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BRIEF REPORT

Conceptualizing and Experiencing Compassion

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Does compassion feel pleasant or unpleasant? Westerners tend to categorize compassion as a pleasant or positive emotion, but laboratory compassion inductions, which present another's suffering, may elicit unpleasant feelings. Across two studies, we examined whether prototypical conceptualizations of compassion (as pleasant) differ from experiences of compassion (as unpleasant). After laboratory-based neutral or compassion inductions, participants made abstract judgments about compassion relative to various emotion-related adjectives, thereby providing a prototypical conceptualization of compassion. Participants also rated their own affective states, thereby indicating experiences of compassion. Conceptualizations of compassion were pleasant across neutral and compassion inductions. After exposure to others' suffering, however, participants felt increased levels of compassion and unpleasant affect, but not pleasant affect. After neutral inductions, participants reported more pleasant than unpleasant affect, with moderate levels of compassion. Thus, prototypical conceptualizations of compassion are pleasant, but experiences of compassion can feel pleasant or unpleasant. The implications for emotion theory in general are discussed.

Keywords: emotion, subjective experience, multidimensional scaling, affective circumplex, Conceptual Act Theory

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In most scientific models of emotion, *fear*, *disgust*, and *sadness* are categorized as unpleasant or "negative" emotions; *gratitude*, *joy*, and *pride* are categorized as pleasant or "positive" emotions. But human experience is more varied. There are times when negative emotions like *fear* can feel pleasant (e.g., riding a roller coaster), and positive emotions like *happiness* can feel unpleasant (e.g., after verbalizing a retort at a difficult person). These examples appear to violate traditional understandings of emotion, but they are common in everyday life (Condon, Wilson-Mendenhall, & Barrett, in press). Although labels provide an emotion category with a dedicated valence, these categories appear to contain multiple instances that vary from pleasant to unpleasant.

Compassion is of particular interest as empirical findings leave the question about compassion's valence unresolved (e.g., Lazarus, 1991). Although scientists and laypeople typically characterize compassion as a positive emotion (Keltner & Lerner, 2010; Shaver, Schwartz, Kirson, & O'Connor, 1987), reports of compassion experiences indicate that compassion can feel unpleasant. Images depicting poverty and vulnerable infants, for example, simultaneously elevated reports of compassion and distress (Simon-Thomas et al., 2012). The valence of compassion appears illusive, but a scientific account depends on a greater understanding of the subjective experience of compassion.

A newer perspective views an emotion's valence in more nuanced terms. The Conceptual Act Theory defines emotions as situated conceptualizations accompanied by shifts in core affective states (Barrett, 2006; Wilson-Mendenhall, Barrett, Simmons, & Barsalou, 2011). Emotion categories are abstract concepts, much like *truth* or *justice,* which integrate sensory information from the world, the body, and conceptual information from past experience to create a single gestalt. Over time, a person experiences various sensations in a situational context and learns to pair them with an emotion word, like "compassion." As a person encounters and learns different instances of the emotion, instances become stored in memory across modalities, thereby creating variation in the concept. Activating different situated conceptualizations of the emotion in the present moment will result in different feelings, some pleasant and some unpleasant depending on the context.[1]

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[1] Context includes prior experience, which is culturally bound. Buddhist taxonomies, for example, conceptualize compassion as virtuous—a category that typically includes a pleasant tone (cf., Dreyfus, 2002). Expert meditators likely have different conceptualizations and experiences of compassion relative to those in our samples, who have little to no meditation experience.

Neuroimaging data support the view that affect can vary among instances within an emotion category. When participants immersed themselves in different scenarios to induce feelings of *fear*, *sadness*, and *happiness* that varied in valence (e.g., pleasant fear of riding a roller coaster; unpleasant fear of giving an unprepared speech), brain regions tracked with the valence (orbitofrontal cortex) and arousal (amygdala) of the instance within and across categories (Wilson-Mendenhall, Barrett, & Barsalou, 2013). From this perspective, different instances of compassion might feel pleasant or unpleasant.

Although instances within an emotion category vary in valence, the prototypical conceptualization of the emotion links the category to a dedicated valence. The most well-known organization of emotion categories—within the affective circumplex structured by valence and arousal—is driven by prototypical episodes (Russell & Barrett, 1999). The prototype of fear, for example, is unpleasant and highly arousing. Likewise, the prototype of compassion appears to be pleasant and low arousal (Shaver et al., 1987). Nevertheless, the prototype of a category like compassion is not the one that is most frequently encountered, but rather the instance that maximally achieves the goal that the category is organized around (Barsalou, 2003). Humans develop categories to guide action and support specific goals. The goal *lose weight*, for example, is supported by the category *foods to eat on a diet* (Barsalou, 1985). Instances that maximally support that goal (i.e., foods with less calories) are most typical of the category, even if they are not the most frequently encountered (Barsalou, 1985). We hypothesize that emotion categories are likewise organized around goals, such as *escape threat* (fear) or *reduce suffering* (compassion) with specific instances varying in the degree to which they serve such goals. The current studies compared prototypical conceptualizations of compassion with experiences of compassion. We predicted that prototypical conceptualizations would link compassion with pleasant affect, but witnessing another's suffering would induce an unpleasant compassion experience.

