

## Distinctions Between Hostile and Nonhostile Forms of Perceived Criticism From Others

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Criticism and hostility from others are related to fluctuations in symptom severity across many disorders, including depression and anxiety. Objective coding systems typically allow for distinctions between criticism and hostility, but the primary self-report measure of perceptions of criticism (the Perceived Criticism Measure) contains no such distinction. This report presents results from two samples regarding the assessment of specific perceptions of hostile and nonhostile criticism. In addition to these specific perceptions, we assessed relationship satisfaction, perceptions of overall criticism, and symptoms of depression and anxiety. Perceptions of hostile criticism were similar to ratings of overall criticism, as indicated by a positive correlation between these two and similar correlations with related variables. In contrast, perceptions of nonhostile criticism demonstrated more complex patterns of associations, showing a positive correlation with relationship satisfaction, a negative correlation with perceptions of hostile criticism, and a positive association with general perceptions of criticism only in the context of low depressive symptoms (as depressive symptoms increased, this association became significantly weaker). These results suggest that respondents do distinguish between perceptions of hostile and nonhostile criticism, and these perceptions are not simply different points on the same continuum. Moreover, they suggest that individuals with higher levels of depression may be less likely to incorporate nonhostile criticism into their overall perceptions of criticism from others.

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PEOPLE'S INTERPERSONAL ENVIRONMENTS HAVE been shown to be strongly related to their mental health. In particular, levels of criticism and hostility from others appear to be highly related to fluctuations in psychological symptoms (e.g., Butzlaff & Hooley, 1998; Renshaw, Steketee, Rodrigues, & Caska, in press). Two methods of assessing criticism and hostility are expressed emotion and perceived criticism (PC). Expressed emotion is an index of the criticism, hostility, and/or emotional overinvolvement that a relative expresses about a patient, typically assessed via objective coding of a 1.5-hour semistructured interview with the relative (Camberwell Family Interview; Vaughn & Leff, 1976). In the context of expressed emotion, hostility is a global rating of how rejecting the relative is of the patient, whereas criticism is an index of circumscribed critical comments. Thus, the criticism measure represents a less attacking form of critique, and hostility represents a more aggressive, personalized critique. PC is typically assessed via individuals' responses to a single item on the Perceived Criticism Measure (PCM; Hooley & Teasdale, 1989) that asks them to rate how critical they think their relatives are of them. It was conceived as a much briefer index of expressed emotion, based on the notion that such a self-report measure might capture "how much criticism is *getting through to the patient*" (Hooley & Teasdale, p. 234; original italics); however, there is no analogous distinction between hostility and more circumscribed criticism on this measure.

For most disorders, psychiatric patients with relatives who are high on one or more of the expressed emotion dimensions have greater rates of

relapse, poorer treatment response, and poorer course of symptoms, with medium to large effect sizes ( $r_s > .30$ ; see meta-analysis by Butzlaff & Hooley, 1998). Similarly, higher levels of perceived criticism are also associated with greater relapse and poorer treatment response across many disorders, typically with medium to large effect sizes (see review by Renshaw, 2008). Thus, the need for a distinction between hostile and nonhostile forms of PC may not seem immediately obvious. However, mounting evidence indicates that these constructs have less clear-cut associations with outcome in anxiety-related conditions. Three studies have now found that objectively coded hostility is related to worse outcome for those with obsessive-compulsive disorder (OCD), panic, and generalized anxiety disorder, but objectively coded nonhostile criticism is actually associated with better outcome, with medium to large effect sizes (Chambless & Steketee, 1999; Peter & Hand, 1988; Zinbarg, Lee, & Yoon, 2007). Interestingly, PC has shown mixed associations with outcome in anxiety disorders, with links to poorer outcome and higher dropout in those treated for OCD and panic disorder (Chambless & Steketee) but a link to lower dropout for those being treated for social phobia (Fogler, Tompson, Steketee, & Hoffman, 2007). Thus, the distinction between hostility and nonhostile criticism may have clinical relevance.

When moving beyond objective coding to assess individuals' own perceptions, personal biases become an important consideration. Individuals with depression and anxiety both exhibit negative biases (e.g., Beck, Rush, Shaw, & Emery, 1979; Eysenck, 1997), but the nature of these biases appears to differ across these conditions. In general, individuals with depression exhibit a negative bias in both interpretations of and memory for events across a wide variety of situations (e.g., Williams et al., 2007). Thus, it is conceivable that those with depression may be prone to interpret even nonhostile criticism as hostile and to subsequently remember hostile criticism more readily than nonhostile criticism. From both of these perspectives, one would expect that, in the context of higher depressive symptoms, general perceptions of criticism would be more centralized around hostile criticism, whereas nondepressed individuals might be more capable of recognizing and incorporating nonhostile criticism in their overall perceptions of criticism.

