esteem scores in predicting interpersonal feedback preference, $t(45) = 2.39, p = .02$, but the main effect for ego-threat condition was nonsignificant, $t(45) < 1$. The main effects for ego-threat condition and self-esteem scores in predicting competence feedback preference were nonsignificant, $t_s(45) < 1.2, p_s > .23$.

Next, we tested the hypothesis that being in a state of ego threat activates an emphasis on different self-aspects as a function of self-esteem. We predicted that there would be a significant association between self-esteem scores and preference for interpersonal and competence feedback only in the ego-threat condition and not in the control condition. Correlations between self-esteem and preference for interpersonal and competence feedback in the control condition supported the first postulate of our hypothesis that neither variable was associated with self-esteem scores; interpersonal feedback: $r(25) = -.05$; competence feedback: $r(25) = -.19, p > .36$. Moreover, as predicted, in the ego-threat condition there was a significant relationship between self-esteem scores and

preference for interpersonal feedback, $r(24) = -.63, p < .01$, and for competence feedback, $r(24) = .51, p = .01$.

Figure 1 depicts the pattern of the interaction between self-esteem and experimental condition on the combined variable representing combined preference for competence relative to interpersonal feedback. This variable was created by subtracting preference for interpersonal feedback from preference for competence feedback; accordingly, higher scores on this combined measure indicate a preference for competence feedback and lower scores indicate a preference for interpersonal feedback. Thus, relative to control conditions, being ego threatened predicted greater preference for interpersonal feedback among low self-esteem participants and greater preference for competence feedback among high self-esteem participants.

Discussion

In Study 1, we found that after ego threat, high self-esteem participants favored competence feedback, whereas low self-esteem participants favored interpersonal feedback. However, in the control condition, high and low self-esteem participants desire similar types of feedback. These analyses indicate that ego threat produces differential focus on aspects of the self as a function of self-esteem. These findings contribute to previous studies of self-esteem that find that high self-esteem people describe themselves in terms of their competencies, whereas low self-esteem people emphasize their positive social qualities (Schütz & Tice, 1997); that high self-esteem people self-enhance on performances directly related to the self, whereas low self-esteem people prefer to bask in the glory of others' accomplishments (Aberson, 1999; Brown et al., 1988; Cialdini et al., 1990); and that high self-esteem people prefer interaction partners who boost their self-esteem, whereas low self-esteem people prefer partners who will form a relationship with them (Rudich & Vallacher, 1999).

One limitation to Study 1 was the measurement of preference for competence and interpersonal feedback. Because the data were obtained using a ranking task, the preference of one type of feedback necessarily indicates less preference for other types of feedback. Thus, in Study 2, we assessed self-aspects using a ratings scale that measures awareness of personal versus interpersonal self-aspects. A ratings system, by definition, allows for the statistical separation of each self-aspect. As a result, we will be able to obtain a cleaner assessment of whether high and low self-esteem people emphasize different self-aspects after threat. Accordingly, in Study 2, we extended the findings of Study 1 to

¹ Analyses were also conducted on competence-interpersonal feedback preference using hostility scores as a covariate. To do so, hostility scores were entered on the first step and the three predictors of self-esteem, ego-threat condition, and their interaction were entered on the second step. Including hostility scores as a covariate showed no main effect of hostility scores in predicting preference for either interpersonal feedback, $t(44) = 1.24, p > .21$, or competence feedback, $t(44) < 1$. More important, the significant Self-Esteem \times Ego-Threat Condition interaction remained for both interpersonal feedback preference, $t(44) = 2.26, p < .03, \beta = -.31$, and competence feedback preference, $t(44) = 2.47, p < .02, \beta = .35$. Thus, the marginal difference in hostility scores as a function of self-esteem and ego-threat condition cannot account for the significant changes in feedback preference.

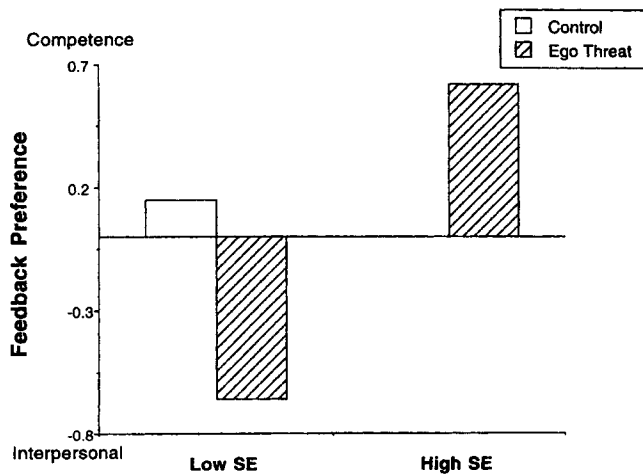


Figure 1. Feedback preference scores (standardized) as a function of self-esteem (SE) and ego-threat condition in Study 1.

test whether ego threat activates distinct aspects of the self to change the way in which people view the importance of other people and their overall orientation toward others.

Study 2

Self-construals represent the way in which a person thinks about him- or herself, especially in the context of how the self relates to others (e.g., Markus & Kitayama, 1991; Singelis, 1994; Triandis, 1989, 1995). Self-construals are not so much evaluative in nature but rather reflect beliefs and philosophies about self as connected to others versus self as separate from others. On the whole, people from individualistic cultures, such as the United States, possess independent self-construals, whereas people from collectivist cultures, such as Japan, possess interdependent self-construals (Diener & Diener, 1995).

An independent self-construal can be described as awareness of personal traits, states, behaviors, and morals and emphasizes self-reliance, distinctiveness from others, and personal freedom (e.g., Cross & Madson, 1997; Markus & Kitayama, 1991; Triandis, 1995). An individualistic culture, therefore, stresses the pursuit of personal goals, even at the expense of interpersonal relationships (e.g., Markus & Kitayama, 1991). In contrast, interdependent self-construals can be described as self-representations that are intertwined with representations of others, "tight" (i.e., shared, agreed upon) social norms, and porous interpersonal boundaries that promote perspective taking (Cross & Madson, 1997; Kondo, 1990; Markus & Kitayama, 1991; Suh et al., 1998; Triandis, 1995). People with an interdependent self-construal emphasize the establishment and maintenance of harmonious ties with others and an awareness of group memberships and public views of the self. Accordingly, people with interdependent self-construals are often encouraged to sacrifice personal goals for the good of relationships with others (Markus & Kitayama, 1991; Triandis, 1995).

Although entire classes of people can be predominantly characterized as being independent or interdependent, research has shown that in any given culture, people simultaneously possess both types of self-construals that differ in availability and acces-

sibility (Cross & Madson, 1997; Gardner et al., 1999; Trafimow et al., 1991). Research has demonstrated that behavior typical of people with independent or interdependent self-construals can be produced by increasing the accessibility and availability of each type (Gardner et al., 1999; Oishi et al., 2000; Trafimow et al., 1991).

Accordingly, in Study 2 we tested the hypothesis that the interaction of self-esteem and ego-threat condition elicits shifts in awareness of one's independent and interdependent self-aspects. Although no differences in relative emphasis of independent and interdependent self-construals were expected under control conditions, after ego threat, we predicted that high self-esteem participants would become more independent and low self-esteem participants would become more interdependent.