Pilot Study

We conducted a pilot study to assess conceptualizations and experiences of compassion across different emotion inductions. This study involved procedures similar to the main study with minor exceptions.[2] Twenty-eight students (19 female; M_{age} = 20.71, SD_{age} = 1.44) received $10 and were randomly assigned to a *neutral* or *compassion* emotion induction. After the induction, participants rated the similarity of emotion-related adjectives that sampled all parts of the affective circumplex, thereby providing conceptualizations of various states. Finally, participants rated their own state in reaction to the induction. To test whether these emotion inductions influenced either conceptualizations or experience, we induced emotional states before both similarity ratings and state ratings.

Participants in the *compassion* condition reported feeling more compassion (M = 4.14, SD = 0.66) than in the *neutral* condition (M = 3.21, SD = 1.05), $t(26) = 2.80$, $p < .01$. We next submitted the similarity ratings to multidimensional scaling (MDS). This analysis assessed prototypical conceptualizations as determined by compassion's location along arousal and valence dimensions (cf., Barrett, 2004). Following both inductions, compassion fell into the *pleasant-low arousal* quadrant (see Figure S1), indicating that all participants conceptualized compassion as pleasant.

In contrast, self-reports indicated that experiences of compassion varied. To compare feelings of compassion with feelings of pleasant and unpleasant states, we created a pleasant state index (the average rating of *awed*, *excited*, *grateful*, *happy*, *loving*, *proud*, *tender*, *warm*; $\alpha = .62$) and an unpleasant state index (the average rating of *afraid*, *angry*, *distressed*, *guilty*, *sad*, *sorrowful*, *troubled*, *upset*; $\alpha = .90$). A mixed 2 (condition: neutral, compassion) × 2 (emotion rating: pleasant, unpleasant) ANOVA with emotion rating as the repeated factor revealed a significant interaction, $F(1, 26) = 30.44$, $p < .001$. Those in the *compassion* condition felt more unpleasant (M = 3.13, SD = 0.59) compared with those in the *neutral* condition (M = 1.44, SD = 0.55), $t(26) = 7.85$, $p < .001$, but no difference emerged for pleasant ratings, ($M_{neutral} = 2.80$, $SD_{neutral} = 0.74$, $M_{compassion} = 2.66$, $SD_{compassion} = 0.57$), $t(26) = 0.54$, $p > .59$.

These findings provided the first evidence that experiences of compassion (as unpleasant) differed from prototypical conceptualizations of compassion (as pleasant). To provide a more stringent test of the mismatch between conceptualizations and experiences of compassion, we conducted a second study and induced neutral and compassion states within participants and compared results with those who received only neutral inductions. We expected all participants to conceptualize compassion as pleasant, but only those who received a compassion induction to experience compassion as unpleasant.

Method

Participants

Twenty-six students (20 female; M_{age} = 20.50, SD_{age} = 2.10) participated in exchange for $10. Each was randomly assigned to a *control* (containing two neutral inductions) or *compassion* condition (containing one neutral and one compassion induction).

Materials

Emotion inductions. Audio clips were selected from StoryCorps (www.storycorps.org). In all clips, real people described events from their lives for approximately 2 minutes. A picture of the person accompanied each clip. *Neutral-baseline* clips consisted of (1) a man talking about the time he met J.D. Salinger and (2) a doorman talking about making others happy through his job at the Plaza Hotel. *Neutral-critical* clips consisted of (1) an owner of a pest-control company talking about the satisfaction he gets from helping others and (2) a man talking about his experience as an announcer for the New York Yankees. *Compassion* clips consisted of (1) a man and wife discussing the man's experience with Alzheimer's, the man's love for his grandson, and the wife's gratefulness for being able to take care of the man and (2) a woman telling about her sister's death in a subway accident and her most prized possession—a voicemail left by her sister that said "I love you!"

[2] See supplementary online material (SOM) for details.

Similarity judgments. For each judgment, participants rated the similarity of two feelings on a 7-point scale (1 = *very dissimilar*, 7 = *very similar*). Participants rated all possible pairs of the following terms: *afraid, alert, angry, calm, compassionate, distressed, excited, grateful, guilty, happy, proud, quiet, sad, sorrowful,* and *sympathetic*. Lists were constructed using the Ross ordering method (Davison, 1983).

Emotion ratings. Participants rated how well emotion terms (see Table S2 for complete list) described their feeling (1 = *not at all*; 5 = *very much*) in response to the audio clips for each induction (e.g., "How compassionate did you feel?").

Procedure

Participants completed two blocks that contained an emotion induction and a set of similarity judgments. In each block, participants listened to two audio clips selected to evoke a neutral or compassionate state. All participants completed an initial neutral block, followed by a second neutral block (*control* condition) or compassion block (*compassion* condition). Participants completed 105 unique similarity judgments following the emotion induction in each block and completed emotion ratings for both inductions upon finishing both blocks. They received a 5-min break and worked on a Sudoku puzzle between blocks.