Although there is also evidence that those with anxiety overinterpret ambiguous situations as threatening, many such studies of anxiety (with the exception of those focused on social anxiety) do not focus on interpersonal situations (e.g., Hadwin, Frost, French, & Richards, 1997). Thus, it is unclear whether general anxiety is associated with

overinterpreting threat specifically in interpersonal situations, or whether those with anxiety (excepting social anxiety) would be expected to have the same types of difficulty as those with depression in perceiving certain types of criticism as nonhostile. Moreover, with regard to memory, anxiety is primarily associated with enhanced implicit memory for threatening stimuli (e.g., Fox, Derakshan, & Shoker, 2008), with little evidence of biases in explicit memory (Koster, Fox, & McLeod, 2009). Based on this evidence, those with high anxiety but without depression would not be biased to remember episodes of hostile criticism more than instances of nonhostile criticism. Thus, relative to those with depressive symptoms, one might expect those with anxiety symptoms to be more able to both recognize and remember nonhostile criticism and, thus, incorporate nonhostile criticism in their overall perceptions of criticism from others.

The current investigation represents a first step in attempting to assess specific perceptions of hostile and nonhostile forms of criticism, as well as examining the potential influence of depressive and anxiety symptoms on such perceptions. We assessed perceptions of criticism using the PCM, as well as two related items that assess more specific perceptions of nonhostile and hostile criticism. In addition to examining basic properties of these new items, we evaluated the overlap of general ratings on the PCM with specific perceptions of hostile and nonhostile criticism. We hypothesized that perceptions of hostile criticism would be positively related to general ratings of PC regardless of the level of depressive or anxiety symptoms, due to the clear negativity of hostile criticism. In contrast, based on cognitive tendencies associated with depression, we hypothesized that perceptions of nonhostile criticism would be positively related to overall PC only in the context of lower depressive symptom severity. In other words, as depressive symptoms increased, we expected a decreasing association between general ratings of PC and perceptions of nonhostile criticism. Due to potentially different cognitive tendencies related to anxiety, we made no a priori hypotheses regarding potential moderation of associations by anxiety symptoms. Given the exploratory nature of this investigation, we examined these issues in two samples to determine whether findings would replicate across samples.

## Study I

### METHOD

#### *Participants*

One hundred eighty-six undergraduate students completed screening questionnaires online. Those

who scored above the cutoffs for mild symptom levels on either a measure of depression or anxiety (see below for description of measures) were admitted into the study. Of the original 186 respondents, 47 had scores above cutoffs for depression and anxiety, 39 had scores above cutoffs for anxiety only, and 11 had scores above cutoffs for depression only. These 97 individuals comprised the sample for this study. Seventy of these participants (72.2%) were women, and ages ranged from 18 to 35 years old ( $M=20.61$ ,  $SD=3.44$ ). The majority were Caucasian (85.6%), with 9.3% Asian American, 2.1% Hispanic, and 3.0% other. Thirty-two percent of the sample reported current or prior psychological and/or psychiatric treatment. Forty-eight participants (49.5%) responded to interpersonal measures in regard to a parent or caregiver with whom they lived, 20 (20.6%) chose a spouse or romantic partner with whom they lived, and 29 (29.9%) chose a close friend with whom they lived.

#### Measures

*Perceived Criticism Measure (PCM)*. The PCM (Hooley & Teasdale, 1989) is completed in reference to another individual, and the first question (“How critical do you think this person is of you?”) provides the measure of PC. It is this single item that has been used in all major studies of PC (Renshaw, 2008). The question is answered on a scale from 1 (*not at all critical*) to 10 (*very critical*). Test-retest reliability of the 1-item measure of PC was .75 in a sample of depressed patients assessed over a period of approximately 20 weeks (Hooley & Teasdale), and .75 in a sample of anxiety disordered patients over a period of 2 weeks prior to treatment (Chambless & Steketee, 1999).

*PCM – Type (PCM-T)*. The PCM-T was created for this study and includes two items to assess perceptions of nonhostile criticism (“How much do you think this person criticizes you in a helpful, constructive way?”) and perceptions of hostile criticism (“How much do you think this person criticizes you in a harsh, hurtful way?”). Answers to both questions are again given on a scale from 1 (*not at all constructively critical / not at all harshly critical*) to 10 (*very constructively critical / very harshly critical*). As 1-item measures, their test-retest reliability over 2 to 3 weeks in a subsample of 50 individuals was acceptable ( $r=.68$  for nonhostile criticism;  $r=.53$  for hostile criticism).

*Relationship Assessment Scale (RAS)*. The RAS (Hendrick, 1988) contains seven questions about an interpersonal relationship that are answered on a scale from 1 to 5. Two items are reverse scored, and total scores are calculated by averaging

the responses to all seven items, with higher scores indicating greater satisfaction. This measure has high internal consistency and convergent validity (Hendrick; Vaughn & Matyastick Baier, 1999). In the current study, the wording of four items was altered slightly to be appropriate for both romantic and nonromantic relationships. Renshaw, McKnight, Caska, and Blais (2010) have documented adequate internal consistency, test-retest reliability, factorial validity, and convergent validity of the RAS with this adaptation. Internal consistency in this sample was also high, Cronbach's  $\alpha=.91$ .