Method

Participants

Forty-nine female undergraduates participated for extra course credit. Data from 3 participants were excluded, 2 because they knew the confederate prior to the interaction and 1 because she expressed suspicion of the cover story. The data from 46 participants were used in data analyses.

Procedure

Approximately 5 weeks prior to participation, participants completed a standard measure of self-esteem (Fleming & Courtney, 1984, based on Janis & Field, 1959). Self-esteem scores ranged from 71 to 167 ($M = 117.7$, $SD = 21.3$).

Prior to arrival, participants were randomly assigned to be in the ego-threat or control condition. Participants arrived at the laboratory where they encountered a female confederate posing as another naive participant waiting for the experiment. The two were separated, and the participant was given a difficult or easy version of the RAT (Mednick, 1968) to manipulate ego-threat versus control conditions. Experimental conditions were established using the same procedures as Study 1, with predictability of the RAT, the presence of a time limit, and objective and relative feedback information used to induce ego threat. After the RAT, participants completed a 24-item mood scale (see Heatherton & Vohs, 2000a) and the State Self-Esteem Scale (Heatherton & Polivy, 1991) as manipulation checks. Subsequently, participants completed a scale assessing independent and interdependent self-construals, the Self-Construal Scale (SCS; Singelis, 1994). This 24-item scale has demonstrated its reliability and validity in previous research on different cultural groups (e.g., Singelis, 1994; Singelis, Bond, Sharkey, & Lai, 1999).

Next, participants met with the confederate for a structured conversation consisting of a series of questions designed to create intimacy (Sedikides, Campbell, Reeder, & Elliot, 1998). The confederate's answers were scripted on the basis of her own responses to maintain consistency and also to allow for tests of participants' memory. That is, we asked her to write down her answers to the questions to be asked and answered during the upcoming interactions with naive participants. After excluding information that invalidated the cover story—that the confederate was a 1st-year student in Introductory Psychology—the confederate memorized her answers. In this way, the confederate gave both consistent and natural responses during the interaction.

After the interaction, the participant and confederate were separated and the participant completed a filler task prior to a memory questionnaire. The memory questionnaire asked participants to recall responses given by the confederate during the conversation (e.g., "What is your partner's home town?"). After completing the memory questionnaire, participants were debriefed and thanked.

Results

Preliminary Analyses

To confirm the effectiveness of the ego-threat manipulation, centered self-esteem scores, centered ego-threat condition (dummy coded as -1 versus 1 , control condition versus ego threat condition, respectively), and their two-way interaction were simultaneously entered to predict mood and state self-esteem scores. As expected, these analyses showed that relative to participants in the control condition, those in the ego-threat condition reported decreased state self-esteem, $t(42) = 2.70, p < .01$; decreased positive affect, $t(40) = 3.88, p < .001$; increased anxiety, $t(41) = 2.33, p < .03$; and increased dysphoria, $t(41) = 2.25, p = .03$. Hostility scores did not vary with experimental condition, $t < 1$. There were also main effects of trait self-esteem scores for the variables state self-esteem, $t(42) = 3.10, p < .01$; anxiety, $t(41) = 2.47, p < .02$; and increased dysphoria, $t(41) = 2.60, p = .01$, such that higher trait self-esteem was related to higher state self-esteem, less anxiety, and less dysphoria. More important, trait self-esteem and ego-threat condition did not interact to predict scores on the mood factors or state self-esteem (all t s < 1).

Independence Versus Interdependence

The primary dependent measures were participants' self-construals as a function of ego-threat condition and self-esteem. Analyses were conducted using a regression model in which the centered variables of self-esteem scores and ego-threat condition and their two-way interaction were simultaneously entered into a multivariate regression model (see Davison & Sharma, 1990) to predict both independent and interdependent self-construal variables. This analysis revealed a multivariate effect of Self-Esteem \times Ego-Threat Condition in predicting both types of self-construals, $F(2, 41) = 4.98, p < .02$. There was also an overall effect of self-esteem scores in predicting both variables, $F(2, 41) = 14.68, p < .01$, but no main effect of ego threat condition, $F < 1$. Univariate tests supported our predictions regarding the effect of the Self-Esteem \times Ego-Threat Condition interaction on both variables separately. As expected, the interaction significantly predicted independence scores, $t(42) = 2.64, p = .01, \beta = .36$, as well as interdependence scores, $t(42) = 2.25, p < .03, \beta = -.33$. As seen by the sign of the beta weights, the interaction term predicted scores on the self-construal subscales in the predicted directions, such that higher self-esteem scores combined with being in the ego-threat condition were positively related to independent self-construal scores and lower self-esteem scores combined with being in the ego-threat condition were inversely related to interdependent self-construal scores (see Figure 2). In addition, there was also a main effect of self-esteem scores on independence, $t(42) = 4.82, p < .01$, and interdependence, $t(42) = 3.46, p < .01$. There were no main effects for ego-threat condition.

Next, we tested our specific predictions that being ego threatened activates differential awareness of independent and interdependent self-construals as a function of self-esteem. As in Study 1, we predicted that there would only be a significant effect of self-esteem scores on the dependent measures, scores on the independent and interdependent self-construal subscales, in the ego threat condition; we predicted no differences in self-construal scores in the control condition. Correlations among self-esteem

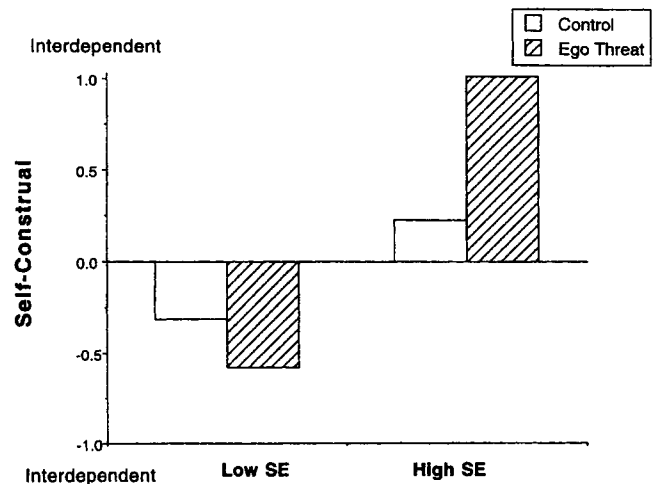


Figure 2. Self-construal scores (standardized) as a function of self-esteem (SE) and ego-threat condition in Study 2.

and independence and interdependence scores in the control condition supported our hypothesis in revealing no significant effect of self-esteem scores: Independence scores, $r(25) = -.32, p > .13$, and interdependence scores, $r(25) = -.19, p > .36$. Furthermore, and also as predicted, there was a significant relationship between self-esteem scores and independence and interdependence scores in the ego-threat condition: Independence scores, $r(21) = .79, p < .001$, and interdependence scores, $r(21) = -.65, p < .01$.

Figure 2 depicts the overall effect of the Self-Esteem \times Experimental Condition interaction on a combined variable representing the relative scores on the independence and interdependence subscales. This variable was created by subtracting interdependence scores from independence scores; accordingly, higher scores represent more of an independent orientation and lower scores represent more of an interdependent orientation.