Results

Manipulation Check

A mixed 2 (time: baseline, critical) × 2 (condition: control, compassion) ANOVA with time as the repeated factor revealed a significant interaction, $F(1, 24) = 8.46$, $p < .01$. Those in the *compassion* condition reported increased compassion following the critical compassion induction ($M = 3.85$, $SD = 0.99$) compared with the baseline neutral induction ($M = 2.77$, $SD = 1.30$), $t(12) = 2.34$, $p < .05$. Those in the *control* condition felt slightly more compassion after the baseline neutral induction ($M = 3.69$, $SD = 1.32$) than the critical neutral induction ($M = 3.00$, $SD = 0.91$), $t(12) = 1.74$, $p < .11$. The differences between conditions for baseline ratings of compassion $t(24) = 1.80$, $p > .08$, unpleasant states, $t(24) = 1.95$, $p > .06$, and pleasant states, $t(24) = 0.68$, $p > .50$, did not reach conventional levels of statistical significance (see Figure 2).

Similarity Ratings

We next obtained INDSCAL MDS solutions for the similarity ratings for each induction. Stress × Dimension plots revealed a clear elbow at the two-dimensional solutions (Stress ≤ 0.23, RSQ ≥

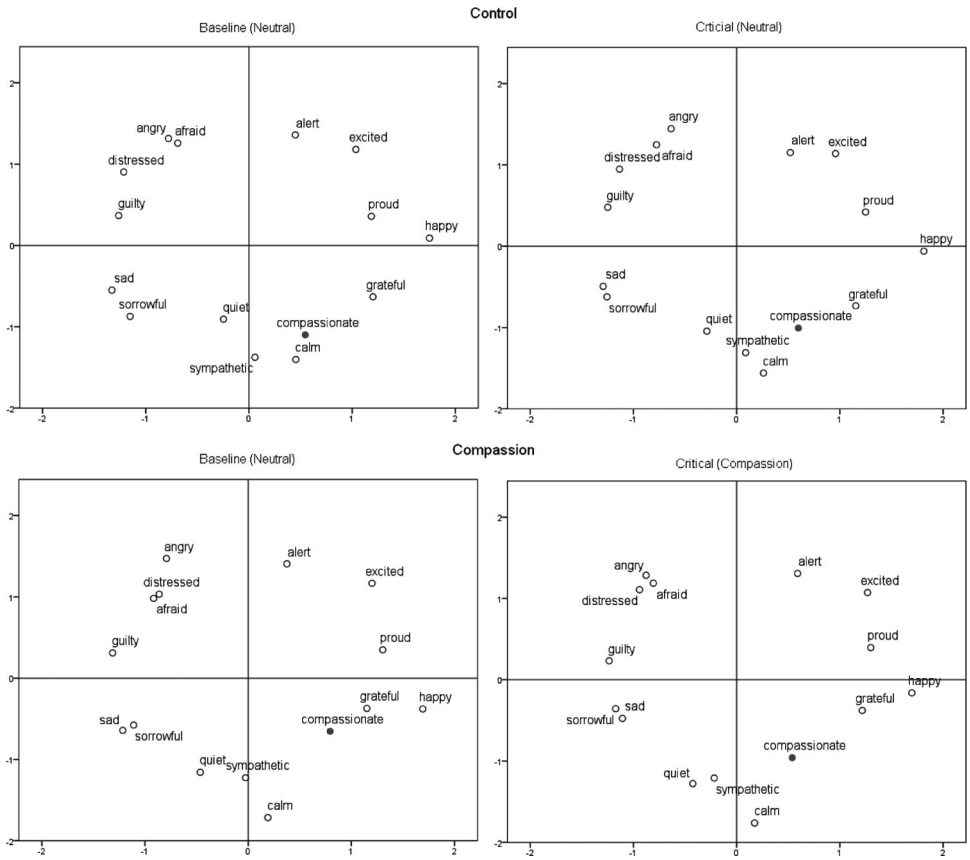

Figure 1. Representations of emotion concepts obtained from similarity ratings following each induction. Valence is the horizontal axis, and arousal is the vertical axis.