*Beck Depression Inventory – Second Edition (BDI-II)*. The BDI-II (Beck, Steer, & Brown, 1996) is a self-report measure that consists of 21 items that assess intensity of depressive symptoms on a Likert scale from 0 to 3. It has been widely used in a variety of populations, and several reports attest to its reliability and validity. The BDI-II demonstrated good internal consistency in our sample, as well (Cronbach's  $\alpha=.76$ ). Beck and colleagues (1996) suggest that scores of 13 and higher indicate at least mild levels of depressive symptoms.

*Beck Anxiety Inventory (BAI)*. The BAI (Beck & Steer, 1993) is a 21-item self-report measure of general anxiety symptoms that focuses on cognitive and physiological components of anxiety, with questions answered on a Likert scale from 0 to 3. It has been used widely to assess general levels of anxiety, with strong evidence of reliability and validity (Beck & Steer). The BAI demonstrated good internal consistency in our sample, as well (Cronbach's  $\alpha=.89$ ). Beck and Steer suggest that scores of 8 and higher indicate at least mild levels of anxiety.

#### Procedure

All procedures were approved by the University of Utah's Institutional Review Board (IRB). Participants were undergraduates enrolled in psychology courses at the University of Utah, a large intermountain western university, during the summer and fall of 2007. Participants provided consent and completed depression and anxiety measures online. Those who screened positive for mild depressive or anxiety symptoms proceeded to complete the rest of the measures that same day. Participants were not informed as to the specific screening result, but symptoms were monitored by study personnel. Two participants required follow-up regarding symptom severity, but both were already receiving mental health services.

Participants were instructed to complete interpersonal measures with regard to a parent, romantic partner, or close friend with whom they lived. The PCM (which contains the general question

about PC) was administered first, followed by 10 questions (e.g., items from the RAS) before the PCM-T items. Order of administration was the same across all participants. As compensation, participants received credit toward partial fulfillment of a research requirement in a psychology course. Also, as part of the standard debriefing, all participants were informed of available treatment resources.

### Analytic Plan

Bivariate correlations and one-way ANOVAs were used to test for differences in respondents' ratings by sex, age, race/ethnicity, and target individual. For ANOVAs, significant results were probed via a priori specified contrasts. Homogeneity of variance for follow-up contrasts was analyzed using the Levene statistic, and when heterogeneity of variance was detected, pooled variances and degrees of freedom were used. Where significant differences were found, variables were explored as potential covariates in the subsequent regressions testing for moderation, as described below.

Zero-order correlations were used to examine general patterns of associations among the variables of interest, after which, we conducted regressions to determine whether the associations of perceptions of hostile and nonhostile criticism with overall PC were moderated by level of depressive or anxiety symptom severity. Each potential instance of moderation was checked in a separate regression, yielding four total regressions. Although this approach increased the chance for Type I error, it also preserved power, which is inherently low for detecting interactions, due to increased error variance when variables are multiplied. Despite the decreased power, interactions in regressions are the primary recommended method for detecting moderation (e.g., Stone-Romero & Anderson, 1994). Thus, each of these regressions had the overall PC rating as the dependent variable with any relevant covariates entered as independent

variables (IVs). Additional IVs in these regressions were (a) perceptions of hostile criticism or nonhostile criticism, (b) BDI-II score or BAI score, and (c) the relevant interaction between perceptions and symptoms.

For all regressions, variables were centered before creating interaction terms, and randomness of residuals, multicollinearity, and possible outliers (via inspection of standardized DFBETAs) were examined. No such problems were detected in any of the regressions. Probes of significant interactions were conducted by examining associations between perceptions of hostile or nonhostile criticism and general perceptions of criticism at high or low levels of depressive or anxiety symptoms (Aiken & West, 1991). For example, if a significant interaction was detected between depressive symptoms and perceptions of nonhostile criticism, the regressions were rerun to yield the association of perceptions of nonhostile criticism with general perceptions of criticism at one standard deviation above and below the mean on the BDI-II (see Aiken & West for more details).

### RESULTS

Means and standard deviations for all measures are reported in Table 1. One-way ANOVAs and bivariate correlations revealed no significant differences in ratings of general PC, perceptions of nonhostile criticism, or perceptions of hostile criticism by racial/ethnic group or sex. However, one-way ANOVAs did reveal that ratings of general PC,  $F(2, 94)=7.89, p=.001$ , perceived nonhostile criticism,  $F(2, 94)=5.28, p<.01$ , and perceived hostile criticism,  $F(2, 94)=6.00, p<.01$ , differed across target individual (i.e., parents, friends, romantic partners). Follow-up contrasts revealed that parents were rated as higher on general PC than friends or romantic partners,  $t(94)=3.97, p<.001$ , with no significant differences between friends and romantic partners,  $t(94)=0.57, p=.57$ . In contrast, romantic partners were rated as higher

Table 1  
Means, Standard Deviations, and Intercorrelations of Measures from Participants in Study 1

	<i>M (SD)</i>	Correlations				
		PC (General)	PC (Non-hostile)	PC (Hostile)	RAS	BDI-II
PC (General)	5.58 (2.56)					
PC (Non-hostile)	6.76 (2.20)	-.18				
PC (Hostile)	3.33 (2.08)	.36**	-.59***			
RAS	4.00 (1.00)	-.24*	.39***	-.38***		
BDI-II	16.01 (8.93)	.06	-.10	.18	-.22*	
BAI	16.59 (10.57)	.06	.02	.15	-.10	.49**

Note. PC=Perceived Criticism; RAS=Relationship Assessment Scale; BDI-II=Beck Depression Inventory – Second Edition; BAI=Beck Anxiety Inventory.