Memory for Confederate's Responses

Coding scheme. Participants were asked in an open-ended format to recall the confederate's answers to eight specific questions asked during the interaction. Two questions were of particular interest in examining differences in independent and interdependent orientations. Recall of responses to "what is one recent accomplishment that you are proud of?" was conceptualized as reflecting an independent orientation, whereas recall of responses to "is it difficult or easy for you to meet people?" was conceptualized as reflecting an interdependent orientation. Two judges blind to experimental condition coded participants' answers as either 0, 1, or 2 to represent *no*, *moderate*, or *near-perfect* memory for the item. Interrater reliabilities (kappas) indicated excellent agreement overall. Average kappa was .84, (range = .50–1.00). Percentage agreement between coders for the *accomplishments* and *meeting people* items were 82% and 90%, respectively.

Memory analyses. Participants' memory for the confederate's responses was analyzed using a multiple regression model in which self-esteem scores and ego-threat condition and their interaction were simultaneously entered. Recall on the accomplishments question was predicted by the Self-Esteem \times Ego-Threat

interaction, $t(42) = 2.19, p = .03, \beta = .34$. As seen in Table 1, high self-esteem people in the ego-threat condition most accurately recalled the confederate's response on this item. There were no effects of self-esteem scores or ego-threat condition, $t_s(42) < 1.50, p_s > .15$. Recollection of the confederate's answer to the meeting people question was also predicted by the Self-Esteem \times Ego-Threat interaction, $t(42) = 2.17, p < .04, \beta = -.35$. For this item, threatened low-SE participants most accurately recalled the confederate's response. Last, and in line with our predictions that there would not be an effect of threat on global memory (but only for specific independent or interdependent details), total score on the memory test was not predicted by self-esteem scores or the two-way interaction of Self-Esteem \times Ego-Threat Condition, $t_s(42) < 1.15, p_s > .26$, although it was marginally predicted by ego-threat condition, $t(42) = 1.87, p = .07, \beta = -.27$, such that being in the control condition was somewhat related to better overall recall.

Discussion

The findings of Study 2 support those of Study 1 in demonstrating that high and low self-esteem people think differently about themselves after ego threat. Under neutral conditions, there were no differences in the relative strength of independent and interdependent self-construals between high and low self-esteem people. This finding is consistent with previous self-report research (obtained under neutral conditions) that found no relationship between self-construals and self-esteem among samples of students from the United States ($r = .00$) and China ($r = .05$; Brockner & Chen, 1996).

The current study extended these findings by showing that after ego threat, high self-esteem people think of themselves as more independent, whereas low self-esteem people think of themselves as more interdependent. Differential recall of confederate's responses after threat is also supportive of differential orientations as a function of self-esteem. High self-esteem people better recalled the confederate's recent accomplishments, whereas low self-esteem people better recalled the confederate's statements about meeting people. Differences in memory for confederate's responses to these two questions were interpreted as representing an orientation toward independence and interdependence.

The current results are perhaps best understood in light of Markus and Kitayama's (1991) description of independent versus

interdependent orientations as differences in desired goals. People with an independent orientation seek autonomous achievements, whereas those with an interdependent orientation seek connectedness with others. In the context of the current study, ego threat can be conceptualized as eliciting personal versus interpersonal objectives as a function of self-esteem. By extension, we postulated that these goal differences among high and low self-esteem people after ego threat may lead to dissimilar behaviors in the context of an interpersonal interaction. We investigated the link between self-construals and interpersonal behavior in the next two studies.

Previous research suggests that independent and interdependent self-construals are associated with different interaction styles. Groups containing a high percentage of members with independent self-construals use more competitive and less cooperative tactics (Oetzel, 1998a). Likewise, people with independent self-construals endorse a dominating style of dealing with conflict, whereas people with interdependent self-construals endorse methods of avoiding, obliging, and compromising (Oetzel, 1998b). Recent research has shown that believing that one's interpersonal acceptance is based on one's accomplishments (as opposed to believing that one is accepted for the person one is) leads to defensive interpersonal behaviors (Schimel, Arndt, Pyszczynski, & Greenberg, 2001). This research suggests that interpersonal behaviors of people with independent and interdependent self-construals vary in ways that may predict differences in likability.

Thus in Study 3, we attempted to link the findings of our previous research (Heatherton & Vohs, 2000a) to the findings of Studies 1 and 2. Our predictions for Study 3 were derived from our earlier research describing two related phenomena: (a) that after ego threat, high self-esteem people are seen as less likable and more antagonistic (a personality variable composed of *fake, rude, unfriendly, uncooperative, and arrogant*), whereas low self-esteem people are seen as more likable, and (b) that high and low self-esteem people shift their self-construals after ego threat to become more independent and interdependent, respectively (Studies 1 and 2). Thus, we posited that being in a state of independence versus interdependence predicts likability and interpersonal perceptions. Specifically, in Study 3 we hypothesized that an independent orientation would be seen as less likable and more antagonistic than an interdependent orientation.

Table 1
Memory for Confederates' Responses as a Function of Self-Esteem and Ego-Threat Conditions in Study 2

	Low self-esteem				High self-esteem			
	Control		Ego threat		Control		Ego threat	
Participants' memory	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
For meeting people	1.54	0.7	1.92	0.3	1.77	0.4	1.38	0.9
For accomplishments	1.25	0.6	1.38	0.7	1.42	0.9	2.00	0.0
Overall	15.08	3.8	14.58	2.8	16.27	1.6	13.44	2.8

Note. Memory for meeting people = correct recall of confederate's response to the question, "Is it difficult or easy for you to meet people?" Memory for accomplishments = correct recall of confederate's response to the question, "What is one recent accomplishment that you are proud of?"

Study 3

We conducted Study 3 to assess whether independent and interdependent self-construals would lead to differences in likability, irrespective of self-esteem level. Our aim was to show a relationship between focus on the self as independent or interdependent and likability and personality traits to support our postulate that differences in self-construals are responsible for differences in interpersonal perceptions of high and low self-esteem people after ego threat. To achieve this goal, we created a situation in which participants were put into a state that mirrored the postulated endstate of high and low self-esteem participants after ego threat: that of an independent self-construal (to mimic high self-esteem people's self-conceptions after threat) or an interdependent self-construal (to mimic low self-esteem people's self-conceptions after threat). We predicted that type of self-construal—*independent or interdependent*—would predict interpersonal perceptions of the target. Specifically, we predicted differences in two areas of interpersonal perceptions—likability and antagonism ratings—based on our previous research that found differences in these variables as a function of self-esteem and ego threat.

Thus, in Study 3 we attempted to triangulate the results of our previous research with the results of Studies 1 and 2. Specifically, given that ego threat and self-esteem interact to predict patterns of likability and personality ratings (Heatherton & Vohs, 2000a) and that ego threat and self-esteem interact to predict differences in orientations toward the self and others (Studies 1 and 2), we hypothesized that priming differences in orientations toward the self and others will lead to differential interpersonal evaluations.

Operationally, target participants were primed with either an independent or interdependent self-construal and then met with an unacquainted partner for a short interaction. We hypothesized that participants primed with an independent self-construal would be seen by their partners as less likable and more antagonistic relative to participants primed with an interdependent self-construal. Moreover, we expected that the self-construal primes would predict interpersonal perceptions independent of any effects of self-esteem.

Method

Participants

Fifty female undergraduates participated in exchange for extra course credit. Participants in each dyad were unacquainted prior to the interaction.

Procedure

Prior to participation, participants completed a standard measure of self-esteem (Fleming & Courtney, 1984, based on Janis & Field, 1959). Self-esteem scores ranged from 71 to 148, ($M = 113.9$, $SD = 20.2$).