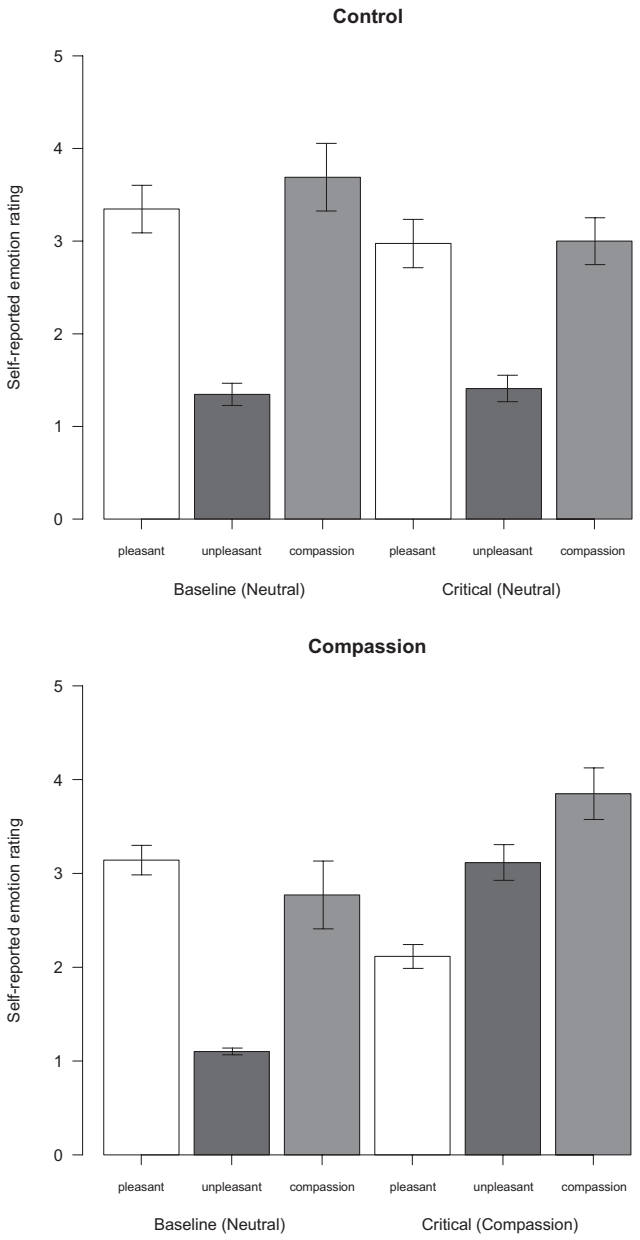

Figure 2. Mean (± one *SE*) ratings of experienced compassion, pleasant, and unpleasant states following each induction.

0.69; see Figure S2), indicating a two-dimensional solution best modeled the similarity ratings and accounted for a large proportion of variance in the distances between emotion-related words. A plot of the group MDS coordinates indicated the words fell in a circular order around two dimensions of valence and arousal (see Figure 1). As predicted, compassion fell into the *pleasant, low arousal* quadrant for all inductions, meaning all participants conceptualized compassion as pleasant.

Self-Reported Emotion Ratings

To examine the valence underlying experiences of compassion, we compared self-reported feelings of compassion (using the single item *compassion*) with reports of various pleasant and unpleasant states using a pleasant state index (the average rating of *awed*, *excited*, *grateful*, *happy*, *loving*, *proud*, *tender*, *warm*; $\alpha = .89$) and an unpleasant state index (the average rating of *afraid*, *angry*, *distressed*, *guilty*, *sad*, *sorrowful*, *troubled*, *upset*; $\alpha = .87$). Because we expected ratings of experienced compassion, pleasant, and unpleasant states to differ from each other between inductions, we treated them as levels of one factor in the following analysis. A mixed 2 (time: baseline, critical) × 3 (emotion rating: compassion, pleasant, unpleasant) × 2 (condition: control, compassion) ANOVA with time and emotion rating as repeated factors revealed a significant three-way interaction, $F(2, 48) = 14.26$, $p < .001$ (see Figure 2).[3] Two mixed 2 (time) × 3 (emotion rating) ANOVAs separately examined each emotion condition. A significant two-way interaction emerged in the compassion condition, $F(2, 24) = 28.02$, $p < .001$, but not the neutral condition, $F(2, 24) = 2.34$, $p > .11$. We further examined differences among emotion ratings within each emotion induction using four separate repeated measures ANOVAs. Post hoc tests with Bonferroni corrections revealed that ratings of compassion and unpleasant states exceeded ratings of pleasant states ($ps < .002$) after the critical compassion induction. After all neutral inductions, ratings of compassion differed from ratings of unpleasant states ($ps < .002$) but not pleasant states ($ps > .4$).[4]

Participants' experience of compassion during exposure to others' suffering was associated with heightened unpleasant affective states. Compassion and empathic distress, however, are theoretically distinct constructs (Klimecki & Singer, 2012). Thus, we examined whether participants differentiated compassion from distress when reporting on their unpleasant affective state following the compassion induction. A high positive correlation between self-reported compassion and distress would indicate that participants used the terms to represent a global unpleasant state, whereas a low correlation would indicate that participants differentiated compassion from distress (see Lindquist & Barrett, 2008). Because we predicted self-reports of compassion to covary with unpleasant states following the *compassion* induction, we also examined correlations of compassion and distress with other typical unpleasant states (afraid, angry, concerned, distressed, guilty, sad, sorrowful, sympathetic, upset).