\*  $p<.05$ ; \*\*  $p<.01$ ; \*\*\*  $p<.001$ .

in nonhostile criticism and lower in hostile criticism, as compared to parents or friends ( $t[84.64] = -2.93, p < .01$ ;  $t[78.52] = 3.03, p < .01$ , respectively), with no differences between parents and friends (all  $ps > .15$ ). Thus, relative type was included as a covariate in regression analyses.

The bivariate correlations among general PC, perceptions of nonhostile criticism, and perceptions of hostile criticism are also shown in Table 1. Perceptions of hostile and nonhostile criticism were negatively correlated, with a large effect size. General ratings of PC were unrelated to perceptions of nonhostile criticism but positively related to perceptions of hostile criticism, with a medium effect size. Consistent with prior research (Renshaw, 2008), general PC was not significantly correlated with either depressive or anxiety symptom severity, nor were perceptions of nonhostile or hostile criticism. In contrast, all three ratings were significantly associated with relationship satisfaction. General criticism and hostile criticism were both negatively correlated with relationship satisfaction, whereas nonhostile criticism was positively correlated with relationship satisfaction. Due to these associations, relationship satisfaction was retained as a covariate in subsequent regression analyses.

*Moderation of Associations by Symptom Severity*

The four regressions of general PC included relative type (two dichotomous dummy coded variables to represent the three types of relatives) and RAS score as covariates. All four regressions were significant, but the only interaction term that approached significance was that between perceptions of

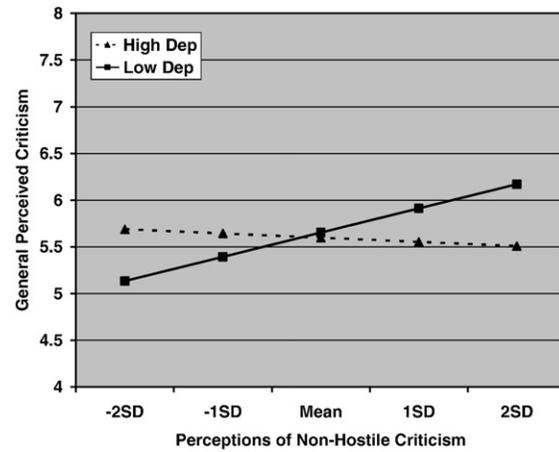


FIGURE 1 Association of overall ratings of perceived criticism with perceptions of nonhostile criticism, by level of depressive symptoms, in Study 1.

nonhostile criticism and depressive symptoms (see Table 2). Although this result was only marginally significant ( $p < .08$ ), we probed the results, due to the low power for detecting interactions. The subsequent probes indicated that, consistent with our a priori hypothesis, perceptions of nonhostile criticism became less positively associated with general ratings of PC as depressive symptoms increased. Specifically, the association of perceptions of nonhostile criticism with general PC was nonsignificantly positive ( $\beta = .28, p = .14$ ) at one standard deviation below the mean on the BDI-II but nonsignificantly negative and near zero ( $\beta = -.05, p = .67$ ) at one standard deviation above the mean on the BDI-II (see Figure 1).

Table 2  
Standardized Beta Coefficients from Regressions Predicting General Ratings of PC in Study 1

	Regressions with Perceptions of Non-hostile Criticism	Regressions with Perceptions of Hostile Criticism		
	Moderator=Depression <sup>a</sup>	Moderator=Anxiety <sup>b</sup>	Moderator=Depression <sup>c</sup>	Moderator=Anxiety <sup>d</sup>
Relative Type Variable 1	-.33***	-.36***	-.32**	-.33**
Relative Type Variable 2	-.38***	-.36***	-.32**	-.30**
Relationship satisfaction	-.27*	-.22*	-.18†	-.17†
Perceptions of hostile/non-hostile criticism	.11	-.01	.12	.21
Symptom Score	-.03	.07	-.06	.06
Perception * Symptom Interaction	-.20†	.01	.08	-.08

Note. Depression and anxiety scores are derived from the Beck Depression Inventory – Second Edition and Beck Anxiety Inventory.

†  $p \leq .10$ ; \*  $p \leq .05$ ; \*\*  $p \leq .01$ ; \*\*\*  $p \leq .001$ .

<sup>a</sup>  $F(6, 86) = 4.86, p < .001$ .

<sup>b</sup>  $F(6, 86) = 4.25, p = .001$ .

<sup>c</sup>  $F(6, 86) = 4.82, p < .001$ .

<sup>d</sup>  $F(6, 86) = 4.79, p < .001$ .