Prior to arriving at the laboratory, participants were randomly assigned to be either a target or a rater. Targets were then randomly assigned to receive either an independent or interdependent prime. Participants were taken to separate rooms where they were asked to think about one of three topics for the next several minutes. All raters received a neutral prime in which they were asked to think about the path they would take back to their residence after the experiment. Targets received either an independent or interdependent prime, using instructions from Trafimow et al. (1991). Participants in the independent prime condition were asked to think about "what makes you different from your family and friends," whereas partic-

ipants in the interdependent prime condition were asked to think about "what you have in common with your family and friends." After 4 min, participants completed the Twenty Statements Test (TST; Kuhn & McPartland, 1954) as a manipulation check (Trafimow et al., 1991).

Subsequently, participants were joined for a 10-min structured conversation. Using a task developed by Sedikides and colleagues (Sedikides et al., 1998) that mimics the growing intimacy of an actual relationship, participants both asked and answered questions that required minimal, moderate, and, by the end, high self-disclosure. After the interaction, participants were separated and asked to rate their partner's likability and personality traits. The likability question asked participants to rate their partner's likability from 1 to 100, with higher numbers indicating more liking for the partner. Personality characteristics were rated using bipolar scales that were created to reflect the Big Five model of personality (e.g., John & Robins, 1993) and traits related to interpersonal perceptions (e.g., unintelligent/intelligent, shy/outgoing, genuine/fake, modest/arrogant). After completing the questionnaires, participants were debriefed and thanked.

Results

Preliminary Analyses

Statements on the TST were coded by two judges blind to experimental condition. Following coding procedures used by Gardner et al. (1999), statements were coded as independent if they made reference to personal attributes, skills, abilities, physical characteristics, or attitudes. Interdependent statements made reference to roles in relationships or membership in social or demographic groups. Interrater agreement was satisfactory ($\kappa = .81$). We followed procedures from Trafimow et al. (1991) to test the effectiveness of the manipulation. First, we formed two variables to proportionately represent the number of independent self-statements and interdependent self-statements relative to the total number of self-statements made by each participant. Then we used a mixed-measures ANOVA, with self-construal prime condition (independent vs. interdependent) as the between-subjects factor and type of statement (proportion of independent statements vs. proportion of interdependent statements) as the within-subject factor, and examined whether there was a significant interaction.

Confirming the effectiveness of the manipulation, the Priming Condition \times Statement Type interaction was significant, $F(1, 23) = 4.39$, $p < .05$, indicating that participants who received an independent prime made more independent statements than those receiving the interdependent prime (independent $M = 0.74$ vs. interdependent $M = 0.62$) and fewer interdependent statements than those receiving the interdependent prime (independent $M = 0.26$ versus interdependent $M = 0.37$).² In addition, we found

² A separate experiment was conducted to ensure that the priming manipulations did not alter mood or state self-esteem. In this experiment, 27 female undergraduates participated in exchange for extra course credit. Participants were given either the independent or interdependent prime using the same instructions as Study 3. After 4 min, participants were given a 24-item mood questionnaire (see Heatherton & Vohs, 2000a) and the State Self-Esteem Scale (SSES; Heatherton & Polivy, 1991). Afterwards, participants were debriefed and thanked.

Because these participants had completed a set of questionnaires that included the SSES 7 weeks prior to the experiment, a mixed-measures ANOVA was conducted on state self-esteem scores after the priming manipulation using Time 1–Time 2 as the within-subject variable and priming condition as the between-subjects variable. This analysis found

a strong main effect for statement type, $F(1, 23) = 44.70, p < .001$, such that participants generally wrote more independent statements than interdependent statements, a pattern that has been observed in previous research using the TST (Trafimow et al., 1991).

Likability and Personality Perceptions

The primary hypothesis was that targets' likability and personality ratings would vary as a function of type of prime. A regression model in which self-esteem scores, prime condition (dummy coded as $-1 =$ control condition and $1 =$ ego threat condition) and their interaction were simultaneously entered revealed the predicted effect of prime condition, $t(21) = 2.84, p < .01, \beta = .51$. Receiving an interdependent prime was related to higher likability (independent $M = 85.80$; interdependent $M = 94.60$). Although the full model was significant, $R^2 = .32, F(3, 21) = 3.24, p < .05$, there was no main effect of self-esteem scores, $t(21) = 0.92, ns, \beta = .18$, nor an effect of the Self-Esteem \times Prime Condition interaction in predicting likability, $t(21) = 0.57, ns, \beta = -.11$. Hence, the nonsignificant interaction term indicates that the effect of the prime on likability was independent of self-esteem.

Similar results were found when ratings of antagonism were analyzed using this model. Analyses of the ratings of the target on the Antagonism factor (i.e., arrogant, fake, uncooperative, rude, and unfriendly) revealed a near-significant effect of prime condition, $t(21) = 1.90, p = .07, \beta = -.36$, such that participants who received an independent prime were rated higher on the Antagonism factor ($M = 12.30$) than those who received an interdependent prime ($M = 9.60$). Again, and as predicted, the Prime Condition \times Self-Esteem interaction did not predict Antagonism ratings, $t(21) < 1, ns, \beta = -.05$.

Analyses of the factors Composed, Depressive, and Inhibited were conducted. The only factor predicted by prime condition, and marginally so, was the Inhibited factor, $t(21) = 1.67, p = .11, \beta = .33$, revealing that participants in the interdependent prime condition were rated as more inhibited than those in the independent prime condition ($M = 16.10$ vs. $M = 14.50$). Ratings on the Composed factor yielded a main effect of self-esteem, $t(21) = 2.39, p = .03, \beta = .48$, such that high self-esteem participants were rated as more Composed. There were no other significant predictors in predicting the Composed or Depressive factors, all t s $< 1.23, ps > .23$.

no effect of priming condition on state self-esteem, $F(1, 25) = 0.34, p > .56$, and no Condition \times Time interaction, $F(1, 25) = 1.41, p > .24$. There was an effect of time, $F(1, 25) = 7.65, p = .01$, such that participants reported higher state self-esteem at the time of the experiment ($M = 75.41$) than when they had earlier completed the scale ($M = 70.11$). Separate tests of scores on the social and performance subscales supported the overall results in showing that prime condition did not predict scores on either subscale, $F_s(1, 25) < 1, ns$.

t tests assessing the effect of independent versus interdependent prime on mood also showed no effect of the priming condition. Participants given the independent and interdependent primes reported comparable positive affect, $t(24) = 0.08$; hostility, $t(25) = 0.16$; anxiety, $t(25) = 0.72$; and dysphoria, $t(25) = 0.11$. Thus, effects of the independent and interdependent prime were not due to changes in state self-esteem or mood.

Discussion

The results of Study 3 provided support for our hypothesis that differences in an independent or interdependent orientation predict likability and personality perceptions. Specifically, targets primed with an independent orientation were seen as less likable and somewhat more antagonistic relative to ratings of targets primed with an interdependent orientation. Ratings of targets' personality traits subsumed under the personality factors Composed, Depressive, or Inhibited were not predicted by priming condition. This pattern of results nicely mirrors the findings relating the interaction of self-esteem and ego-threat condition (Heatherton & Vohs, 2000a).