Following the compassion induction, experiences of compassion and distress did not correlate ($r = .31$, $p > .3$; see Table S3). Ratings of compassion correlated with sympathy and love ($rs \geq .65$, $ps < .05$), but not angry, concerned, or troubled ($rs \leq .43$; $ps > .25$). In contrast, ratings of distress correlated with angry, concerned, sympathy, troubled, and upset ($rs \geq .57$; $ps < .05$). Although ratings of compassion and distress converged with sympathy, ratings of distress converged with unpleasant states that compassion did not (angry, concerned, troubled), suggesting participants differentiated unpleasant compassion from distress.[5]

[3] Repeated measures MANOVAs revealed the same results. All ANOVAs met the assumption of sphericity except for one on the baseline ratings within the *compassion* condition. This effect remained significant using a Greenhouse-Geisser correction, $F(1.26,15.12) = 22.53$, $p < .001$.

[4] See Table S2 for all emotion ratings.

[5] A similar pattern emerged in the pilot study (see SOM).

Discussion

Our results support the view that an emotion category contains a variety of instances, with one particular variety representing the prototypical conceptualization. The similarity ratings tapped prototypical conceptualizations, including compassion as pleasant (Shaver et al., 1987). Yet, experiences of compassion were unpleasant (following exposure to another's suffering) or pleasant following neutral inductions (perhaps because they conveyed something positive that elicited a "heart-warming" compassion). These data clarify the nature of compassion's valence and encourage further exploration of emotion heterogeneity. We expect these results to generalize to other emotion categories, such as sadness (sadness may feel pleasant, e.g., when celebrating the life a passed loved one) or gratitude (which may at times feel unpleasant).

An alternative explanation suggests that participants experienced mixed affect during the compassion induction. It is more likely, however, that people only experience one phenomenological state at one moment. Conscious experience can move at great speed (estimated at 100–150 ms per conscious moment; Edelman & Tononi, 2000; Gray, 2004), so that pleasant and unpleasant experiences can come in and out of focus quickly, like different perceptions of a Necker cube. Research that limits the time window to momentary experience does not find dialectic representations at single moments (Scollon, Diener, Oishi, & Biswas-Diener, 2005). Thus, it is unlikely that pleasure and displeasure co-occur in real time, although people can quickly shift from one experience to another and summarize all of the contents in working memory (Barrett, Mesquita, Ochsner, & Gross, 2007).

Finally, these data raise questions concerning the functions of different conceptualizations of an emotion category. An emotion category, like compassion, refers to a population of instances that vary and therefore support outcomes appropriate to the situation. Similarity ratings, however, represent the prototypical experience, which is the one that maximally achieves the goal that the category is organized around (Barsalou, 2003). Just as an arousing experience of anger might best facilitate the removal of an obstacle in the environment, a pleasant, calm experience of compassion might best facilitate the reduction of another's suffering. Calm compassion in the face of another's suffering may in fact constitute one primary outcome of contemplative practice. Recent work found that participants reacted to others' distress with unpleasant affect; however, after 6 hours of loving-kindness training, the same participants reacted to the same stimuli with pleasant affect (Klimecki, Leiberg, Lamm, & Singer, 2013). Future work should examine compassion conceptualizations across different demographics, contexts, and goal-states, which will ultimately advance the scientific understanding of compassionate experience and compassionate action.

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Supplementary Online Material

Methods of Pilot Study

The pilot study involved the same stimuli and procedures as the main study with minor exceptions. Those differences are reported here. Twenty-eight students (19 female; M_{age} = 20.71 years, SD_{age} = 1.44 years) participated in exchange for $10 and were randomly assigned to a *neutral* or *compassion* emotion induction. Participants completed two blocks of emotion inductions (See Table S1 for induction content) and similarity judgments. In each block, participants listened to two audio clips selected to evoke a neutral or compassionate state. In total, participants listened to four compassion or four neutral clips presented in random order across two blocks. Participants then completed 150 unique similarity judgments immediately following each block of the listening task. Participants rated the similarity of all possible pairs of 25 emotion-related adjectives. The terms included *activated, afraid, alert, angry, in awe, bored, calm, compassionate, concerned, distressed, embarrassed, excited, grateful, guilty, happy, loving* (defined by the experimenter as an affectionate feeling for any person, rather than an exclusive feeling for a romantic partner), *proud, quiet, sad, still, sorrowful, sympathetic, tender, upset,* and *warm* (the term *troubled*, although used in self-reported ratings, was unintentionally left out of the similarity ratings). Unlike the main study, which collected two separate sets of 105 similarity judgments, the pilot study collected a single set of 300 similarity judgments divided across two blocks (fewer terms were used in the main study to allow for 2 complete sets). Participants rated their own state after completing both blocks of the induction and similarity ratings. In addition to rating their state along discrete emotion terms, participants in both studies also marked a 9×9 affect grid (Russell, Weiss, & Mendelsohn, 1989) to describe the feeling they experienced during each clip along valence (1=*unpleasant*; 9=*pleasant*) and arousal (1=*low arousal*; 9=*high arousal*) dimensions. Patterns of results from the affect grid largely matched patterns from discrete emotion ratings.