## Study 2

### METHOD

#### *Participants*

Five hundred forty-five undergraduate students completed all questionnaires during 1-hour mass testing sessions. Of the 467 individuals who specified their sex (78 left this item blank), 223 (47.8%) were women. Ages ranged from 17 to 49 years old ( $M=20.53$ ,  $SD=3.95$ ). Of the 331 individuals for whom race/ethnicity data were available (this question was only included in some of the testing sessions), 74.0% identified as White/Caucasian, 11.5% as Asian American, 7.3% as Hispanic, 5.7% as bi-/multiracial, and 1.5% as other. Two hundred eighty-two participants (51.7%) responded to interpersonal measures in regard to a parent or caregiver with whom they lived, 98 (18.0%) in regard to a parent or caregiver with whom they did not live, 65 (11.9%) in regard to a spouse or romantic partner with whom they lived, 72 (13.2%) in regard to a spouse or romantic partner with whom they did not live, and 27 (5.0%) chose another type of relative with whom they lived (1 respondent did not specify the relationship). Within this sample, a total of 96 students had scores above cutoffs for both depression and anxiety, 61 had scores above cutoffs for depression only, and 67 had scores above cutoffs for anxiety only. These 224 individuals comprised a subsample of individuals with at least mild depressive or anxiety symptoms, comparable to the sample in Study 1. This subsample did not differ from the rest of the sample in terms of the type of relative/friend about whom they provided responses, living status (i.e., living with or not living with target individual), race, or sex. Those meeting cutoffs ( $M=20.06$ ,  $SD=3.43$ ) were slightly younger than those not meeting cutoffs ( $M=20.87$ ,  $SD=4.28$ ),  $F(1, 506)=5.24$ ,  $p<.05$ .

#### *Measures*

Participants in this study completed the PCM (Hooley & Teasdale, 1989), PCM-T, and RAS (Hendrick, 1988), which are described in Study 1. Internal consistency of the slightly reworded RAS was high in this sample, as well, Cronbach's  $\alpha = .89$ . Because of the mass administration, the BDI-II and BAI could not be used, due to copyright policies. Thus, depression and anxiety were assessed using subscales from the Depression Anxiety Stress Scale (DASS; Lovibond & Lovibond, 1995a). The DASS is a 42-item, Likert-type, self-report measure of depression (14 items), anxiety (14 items), and stress (14 items). There is a corresponding short form (DASS-SF) that contains 7 items per scale. In two of

the four testing sessions, participants completed the depression and anxiety subscales from the full DASS. In the other two sessions, due to constraints on the number of questions that could be included, participants completed the depression and anxiety subscales from the DASS-SF.

On the DASS, participants are asked to indicate how much each statement has applied to them over the past week, on a scale from 0 (*did not apply to me at all*) to 3 (*applied to me very much or most of the time*). Scores on the DASS-SF are converted to be equivalent to those of the full version. Scores of 10 or higher on the depression subscale (DASS-D) represent at least mild depressive symptoms, and scores of 8 or greater on the anxiety subscale (DASS-A) represent at least mild anxiety symptoms. Research has indicated that the subscales of both the full version and the short form of the DASS have good test-retest reliability, convergent and divergent validity, and internal consistency (Antony, Bieling, Cox, Enns, & Swinson, 1998; Lovibond & Lovibond, 1995a). More specifically, Lovibond and Lovibond (1995b) found that the DASS-D and DASS-A demonstrate high correlations with the BDI-II ( $r=.74$ ) and the BAI ( $r=.81$ ), respectively. Both the DASS-D and DASS-A demonstrated good internal consistency in our sample, in both short form (Cronbach's  $\alpha = .90$  and  $.79$ , respectively) and full form (Cronbach's  $\alpha = .93$  and  $.85$ , respectively).

#### *Procedure*

All procedures were approved by the University of Utah's IRB. Participants were undergraduate students enrolled in the introductory psychology course at the University of Utah, a large intermountain western university, during the spring semesters of 2008 and 2009. Because this is the first course in which students must enroll before taking any other courses in psychology, and the data were collected in semesters after Study 1 was complete, no students in this sample would have been eligible to participate in Study 1. Participants provided written consent and then completed a large bank of measures, including several not relevant to this study (none of which were interpersonal in nature), during a 1-hour mass testing session. Participants chose whether to complete interpersonal questionnaires for this study in regard to a parent(s), a romantic partner, or another type of relative. The PCM (which contains the general question about PC) was separated from the PCM-T items by a number of other questions (e.g., RAS items). Order of administration was the same for all participants. As compensation, all participants received credit toward partial fulfillment of a research requirement in a psychology course.

## Results

The general analytic approach mirrored that for Study 1, with two slight alterations. First, analyses were conducted in both the full sample and the subsample of individuals with depressive and/or anxiety symptoms, to allow for full comparison across studies. Results for the full sample are reported, with results from the subsample reported only if they represent a difference in the overall pattern of results obtained. Second, given the much larger sample size in this study, a strict alpha of .05 was maintained throughout the analyses.