We were encouraged by the supportive results of Study 3 and sought to extend these results by directly testing the intra- and interpersonal consequences of ego threat and self-esteem. We have proposed a multistep model that links together several effects to depict the psychological processes that occur when high and low self-esteem people receive an ego threat. To this point, however, none of our studies directly tested this multistep model; accordingly, the goal of Study 4 was to test the full process model.

Study 4

We conducted Study 4 to connect the results of Studies 1–3 to previous research showing that ego threat leads to different interpersonal perceptions of high and low self-esteem people (Heatherton & Vohs, 2000a). Given that the results of Study 3 showed that an independent versus interdependent orientation predicts patterns of likability and personality perceptions similar to those seen in our previous research on ego threat and self-esteem, the overarching goal of Study 4 was to test all the steps in one model.

In study 4, we put forth the following four hypotheses: (a) that we would replicate the results of Study 2 in showing that ego threat leads to differences in targets' self-ratings of independence and interdependence, (b) that we would replicate our previous findings (Heatherton & Vohs, 2000a) in showing that ego threat leads to differences in targets' likability and personality perceptions, (c) that we would replicate the results of Study 3 in showing that lower independence and higher interdependence are related to likability and more favorable personality perceptions, and (d) that ratings of independence and interdependence mediate the link between the Self-Esteem \times Ego-Threat Condition interaction and ratings of targets' likability and personality traits.

The methodology of Study 4 was a combination of that used in Studies 2 and 3. Similar to Study 2, participants came to the laboratory, were assigned to either ego-threat or control conditions, and were asked to complete a measure of independent and interdependent self-construals (i.e., the SCS; Singelis, 1994). Similar to Study 3, participants then were asked to engage in a structured interaction with an unacquainted participant. After the interaction, participants were separated and asked to rate their partner's likability and personality traits.

Method

Participants

Ninety male undergraduates participated in exchange for course credit. Within each dyad, participants were unacquainted prior to the interaction.

Procedure

Participants arrived at the laboratory individually, where they met the experimenter and another naïve participant. After being assured that the 2 participants did not know each other, they were ushered into separate rooms to complete a standard measure of self-esteem (Fleming & Courtney, 1984, based on Janis & Field, 1959). Self-esteem scores ranged from 71 to 148, ($M = 113.9$, $SD = 20.2$). Participants were randomly assigned to be either a target or a rater, with targets being further randomly assigned to receive either ego-threat treatment or control treatment. All raters received control treatment.

After completing the self-esteem scale, participants were given either an easy or difficult version of the RAT, corresponding to control or ego-threat condition, respectively. As in Study 2, participants in the ego-threat condition were told that the RAT was a standard test of intelligence. After completing it under time constraints, they saw their answers scored with a red pen by the experimenter and were left with the answer key to review "the correct answers." Although ego-threatened participants' answers were scored veridically, the answer key listed false normative statistics indicating that their peers and college students nationwide perform quite well on this task. Participants in the control condition were told that the task was being pilot tested for another experimenter, were not given time constraints, and did not have their answers scored.

After completing the RAT and, for ego-threatened participants, receiving feedback on their performance, participants completed state self-esteem (Heatherton & Polivy, 1991) and mood (see Heatherton & Vohs, 2000a) scales to assess the effectiveness of the manipulation. After completing the mood and self-esteem scales, participants were given the SCS (Singelis, 1994) to assess endorsement of independent and interdependent self-aspects.

Next, participants came together for a structured interaction. The form of the interaction followed exactly as described in Study 3: Participants were given a list of questions that required low, moderate, and high self-disclosure responses (disclosure level escalated as time progressed; see Sedikides et al., 1998), which were discussed for 10 min. Subsequently, participants were separated and asked to rate their partners' likability and personality traits, the latter of which used bipolar ratings scales (e.g., unintelligent/intelligent, friendly/unfriendly). Last, participants were debriefed and thanked for their participation.

Results

Preliminary Analyses

To confirm the effectiveness of the manipulation of ego-threat versus control conditions, a series of regression analyses were used. Centered self-esteem scores, centered ego-threat condition (dummy coded as $-1 =$ control condition and $1 =$ ego threat condition), and their two-way interaction were simultaneously entered to predict mood and state self-esteem scores. These analyses revealed that, as expected, ego-threatened participants reported decreased state self-esteem, $t(40) = 2.13$, $p < .04$; decreased positive affect, $t(40) = 3.42$, $p < .01$; increased dysphoria, $t(41) = 2.15$, $p < .04$; and increased hostility, $t(41) = 2.30$, $p < .03$. There were no differences between control and threat participants' reports of anxiety, $t(41) < 1$. Consistent with past research, there was also a main effect of trait self-esteem on state self-esteem, $t(41) = 5.14$, $p < .01$; anxiety, $t(41) = 3.52$, $p < .01$; dysphoria, $t(41) = 4.49$, $p < .01$; and positive affect, $t(40) = 3.45$, $p < .01$, indicating that high trait self-esteem participants reported higher state self-esteem and lower anxiety, hostility, and dysphoria than reported by participants with low trait self-esteem. The interaction of trait self-esteem scores and experimental condition did

not predict state self-esteem scores or mood factors (all $ts < 1.10$), with the exception of scores on the positive affect factor, $t(40) = 1.70$, $p > .09$. Investigation of the relationship between self-esteem and positive affect by experimental condition showed that among control condition participants, higher self-esteem was related to higher reports of positive affect, $r(22) = .77$, $p < .001$, whereas there was no relation among threatened participants, $r(22) = .21$, *ns*.

Independence Versus Interdependence

Our first prediction involved replicating the results of Study 2 by showing that the interaction of self-esteem and ego-threat condition predicts endorsement of independent and interdependent self-aspects. A regression model in which centered self-esteem scores, centered ego-threat condition (dummy coded, -1 vs. 1), and their interaction were simultaneously entered showed the predicted effect of the interaction term in predicting self-ratings of independence, $t(41) = 2.74$, $p < .01$, $\beta = .33$, and self-ratings of interdependence scores, $t(41) = 2.50$, $p < .02$, $\beta = -.36$. There was also a main effect of self-esteem scores in predicting self-ratings of independence, $t(41) = 4.82$, $p < .001$, $\beta = .57$. The main effect of ego-threat condition in predicting independence self-ratings and both main effects in predicting interdependence were not significant, $ts(41) < 1.01$. Planned comparisons also confirmed the results of Study 2 in showing that self-esteem scores predict endorsement of independent and interdependent self-aspects in the ego-threat condition, $r(22) = .80$, $p < .01$, and $r(22) = -.50$, $p < .02$, respectively. There was no relation between self-esteem scores and these measures in the control condition, $rs(23) \leq .30$, $ps > .17$. Thus, as seen in Study 2, the current study showed that ego threat elicits more independence and less interdependence as a function of (higher) self-esteem scores.

Likability and Personality Perceptions

Our second prediction was that targets' likability and personality ratings would vary as a function of self-esteem and ego-threat condition. A regression model in which centered self-esteem scores, centered ego-threat condition (dummy coded as -1 vs. 1), and their interaction were simultaneously entered revealed the predicted effect of the interaction term on likability ratings, $t(41) = 2.35$, $p < .03$, $\beta = -.33$. Planned comparisons within experimental conditions showed that, as expected, the relationship between self-esteem and likability was significant only for ego-threatened participants, $r(22) = -.54$, $p < .01$, and not for control participants, $r(23) = .05$.