Supplementary Analyses for Pilot Study

Self-reported affect ratings. In addition to analyzing reports of various pleasant and unpleasant emotion states, we also analyzed reports of valence and arousal collected via the affect grid. Those in the *compassion* condition reported feeling more unpleasant (M = 2.86, SD = 1.04) compared with those in the *neutral* condition (M = 6.75, SD = 0.94), $t(26) = 10.43$, $p < .001$. The compassion induction also decreased arousal (M = 4.25, SD = 0.73) compared with the neutral induction (M = 5.50, SD = 0.73), $t(26) = 4.51$, $p < .001$ (see Table S1).

Similarity ratings. To compare the stability of the two-dimensional MDS solutions across conditions, we computed congruence coefficients for each dimension across the *neutral* and *compassion* solutions (Davison, 1983; Barrett, 2004). Coefficients of congruence were computed by comparing the MDS coordinates for all items on valence and arousal dimensions. The two solutions had an acceptable level of stability as indicated by congruence coefficients of .81 (valence) and .70 (arousal).

Supplemental Analyses for Main Study

Self-reported affect ratings. A mixed 2(time: baseline, critical) × 2(condition: control, compassion) ANOVA, with time as the repeated factor, revealed a significant interaction on self-reported valence, $F(1, 24) = 86.72$, $p < .001$. Post-hoc analyses revealed that, among participants in the *compassion* condition, self-reported valence was unpleasant following the critical compassion induction compared with the baseline neutral induction, $t(12) = 13.95$, $p < .001$, but no difference emerged across time points among participants in the *neutral* condition, $t(12) = 0.99$, $p > .30$ (see Table S1). Furthermore, valence was more unpleasant following the critical compassion induction compared with the critical neutral induction $t(24) = 11.84$, $p < .001$. A mixed 2(time: baseline, critical) × 2(condition: control, compassion) ANOVA, with time as the repeated factor also revealed a significant interaction on self-reported arousal, $F(1, 24) = 4.46$, $p < .05$. Participants in the *compassion* condition reported marginally less arousal following the critical compassion induction compared with the baseline neutral induction, $t(12) = 1.74$, $p < .12$. Compared with those in the neutral condition, those in the compassion condition reported less arousal following the critical induction, $t(24) = 2.71$, $p < .05$.

Similarity ratings. To compare the stability of the two-dimensional MDS solutions across conditions and inductions, we computed congruence coefficients for each dimension across the four solutions (Davison, 1983; Barrett, 2004). Coefficients of congruence were computed by comparing the MDS coordinates for all items on valence and arousal dimensions. All four solutions were nearly identical to one another (valence >.98; arousal > .97).

Supplementary Table 1.

Content of audio clips used in emotion manipulations.

Induction	Content	Pilot Study	Main Study
Compassion	A man and wife talk about the man's experience with Alzheimer's. The man expresses love for his grandson and the wife expresses her gratefulness to have the opportunity to care for the man.	Yes	Yes (critical)
	A woman tells her friend about the time she heard that her sister was killed in a subway accident. The woman says that her most prized possession is a voicemail left by her sister. The audio clip presents a portion of the voicemail, yelling out, "Hey Kendra, I love you!"	Yes	Yes (critical)
	Two sisters talk about their final Thanksgiving with their mother, who died of breast cancer shortly after. They talk about future holidays and express thanks for their mother.	Yes	No
	A couple reminisce about their daughter, who died of a rare disease at age 4. They talk about her struggles relative to other children and rejoice in how the girl changed their life perspective.	Yes	No
Neutral	A man talks about the time he traveled to New Hampshire to meet the famous but recluse author, J.D. Salinger.	Yes	Yes (baseline)
	A man tells his friend about his job as a doorman at the Plaza Hotel. He describes the job as all about making others happy.	Yes	Yes (baseline)
	A man talks about the satisfaction he gains from helping others as an owner of a pest-control company.	Yes	Yes (critical)
	A man tells his friend about his experience as an announcer for the New York Yankees, during which he announced the president, Dwight Eisenhower, who gave out the first pitch.	Yes	Yes (critical)

Note. All audio clips can be found at www.StoryCorps.org.

Supplementary Table 2.

Mean (SD) ratings of experienced valence, arousal, and specific emotion ratings.