Means and standard deviations for all measures are reported in Table 3. There were no differences in ratings of general PC, perceptions of nonhostile criticism, or perceptions of hostile criticism between men and women or between Whites and non-Whites (all  $ps > .40$ ). However, general PC,  $F(2, 541) = 13.59$ ,  $p < .001$ , and perceptions of hostile criticism,  $F(2, 541) = 5.04$ ,  $p < .01$ , differed across relative types. Follow-up contrasts revealed that parents were rated more highly than romantic partners on general PC,  $t(214.60) = 4.86$ ,  $p < .001$ , with no other differences among types of individuals (all  $ps > .10$ ). In addition, respondents rated romantic partners as less hostilely critical than parents or friends,  $t(71.46) = -2.82$ ,  $p < .01$ , with no significant differences between parents and friends,  $t(30.10) = -.54$ ,  $p = .59$ . Due to these differences, relative type was again retained as a covariate in subsequent regression analyses.

The intercorrelations of general PC, perceptions of nonhostile criticism, and perceptions of hostile criticism are also shown in Table 3. Once again, perceptions of hostile and nonhostile criticism were negatively correlated, with a medium effect size. Furthermore, as in Study 1, general ratings of PC were uncorrelated with perceptions of nonhostile criticism but positively correlated with perceptions of hostile criticism, with a medium effect size.

Again, higher ratings of general PC were associated with poorer relationship satisfaction, with a small effect size, and the more specific perceptions of hostile and nonhostile criticism were more strongly correlated with relationship satisfaction, positively for nonhostile criticism and negatively for hostile criticism (see Table 3). Thus, relationship satisfaction was again retained as a covariate in subsequent regression analyses.

In contrast to the sample in Study 1, general PC was significantly correlated with both depressive and anxiety symptom severity in the full sample, albeit with a small effect size. In the subsample of individuals with at least mild depressive or anxiety symptoms, however, these correlations were smaller and nonsignificant ( $r = .09$  and  $.04$ , respectively), consistent with the results from Study 1 and from prior research on individuals with psychiatric disorders (Renshaw, 2008). In the entire sample, perceptions of hostile criticism also showed a medium-sized positive correlation with both depressive and anxiety symptoms, and perceptions of nonhostile criticism showed a small, negative correlation with depressive symptoms (see Table 3). Once again, in the subsample of individuals with depressive and anxiety symptoms, these associations were nonsignificant for nonhostile criticism ( $r = -.09$ ,  $p = .18$  for depressive symptoms;  $r = .06$ ,  $p = .39$  for anxiety symptoms) and smaller but significant for hostile criticism ( $r = .24$ ,  $p < .001$  for depressive symptoms;  $r = .16$ ,  $p < .05$  for anxiety symptoms). These differences may have been due simply to the restriction of range for depressive and anxiety symptoms, but they are more consistent with prior research on general PC ratings (Renshaw, 2008).

## MODERATION OF ASSOCIATIONS BY SYMPTOM SEVERITY

As in Study 1, each of the four regressions of general PC included relative type (two dichotomous

Table 3  
Means, Standard Deviations, and Intercorrelations of Measures from Participants in Study 2

	<i>M</i> ( <i>SD</i> )	Correlations				
		PC (General)	PC (Non-hostile)	PC (Hostile)	RAS	DASS-D
PC (General)	6.50 (2.67)					
PC (Non-hostile)	6.76 (2.32)	.05				
PC (Hostile)	3.12 (2.35)	.36***	-.37***			
RAS	4.28 (0.73)	-.18***	.41***	-.66***		
DASS-D	7.19 (7.99)	.15**	-.15***	.33***	-.32***	
DASS-A	6.12 (6.28)	.12**	-.05	.28***	-.24***	.63***

Note. PC = Perceived Criticism; RAS = Relationship Assessment Scale; DASS-D = Depression Anxiety Stress Scale – Depression Subscale; DASS-A = Depression Anxiety Stress Scale – Anxiety Subscale.

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ .

dummy coded variables to represent the three types of relatives) and RAS score as covariates. Also similar to Study 1, all four regressions were significant, and the only significant interaction term was that between perceptions of nonhostile criticism and depressive symptoms (see Table 4). Subsequent probes of this interaction indicated that, consistent with our a priori hypothesis, perceptions of nonhostile criticism became less positively associated with general ratings of PC as depressive symptoms increased. Specifically, at one standard deviation below the mean on the DASS-D, the association of perceptions of nonhostile criticism with general PC was significantly positive ( $\beta = .25, p < .001$ ), but at one standard deviation above the mean on the DASS-D, the association was nonsignificant and near zero ( $\beta = .06, p = .29$ ; see Figure 2).

The same patterns of significance were obtained in regressions conducted in the subsample of individuals with at least mild symptoms of depression and/or anxiety, with two exceptions. First, the interaction between symptoms of depression and perceptions of hostile criticism was significant ( $\beta = .19, p = .04$ ). A probe of this interaction yielded the opposite pattern of that obtained for perceptions of nonhostile criticism; specifically, the association of perceptions of hostile criticism and general ratings of PC became stronger as depressive symptoms increased ( $\beta = .20, p = .16$  at one SD below the mean;  $\beta = .43, p < .001$  at one SD above the mean). Second, the association of perceptions of nonhostile criticism with general PC was nonsignificant ( $\beta = .11, p = .18$ ) in the regression including perceptions of nonhostile criticism and anxiety symptoms.