A regression model with the same predictors—self-esteem scores, ego-threat condition (dummy coded, with $-1 =$ control condition and $1 =$ ego-threat condition), and their interaction—also revealed the expected significant interaction in predicting ratings on the Antagonism factor (arrogant, fake, uncooperative, rude, and unfriendly), $t(41) = 2.34$, $p < .03$, $\beta = .33$. Planned comparisons within experimental condition also confirmed that the effect of self-esteem on ratings of targets' antagonism was confined to the ego-threatened participants, $r(22) = .43$, $p < .05$, and was nonsignificant for control participants, $r(23) = -.18$, $p > .40$. Analyses predicting likability also revealed a near-significant effect of self-esteem scores, $t(41) = 1.99$, $p < .06$, $\beta = -.28$ (see

also Heatherton & Vohs, 2000a), but the main effect for ego-threat condition and both main effects predicting antagonism ratings were not significant, $t(41) < 1.52$, $ps \geq .12$.

Then, we conducted similar regression analyses on the remaining three personality factors (see Heatherton & Vohs, 2000a), Composed (calm, honest, congenial, intelligent, reasonable, refined, and unassuming), Depressive (lethargic, gloomy, lazy, shy, timid, and yielding), and Inhibited (restrained, cautious, and practical). Results of these three regression models showed that the Self-Esteem \times Ego Threat Condition interaction significantly predicted ratings on the Composed factor, $t(40) = 2.26$, $p < .03$, $\beta = -.32$. An examination of the relationship between self-esteem and ratings on the Composed factor within experimental condition showed that there was no relationship in the control condition, $r(23) = .10$, $p > .60$, whereas there was a significant negative relationship in the ego-threat condition, $r(22) = -.46$, $p < .04$. These analyses suggest that in addition to being seen as less likable and more antagonistic, ego-threatened participants with higher self-esteem were also seen less favorably on traits relating to the Composed factor. An examination of the two main effects in the model predicting Composed ratings showed only a marginally significant effect of self-esteem scores, $t(40) = 1.79$, $p < .09$, $\beta = -.25$, such that, overall, higher self-esteem was related to lower ratings on this factor. Thus, although we are more tentative about our confidence in results pertaining to the Composed factor, as it was not predicted by similar variables in past research (Heatherton & Vohs, 2000a), we are encouraged by its specificity and directionality; that is, it is notable that ratings on the Composed factor varied significantly with self-esteem, in the expected direction, and only in the ego-threat condition.

Examination of the models predicting ratings on the Depressive and Inhibited factors only showed a main effect for ego-threat condition for Inhibited ratings, $t(41) = 2.27$, $p < .03$, $\beta = -.32$ such that, overall, being in the control condition was related to lower ratings on this factor.

In sum, we replicated the results of our previous work in showing that after ego threat, higher self-esteem is related to decreased likability and more unfavorable personality perceptions (i.e., higher Antagonism and lower Composed ratings) as seen by an interaction partner. Although the significant effect of the interaction term predicting ratings on the Composed factor was not predicted, examination of the means revealed a relationship consistent with the findings pertaining to ratings of Antagonism and likability.

Self-Construals, Likability, and Personality Perceptions

Our third hypothesis was that independent and interdependent self-construals would predict ratings of targets' likability and personality traits, thereby replicating the findings of Study 3. To test this hypothesis, we entered independence and interdependence scores (which were centered around their means) simultaneously into regression models to predict likability and the four personality factors.

Ratings of targets' likability were predicted by scores on both subscales, independence $t(42) = 2.13$, $p < .04$, $\beta = -.30$, and interdependence, $t(42) = 1.92$, $p = .06$, $\beta = .27$, such that lower independence scores and higher interdependence scores predicted likability. Ratings of targets' Antagonism were predicted only

by interdependence scores, $t(42) = 2.06$, $p < .05$, $\beta = -.30$, such that higher interdependence was related to lower Antagonism scores. The effect of independence scores was not significant, $t(42) = 1.15$, $p > .25$. Independence scores significant predicted ratings on the Composed factor, $t(41) = 2.06$, $p < .05$, $\beta = -.30$, such that lower independence predicted higher Composed ratings, and, in the opposite direction, interdependence scores marginally predicted Composed ratings, $t(41) = 1.73$, $p < .10$, $\beta = .25$. Ratings on the Depressive factor were only predicted by independence scores, $t(42) = 2.37$, $p < .03$, $\beta = -.36$, indicating that lower independence predicted higher Depressive ratings, and ratings on the Inhibited factor were not significantly related to either predictor, $t(42) < 1.65$, $ps \geq .11$.

To summarize, the clearest relationship between self-construals and interpersonal appraisals was for ratings of targets' likability, which was a function of self-ratings of independence and interdependence. Moreover, we found that ratings on the Antagonism factor were best predicted by (lower) interdependence scores, and ratings on the Composed factor were predicted by (lower) independence scores and somewhat by higher interdependence scores.

Mediation Analyses

The full test of our process model of self-esteem, self-construals, and interpersonal perceptions after threats to the self was conducted by assessing whether independent and interdependent self-construals can statistically account for the relationship between the Self-Esteem \times Ego-Threat Condition interaction and ratings of likability and personality traits. Following the conditions specified by Baron and Kenny (1986), we have already established the existence of the following statistical relationships: (a) The Self-Esteem \times Ego-Threat Condition interaction predicts ratings of independence and interdependence; (b) the Self-Esteem \times Ego-Threat Condition interaction predicts ratings of likability and personality traits; and (c) self-ratings of independence and interdependence predict likability, Antagonism ratings (for interdependence self-ratings only), and Composed ratings (for independence self-ratings only). Accordingly, we conducted a series of multiple regression models to test for statistical mediation.

Mediation of likability ratings. To assess mediation by independence and interdependence scores on ratings of likability, we entered centered self-esteem scores, centered ego-threat condition (dummy coded), their two-way interaction, centered independence scores, and centered interdependence scores simultaneously into a regression model. The results of this analysis showed that the presence of independence and interdependence scores rendered the previously significant Self-Esteem \times Ego-Threat Condition interaction nonsignificant, $t(39) = 1.21$, $p > .23$ (see Figure 3). In addition, none of the other main effects were significant, $t(39) < 1.45$, $ps > .16$. Two analyses then were conducted to see if one of the two self-construal subscales best accounted for the relationship. Accordingly, we created two regression models using the same predictors as were used in the initial mediational model except that, in one model, we omitted self-ratings of independence and, in the other model, we omitted self-ratings of interdependence. As seen in Figure 3, these analyses revealed that the presence of each of the self-construal subscales partially mediated the effect of the Self-Esteem \times Ego-Threat Condition interaction