Outcome variable	Pilot Study		Main Study			
	Neutral	Compassion	Neutral		Compassion	
			Baseline	Critical	Baseline	Critical
Valence[#]	6.75 (0.94)	2.86 (1.04)***	6.54 (1.14)	6.15 (0.99)	7.46 (1.05)*	1.88 (0.84)***
Arousal[#]	5.50 (0.73)	4.25 (0.73)***	5.19 (1.30)	5.69 (1.07)	5.19 (1.38)	4.38 (1.37)*
Compassionate	3.21 (1.05)	4.14 (0.66)**	3.69 (1.32)	3.00 (0.91)	2.77 (1.30)†	3.85 (0.99)*
Afraid	1.07 (0.27)	2.36 (1.15)***	1.31 (0.63)	1.23 (0.60)	1.08 (0.28)	3.08 (1.12)***
Alert	3.14 (1.03)	2.43 (1.28)	2.95 (0.76)	3.00 (1.23)	2.92 (1.26)	3.08 (1.12)
Angry	1.29 (0.47)	1.64 (0.93)	1.00 (0.00)	1.46 (0.97)	1.00 (0.00)	2.08 (1.19)***
Awed	2.64 (1.34)	2.36 (1.34)	2.69 (1.32)	2.62 (1.50)	2.69 (1.32)	2.62 (1.33)
Bored	2.14 (0.95)	1.64 (0.74)	2.15 (1.21)	2.08 (1.04)	1.77 (0.83)	1.85 (1.21)
Calm	4.14 (0.95)	2.86 (1.17)**	3.85 (0.80)	3.00 (1.08)	4.00 (0.82)	2.46 (1.33)
Concerned	2.36 (1.22)	4.21 (1.05)***	1.85 (1.07)	1.46 (0.78)	1.38 (0.65)	3.92 (0.95)***
Distressed	1.50 (0.76)	3.14 (1.10)***	1.62 (1.04)	1.46 (0.88)	1.15 (0.38)	3.46 (1.33)***
Excited	3.07 (0.92)	1.21 (0.43)***	3.08 (1.55)	3.38 (1.45)	3.08 (1.04)	1.31 (0.48)***
Grateful	2.07 (1.27)	3.93 (1.49)**	3.54 (1.33)	2.38 (0.96)	2.77 (1.17)	3.15 (1.73)
Guilty	1.43 (1.09)	2.00 (1.30)	1.23 (0.60)	1.08 (0.28)	1.15 (0.38)	1.77 (1.01)*
Happy	3.36 (0.93)	1.86 (0.86)***	3.77 (1.01)	3.46 (1.05)	3.85 (0.69)	1.31 (0.48)***
Loving	2.43 (1.02)	3.50 (0.94)**	3.31 (1.32)	2.77 (1.59)	3.46 (0.97)	3.15 (1.21)
Proud	2.07 (1.27)	2.07 (1.14)	2.92 (1.55)	2.62 (1.61)	2.23 (1.24)	1.38 (0.65)*
Sad	1.64 (1.08)	4.57 (0.51)***	1.54 (0.78)	1.54 (0.66)	1.08 (0.28)†	4.15 (0.56)***
Sorrowful	1.64 (1.08)	4.21 (0.89)***	1.38 (0.87)	1.46 (0.78)	1.15 (0.38)	4.15 (0.69)***
Still	3.29 (1.07)	3.07 (0.83)	3.08 (1.04)	2.77 (1.01)	2.69 (1.11)	3.00 (1.08)
Sympathetic	3.00 (1.47)	4.57 (0.65)***	3.38 (0.77)	2.08 (1.12)	1.62 (0.77)***	4.23 (0.83)***
Tender	3.14 (1.23)	3.93 (0.62)*	2.62 (1.45)	2.23 (1.36)	2.08 (1.26)	2.54 (1.56)
Tired	2.57 (1.22)	2.00 (0.96)	2.08 (1.26)	2.31 (0.86)	2.08 (1.32)	2.46 (1.13)
Troubled	1.57 (0.85)	3.57 (1.09)***	1.15 (0.38)	1.62 (1.12)	1.23 (0.44)	3.77 (1.09)***
Upset	1.36 (0.63)	3.57 (1.09)***	1.31 (0.48)	1.38 (0.65)	1.08 (0.28)	3.92 (1.04)***
Warm	3.57 (0.94)	2.43 (1.22)**	3.62 (1.04)	3.31 (1.32)	3.69 (0.86)	1.92 (1.12)**

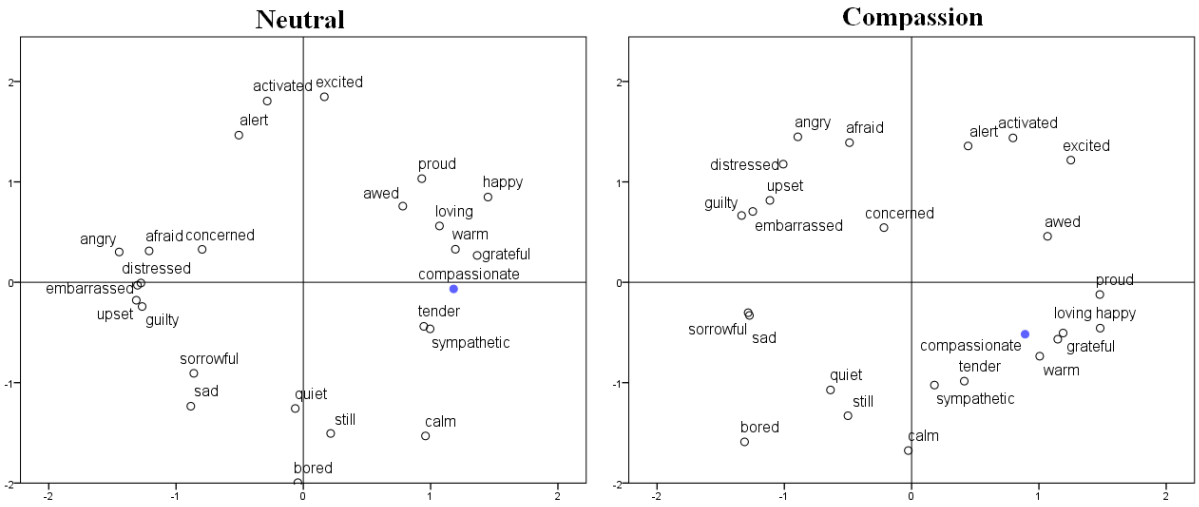
Note. [#]indicates a scale of 1 to 9; all other variables measured on a scale of 1 to 5. Flagged comparisons indicate a between-groups difference from the comparable neutral induction. † $p < .1$; * $p < .05$; ** $p < .01$; *** $p < .001$.