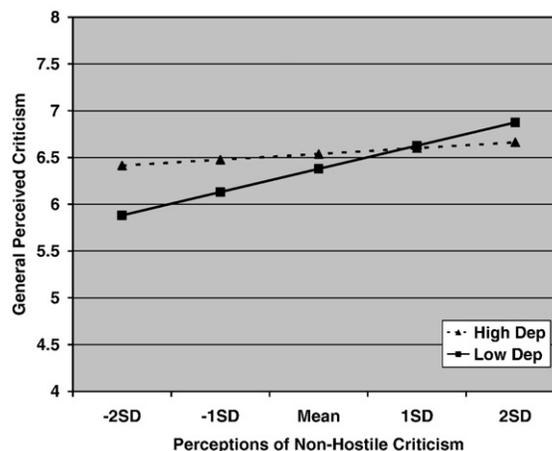


FIGURE 2 Association of overall ratings of perceived criticism with perceptions of nonhostile criticism, by level of depressive symptoms, in Study 2.

### Discussion

Although objective coding systems like that used to assess expressed emotion (Vaughn & Leff, 1976) distinguish between hostile and nonhostile forms for criticism, the standard assessment of individuals' own perceptions of criticism (PCM) does not. This distinction appears to have potential clinical relevance, particularly for those with anxiety disorders (Chambless & Steketee, 1999; Peter & Hand, 1988; Zinbarg et al., 2007). Thus, the present studies were designed to (a) expand the construct of perceived criticism to include perceptions of specifically hostile and nonhostile forms of criticism and (b) to examine the potential influence of depressive and anxiety symptoms on these perceptions.

Table 4  
Standardized Beta Coefficients from Regressions Predicting General Ratings of PC in Study 2

	Regressions with Perceptions of Non-hostile Criticism		Regressions with Perceptions of Hostile Criticism	
	Moderator=Depression <sup>a</sup>	Moderator=Anxiety <sup>b</sup>	Moderator=Depression <sup>c</sup>	Moderator=Anxiety <sup>d</sup>
Relative Type Variable 1	-.04	-.05	-.05	-.06
Relative Type Variable 2	-.20***	-.22***	-.17***	-.18***
Relationship satisfaction (RAS)	-.21***	-.22***	.09	.08
Perceptions of hostile/non-hostile criticism	.16***	.14**	.38***	.39***
Symptom Score	.08	.07	.04	.07
Perception * Symptom Interaction	-.10*	-.08	.00	-.06

Note. Depression and anxiety scores are derived from the Beck Depression Inventory – Second Edition and Beck Anxiety Inventory.

\*  $p \leq .05$ ; \*\*  $p \leq .01$ ; \*\*\*  $p \leq .001$ .

<sup>a</sup>  $F(6, 527) = 11.17, p < .001$ .

<sup>b</sup>  $F(5, 531) = 11.06, p < .001$ .

<sup>c</sup>  $F(6, 527) = 16.99, p < .001$ .

<sup>d</sup>  $F(6, 531) = 18.28, p < .001$ .

Results in two separate samples provided preliminary support for the distinction between perceptions of hostile and nonhostile criticism. Responses to these items were negatively correlated, indicating that they are not simply different levels of severity on the same continuum, but they were not so strongly negatively correlated as to suggest that they represent opposite ends of the same continuum. Rather, they appear to be related but independent perceptions. Overall, the pattern of correlations for perceptions of hostile criticism was similar to that for perceptions of overall criticism, only with stronger magnitudes. Specifically, both of these types of perceptions were unrelated to depressive and anxiety symptoms in Study 1, positively related to depressive and anxiety symptoms in Study 2, and negatively related to relationship satisfaction in both studies. Given these similarities and their positive correlation with each other, it appears that respondents' ratings of perceptions of overall criticism on the PCM may primarily reflect perceptions of hostile criticism. Such a trend helps explain prior findings that, similar to objective ratings of hostility, perceptions of overall criticism have typically been associated with poorer outcome, even in anxiety disorders (e.g., [Chambless & Steketee, 1999](#); but see [Fogler et al., 2007](#)).

On the other hand, perceptions of nonhostile criticism demonstrated more complex associations with variables in this study. Consistent with our a priori hypothesis, perceptions of nonhostile criticism became increasingly positively related to ratings of overall criticism as depressive symptoms decreased. In other words, the relation between individuals' ratings of overall criticism and what they consider to be nonhostile criticism becomes smaller, or even negative, as depressive symptoms increase. This pattern was obtained in both samples (albeit, with only a marginally significant interaction in our first, smaller sample); moreover, in the subset of individuals with at least mild symptoms of depression or anxiety from Study 2, the association of perceptions of hostile criticism with perceptions of overall criticism also grew stronger as depressive symptoms increased. It is important to note that these effects were small in magnitude, as can be seen in [Figures 1 and 2](#). Nevertheless, they are consistent with cognitive biases typical of depression. Specifically, relative to individuals without depression, those with depression tend to interpret situations more negatively ([Beck et al., 1979](#)) and to remember more negative events in general (e.g., [Williams et al., 2007](#)), leaving them potentially less likely to either recognize or recall nonhostile criticism. Moreover, anxiety symptom severity did

not moderate this association (and given the large sample size in our second study, it is unlikely that this lack of moderation was due to low power). Thus, the moderation of the association between perceptions of overall criticism and perceptions of nonhostile criticism appeared specific to depressive symptoms.