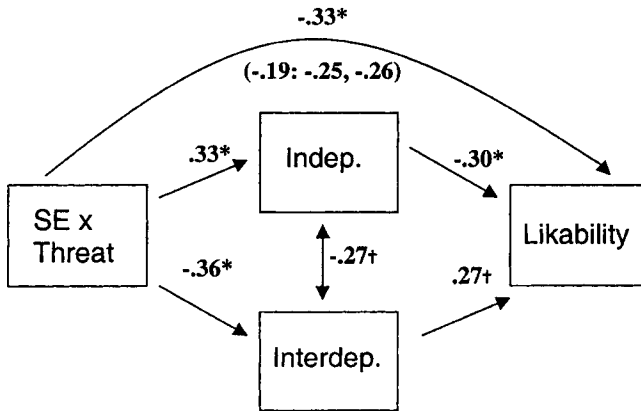


Figure 3. Path coefficients showing the direct and indirect effects of the predictor variables (Self-Esteem \times Ego-Threat Condition interaction and targets' self-ratings of independence and interdependence) on ratings of targets' likability in Study 4. The path coefficients were obtained in the following manner: The coefficients corresponding to the effects of the Self-Esteem \times Ego-Threat interaction term (e.g., Self-Esteem \times Ego-Threat Condition \rightarrow independence ratings) are the results of regression models that included the two main effects of self-esteem and ego-threat condition (dummy coded) as well as the Self-Esteem \times Ego-Threat Condition interaction. The coefficients corresponding to the effects of independence and interdependence ratings on likability were obtained from a regression model that included both independence and interdependence ratings as predictors. The coefficient representing the relationship between independence and interdependence ratings is the simple correlation between the two constructs. The values in parentheses indicate, in this order: (a) the relation between the Self-Esteem \times Ego-Threat Condition interaction and likability in a model that included the interaction term, the two main effects of self-esteem and ego threat condition, and both independence and interdependence self-ratings; (b) the relation between the interaction term and likability in a model that includes the interaction term, the self-esteem and ego-threat condition main effect, and only interdependence self-ratings; and (c) the relation between the interaction term and likability in a model that includes the interaction term, the self-esteem and ego threat condition main effect, and only independence self-ratings. All values without parentheses are direct effects. † $p < .07$. * $p < .05$. SE \times Threat = the multiplicative interaction of self-esteem scores and ego-threat condition (dummy coded, such that -1 = control and 1 = ego threat); Indep. = targets' self-ratings on the independence subscale of the Self-Construal Scale (SCS; Singelis, 1994); Interdep. = targets' self-ratings on the SCS interdependence subscale. Likability = targets' likability as rated by their interaction partner.

on ratings of targets' likability: the interaction term with independence entered, $t(40) = 1.69$, $p < .10$, and the interaction term with interdependence entered, $t(40) = 1.65$, $p = .10$. Thus, neither self-construal variable completely diminished the effect of the Self-Esteem \times Ego-Threat Condition interaction to nonsignificance, but each appeared to additively affect ratings of likability.

Mediation of personality ratings. Mediation analyses of targets' Antagonism ratings were conducted using a regression model in which centered self-esteem scores, centered ego-threat condition (dummy coded as -1 vs. 1), their two-way interaction, and centered interdependence scores were simultaneously entered. This analysis revealed that interdependence partially mediated the effect of the Self-Esteem \times Ego-Threat Condition interaction on

ratings of targets' Antagonism, such that its presence rendered the effect statistically marginal, $t(40) = 1.65$, $p < .11$.

The other personality factor to be predicted by the Self-Esteem \times Ego-Threat interaction and also by self-construal scores (i.e., independence self-ratings) was ratings of targets on the Composed factor. Thus, a mediational analysis was conducted in which centered self-esteem scores, centered ego-threat condition (dummy coded, with control condition = -1 and ego-threat condition = 1), their two-way interaction, and centered independence scores were simultaneously entered. Results of this regression model revealed that independence self-ratings partially mediated the link between the interaction of self-esteem and ego-threat condition and ratings on the Composed factor, $t(39) = 1.54$, $p < .14$.

Discussion

The results of Study 4 strongly support our stated hypotheses. We replicated the results of previous studies (Studies 1–3; Heatherton & Vohs, 2000a) and directly tested our process model. The results of the mediational analyses showed that likability is statistically mediated by the degree to which one perceives oneself as independent and interdependent. Ratings of Antagonism (i.e., being seen as arrogant, fake, uncooperative, rude, and unfriendly) were shown to be statistically mediated by the degree to which one perceives oneself as interdependent (an inverse relationship). Ratings on the Composed factor (i.e., being seen as calm, honest, congenial, intelligent, reasonable, refined, and unassuming) were shown to be statistically mediated by the degree to which one perceives oneself as independent (an inverse relationship). Again, we are tentatively optimistic about results pertaining to the Composed factor but note that the results of the mediational analyses dovetailed nicely with those pertaining to the Antagonism factor. Together, the mediational analyses of both personality factors suggest that they combine to produce overall differences in likability.

General Discussion

The findings of Studies 1–4 support an intrapersonal explanation for differences in likability and personality ratings among high and low self-esteem people after ego threat. Studies 1–2 indicated that ego threat promotes differential conceptualizations of the self on the basis of self-esteem. Study 3 found that people primed with an independent self-construal were perceived as less likable and more antagonistic than those primed with an interdependent self-construal. This distinctive pattern of interpersonal appraisals suggested that differences in self-construals can account for interpersonal ratings.

The results of Study 4 both confirmed previous findings and elucidated the psychological mechanisms with direct tests of mediation. The findings of Study 4 replicated the findings of our previous research by showing that after threat, high self-esteem people are seen as less likable and possessing less favorable personality traits, whereas low self-esteem people are seen as more likable and as possessing more favorable personality traits. The results of Study 4 also replicated the results of Studies 1–2 by showing links among self-esteem, ego threat, and self-construals. Moreover, mediational analyses confirmed that after threat, ratings of likability can be fully accounted for by changes in self-

construals (i.e., orientations toward independence and interdependence) whereas ratings of personality traits (viz. Antagonism and Composed factors) can be partially accounted for by self-construals. Thus, the results of these studies highlight the importance of viewing the self as autonomous versus connected for interpersonal perceptions and interactions. Furthermore, this research integrates and extends our understanding of self-esteem and threats to the self.

Application to Self-Esteem and Self-Construal Theories

The finding that high and low self-esteem people alter their self-conceptions after ego threat has implications for several theoretical lines. For instance, theorists have posited different self-enhancement approaches among high and low self-esteem people that may relate to differences in self-presentations among people who differ in self-construal orientations. In their review of self-esteem research, Baumeister et al. (1989) concluded that high self-esteem people portray themselves in enthusiastically positive terms and low self-esteem people simply portray themselves as average. Baumeister et al. posited that high self-esteem is related to self-enhancing tendencies, whereas low self-esteem can be conceptualized as an evasive pattern of disclosing little about oneself. Additionally, Schütz and Tice (1997) found that high and low self-esteem people differed in the types of self-aspects they chose to favorably feature, with high self-esteem people emphasizing their personal qualities and accomplishments and low self-esteem people emphasizing their interpersonal qualities.

The literature on cultural differences parallels behavioral differences among those with high and low self-esteem. People from individualistic cultures exhibit self-enhancing tendencies, such as making positive self-descriptions (Heine et al., 1999), acting confidently in social situations (see Heine et al., 1999, 2000), and even describing themselves very favorably in anonymous psychological surveys (Shedler, Mayman, & Manis, 1993). Conversely, people from collectivistic cultures do not display self-enhancement (Heine et al., 1999; Takata, 1987). Moreover, the style of people from collectivistic cultures may be best described as self-criticism (e.g., Heine, Takata & Lehman, 2000), which could be said to mirror the negative self-views and overgeneralizations of failure seen among low self-esteem people (e.g., Dodgson & Wood, 1998; Swann, 1996). As an example, Sedikides et al. (1998) found that people in psychologically close dyads do not engage in the self-serving bias. That is, relative to people in distant dyads, people in psychologically close dyads do not take responsibility for success or blame their partner for failure. This finding suggests that the self-serving bias may be absent or attenuated among people with interdependent self-construals, a hypothesis that has empirical support (e.g., Kitayama, Takagi, & Matsumoto, 1995). Parallel support comes from self-esteem research. High self-esteem people credit the self when the outcome is positive and blame external circumstances when the outcome is negative, but low self-esteem people tend to be even-handed in their attributions and, in some studies, show a reversal of the self-serving bias (see Blaine & Crocker, 1993).