Supplementary Table 3.

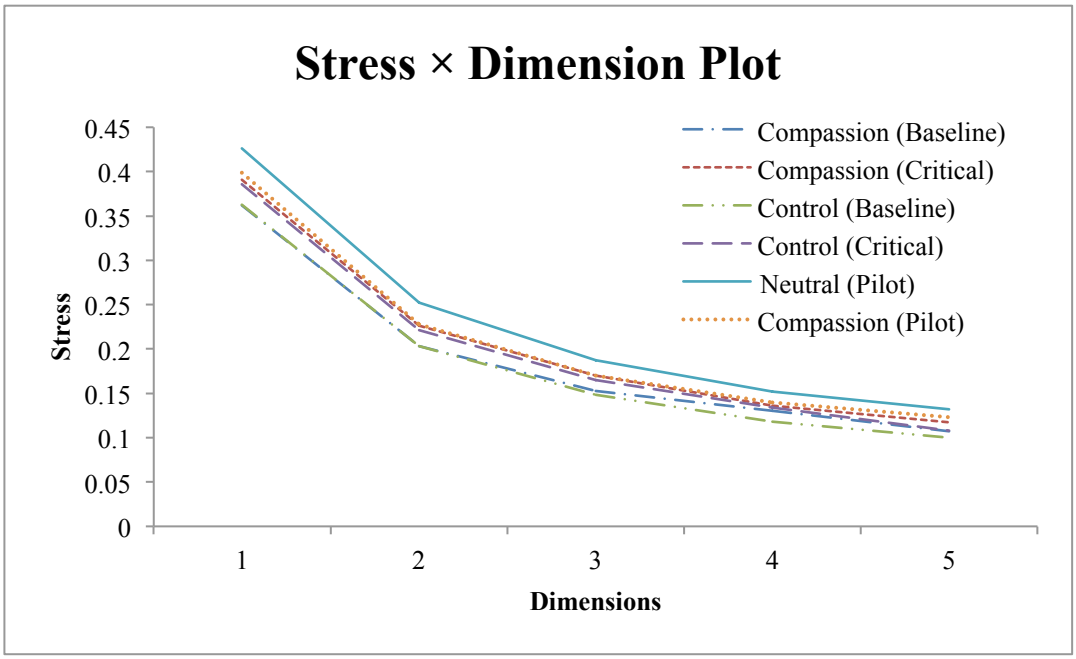
Correlations between self-reported compassion, distress, and other unpleasant emotion states following the critical compassion manipulation.

	Main Study		Pilot Study	
	Emotion category		Emotion Category	
Emotion Category	Compassionate	Distressed	Compassionate	Distressed
Compassionate	-	.31	-	.29
Distressed	.31	-	.29	-
Sad	.50†	.46	-.03	.12
Sorrowful	.53†	.46	-.05	.12
Sympathetic	.66*	.57**	.51†	-.02
Tender	.55†	.15	.22	.24
Loving	.65*	.11	.12	-.22
Grateful	.51†	.29	.17	-.18
Upset	.48†	.63**	.41	.31
Afraid	.09	.48†	.23	.32
Angry	.15	.71**	.34	.51†
Concerned	.34	.82***	.17	.50†
Troubled	.43	.71***	.41	.70**
Guilty	.30	.33	.36	.11
Calm	-.39	-.55**	.13	-.04

Note. † $p < .1$; * $p < .05$; ** $p < .01$; *** $p < .001$.



Supplementary Figure 1. Representations of emotion concepts obtained from similarity ratings in pilot study. Valence is the horizontal axis, and arousal is the vertical axis.



Supplementary Figure 2. The fit of each solution at a given dimensionality for the similarity judgments is indicated by a fit statistic (called stress) plotted against the number of dimensions contained in each solution. The stress value indicates the extent of the solution's departure from the observed data. Identifying the "elbow" in the plot indicates the optimal number of dimensions needed to represent the stimulus structure. INDSCAL does not provide a one-dimension solution, thus we performed a nonmetric group Euclidean distance analysis to check the one-dimension stress score. This analysis produced stress values identical to the INDSCAL group solutions. "Elbows" were detected at the two-dimensional solution in all conditions across studies.

References for Supplementary Material

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