These results have multiple implications. Use of the PCM in interpersonally based research has grown in recent years, often in place of the longer and more intensive measures needed to fully assess expressed emotion (e.g., [Camberwell Family Interview](#); [Vaughn & Leff, 1976](#)). It appears that relying on this sole measure of perceived overall criticism, however, may neglect the potentially important distinction between hostile and nonhostile criticism. Although more research is needed, it appears that the two items we used to assess these more specific perceptions of criticism may help provide a more comprehensive picture of people's interpersonal environments than the PCM alone, while adding little length to assessment batteries. It must be acknowledged that assessing hostile and nonhostile criticism via patients' own perceptions clearly provides different information than using objective coders. Both methods have potential advantages and disadvantages, with objective coding offering a less biased assessment of the interpersonal environment, but individuals' perceptions offering a window into their own interpretations of their environment. In addition, objective coding is based only on a small sampling of behavior that is produced in an artificial environment (typically recorded in a laboratory), whereas individuals' perceptions are presumably based on behaviors from a variety of settings and time points. Interpersonal research that utilizes both methods can provide the most comprehensive understanding of the interpersonal environment, and such research might help clarify the similarities and differences in the type information obtained from these two different methodologies.

Our results also suggest some potential considerations with regard to the growing literature on the apparent benefits of nonhostile criticism for anxiety disorders. Based on this literature, researchers have recently suggested that a firm, possibly critical but nonhostile approach in family members may be optimal for patients with anxiety (e.g., [Renshaw, Steketee, Rodrigues, & Caska, in press](#); [Zinbarg et al., 2007](#)). Our results, however, suggest that it may be important to consider the potential influence of comorbid depression on such recommendations. Specifically, those with anxiety and comorbid depression may stand to benefit less from such an approach, because they may be less

capable of recognizing such an approach as nonhostile. Clearly, further research is needed before drawing such conclusions, as this is the first study to demonstrate possible differences in perceptions of criticism based on depressive symptoms, the effects obtained were fairly small in nature, and our samples were non-clinical in nature. However, our results do suggest that such research is warranted.

Finally, another noteworthy pattern that arose from these two studies was the positive association of nonhostile criticism with relationship satisfaction. This replicated result suggests that individuals rate relationships as more satisfying when they perceive higher levels of what they interpret as constructive criticism. Importantly, these correlations were detected even in samples of individuals with depressive and/or anxiety symptoms. Again, given that our measures were based solely on perceptions of respondents, it is impossible to know whether perceptions of nonhostile criticism correspond to actual nonhostile criticism. Future research is needed to investigate whether this relation holds across differing types of relationships, differing severity and types of psychological symptoms, and objective measures of hostile and nonhostile criticism.

The findings presented here have limitations that should be acknowledged when considering the results. First and foremost, our methodology did not directly address perceptions of specified behaviors. Rather, we relied on people's own perceptions of what they consider to be hostile and nonhostile criticism. Thus, we cannot draw conclusions about the influence of depressive symptoms on people's interpretations of specific situations. Second, as noted above, participants were recruited from college undergraduates. Research with clinical samples is needed to determine whether these results would generalize to a clinical population. Third, the order of item presentation was the same for all participants, which could have contributed to artifactual effects (e.g., priming). Future research should present items related to perceptions of criticism in a counterbalanced fashion, to evaluate whether such effects may occur. Finally, perceptions of criticism were each assessed via a single item, and are thus vulnerable to lower reliability. This approach was utilized due to the established reliability and predictive validity of the PCM (Renshaw, 2008), but a broader measure of perceptions of hostile and nonhostile criticism would likely provide more reliable assessments of these constructs. What is less clear is whether such a measure would also provide incremental validity above these two items.

These limitations notwithstanding, the present findings provide replicated evidence that people distinguish between perceptions of hostile and nonhostile criticism, and that this distinction may be clinically meaningful. It is our hope that these results will spur further research in this area. One relatively straightforward line of inquiry that could help address the questions raised by this study would be to explore depressive symptom severity as a potential moderator of the association of nonhostile criticism and treatment response in patients with anxiety disorders. A second potential approach would be to obtain ratings of a standardized set of sample critical behaviors from people with varying types and levels of psychological symptoms. Such an approach could allow for more definitive conclusions about how perceptions of specific situations might be affected by such symptoms. Approaches such as these have the potential to further our understanding of people's interpersonal environment, and the potential effect of those environments on psychological symptoms.

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