A possible mechanism for the modest self-presentations of people from collectivistic cultures may be their tendency to view events holistically, a perspective that involves seeing all sides and outcomes of a given situation (see Choi & Nisbett, 2000). Thus, a

propensity toward dialecticism, which involves comprehending the existence of apparent contradictions, may promote seeing both favorable and unfavorable aspects of the self simultaneously. Possible effects of this dualistic perspective may include recognition of a flawed self, seeing the self in seemingly paradoxical ways, and less favorable self-presentations, all of which describe people from collectivistic cultures as well as low self-esteem people (Baumeister et al., 1989; Campbell, 1990; Dodgson & Wood, 1998; Heine et al., 1999, 2000).

Furthermore, cross-cultural studies of self-esteem show patterns consistent with aforementioned behavioral differences. People from individualistic cultures report higher scores on self-esteem scales than do people from collectivistic cultures (e.g., Diener & Diener, 1995; Kitayama et al., 1997). Although one might conclude that people from Eastern countries possess lower self-esteem than do people from Western countries, it has also been argued that the concept of self-esteem takes on an entirely different meaning in collectivistic cultures (e.g., Heine et al., 1999; Markus & Kitayama, 1991).

Indeed, some theorists claim that assumptions regarding fundamental psychological needs are erroneously based on responses and behaviors of people from Western cultures, who typically possess independent self-construals (Heine et al., 1999). For instance, people from collectivistic cultures do not experience dissonance as a result of discrepant behaviors and internal feelings (Heine & Lehman, 1997b), exhibit the false uniqueness bias (Heine & Lehman, 1997a), or display unrealistic optimism (Heine & Lehman, 1995), all of which are hallmarks of psychological functioning in individualistic cultures (cf. Taylor & Brown, 1988).

Furthermore, theorists question the meaning of high versus low self-esteem as applied to collectivist cultures. Heine et al. (1999) noted that definitions of self-esteem typically include references to abilities or personal skills, reflecting a belief that self-construction involves a continual process of affirming the self as a self-sufficient agent. Accordingly, high self-esteem reflects self-perceptions of success according to personal goals or accomplishments, with interpersonal relationships serving to highlight what is unique and different about the self (Cross & Madson, 1997; Heine et al., 1999). In the context of the current studies, it is likely that threatened high self-esteem people, who are in a state of independence, engage in self-esteem reparation at a personal level—reaffirming the self's favorable, individualistic qualities—because they presume they are well-liked by their partner (see Leary & Baumeister, 2000; Leary et al., 1995). Accordingly, the independence orientation of threatened high-SE people may promote the perception that having positive interpersonal relationships is simply another aspect of "who they are." Thus, among threatened high self-esteem people, relationships may become another favorable possession for the self to claim.

In contrast, research has shown that self-construction in collectivistic cultures involves affirming the self through relationships (Endo, Heine, & Lehman, 2000; Heine et al., 1999). Returning to the results of the current studies, perhaps the state of interdependence that low self-esteem people experience after threat serves to heighten their awareness of the dynamic nature of relationships. Notably, people of collectivistic cultures do not emphasize mere involvement in relationships but relationship harmony (Kwan, Bond, & Singelis, 1997). This emphasis may result in perceptions that the status of one's relationships is somewhat tenuous, a

mindset that, in turn, may promote goodwill toward others. If low self-esteem people and those of an interdependent orientation do perceive the positivity of their relationships as being tenuous or easily disrupted, this mindset seems especially likely to occur after threat, when people's sense of self is at stake and needs to be reaffirmed (Steele, 1988).

Consequently, the assumption that high self-esteem reflects mental health or that low self-esteem reflects maladjustment is uniquely Western (Cross & Madson 1997; Heine et al., 1999; Kitayama et al., 1997). Recent investigations, which have shown that both high and low self-esteem are associated with benefits and drawbacks (e.g., Baumeister, Heatherton, & Tice, 1993; Baumeister et al., 1989; Baumeister, Smart, & Boden, 1996; Heatherton & Vohs, 2000a; McFarlin, Baumeister, & Blascovich, 1984), add to the current findings in supporting a nonevaluative approach to self-esteem.

Limitations and Future Directions

There are several limitations to the current studies that should be noted. The current studies used a performance-based ego threat to allow for direct comparison to previous studies. Accordingly, these studies cannot address the effects of an interpersonally-based ego threat or the effects of positive feedback on interpersonal appraisals, for example. The current studies are also limited by a lack of direct behavioral data. A crucial area for future investigation is the use of nonverbal and verbal recordings to examine observable interpersonal behaviors exhibited by high and low self-esteem people after ego threat. With respect to participant samples, we explicitly restate that participants were students in their early 20s attending a private college in northeastern United States. The racial composition of the sample was largely Caucasian,³ with the majority of participants having been born and raised in the United States. Given that researchers, especially those studying self-esteem, are prone to assuming cross-cultural applicability of their results when such claims may not be appropriate (Heine et al., 1999), it should be noted that conclusions and implications of this research may be most applicable to young people who (presumably) report a primarily independent self-construal.

Summary

The findings of Studies 1, 2, and 4 support the hypothesis that high and low self-esteem people think about themselves differently after ego threat, and the results of Study 3 and 4 demonstrate that differences in self-conceptions have interpersonal consequences. In several ways, these studies add a new perspective to the study of self-esteem. First, the current studies support previous research (Heatherton & Vohs, 2000a) in highlighting the value of investigating interpersonal perceptions as they relate to self-esteem. Second, these studies raise questions about the nature of self-esteem. If self-esteem is not developed through reflected appraisals from those with whom we interact (see Heatherton & Vohs, 2000b), then what is the origin of self-esteem? Relatedly, there is a clear effect of self-esteem under conditions of threat but, in the current studies, there was no predictive effect of self-esteem in control conditions. These findings point to the role of ego threat as a catalyst for differential responses as a function of self-esteem and, furthermore, call for additional research on the effects of other

types of feedback (e.g., examining the interpersonal consequences of success feedback; Vohs & Heatherton, 2001). In addition, there may be other mechanisms that emerge when coping with ego threat that can influence likability (e.g., erosion of self-regulatory resources; see Vohs, Ciarocco, & Baumeister, 2001). Third, the study of self-esteem as a main effect may be remiss when studying the multiply-determined outcomes that are common to social and personality psychology. Instead, the current studies point to the importance of understanding the interactive effects of self-esteem as shaped by external circumstances. These studies reveal that intrapersonal responses after ego threat influence not only the self but, more important, influence others' views of the self as well.

³ An estimate of the racial composition of the samples used in the current studies comes from Vohs, Heatherton, and Herrin (2001), which lists the demographics of a similar participant sample as 78% White, 11% Asian, 4% Black, 4% Hispanic, and 3% American Indian.

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