

IT'S NOT THAT BAD: SOCIAL CHALLENGES TO EMOTIONAL DISCLOSURE ENHANCE ADJUSTMENT TO STRESS

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Studies conducted in the United States ($n = 115$) and Spain ($n = 146$) examined how talking about an acute stressor in different social contexts influences cognitive, emotional, and physiological adjustment. In both studies, female college students viewed a video dramatizing a real-life, gang rape scene on two separate days. After the first viewing, participants were randomly assigned to one of four social conditions: *no talk*, *talk* alone about their reactions, *talk* to a *validating* confederate about their reactions, or *talk* to a *challenging* confederate about their reactions. Participants in the *challenge* condition showed the greatest emotional, cognitive, and physiological benefits across cultures, whereas participants in the *validate* and *talk* conditions evidenced only modest benefits. These findings suggest that the social context of disclosure has a strong influence on adjustment processes and that providing an alternative and more sanguine perspective can help individuals recover from acute stressors.

Keywords: Emotional expression; Disclosure; Trauma; Stress

People seldom can contain themselves from sharing intensely felt emotions with others, whether it is an outpouring of grief associated with the loss of a loved one or the pronouncements of joy after the birth of a healthy baby. When there is intense emotion, social sharing of emotions often follows (Rime *et al.*, 1991). Emotional disclosure is a window into the inner experience of the discloser. However, in the context of stressful or traumatic events, the social expression of emotions, particularly negative emotions, not only reflects inner subjective and physiological states, but also is a means of coping with distress. Thus, the expression of the negative emotion reveals one's emotional state and simultaneously may change that emotional state. Kennedy-Moore and Watson (2001) have dubbed this reciprocal relation between emotional experience and emotional expression the "paradox of distress".

In Western cultures, many mental health professionals, as well as laypersons, believe that expressing one's emotions and thoughts in the aftermath of a stressful event

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promotes mental and physical health, and that to inhibit such expression is detrimental to health (Kennedy-Moore and Watson, 1999; Pennebaker, 1995; Stanton *et al.*, 2000). Surprisingly, evidence to support these assumptions has only emerged in the last two decades, and we have gained relatively little insight into *why* or *when* emotional expression facilitates adjustment to stressors. In particular, we know little about how the social context of emotional expression influences adjustment (Lepore, 1997). Emotional expression about traumatic or stressful experiences typically involves listeners who are trusted or intimate members of one's social network. Whether the emotional expression facilitates coping may depend on how members of the social network respond (Kelly and McKillop, 1996; Lepore *et al.*, 1996; Pennebaker and Harber, 1993; Revenson *et al.*, 1991). This paper addresses some of these issues by examining the effects of emotional expression on adjustment to an acute stressor under experimentally manipulated social conditions.

EMOTIONAL EXPRESSION AND ADJUSTMENT: COGNITIVE RESTRUCTURING AND DESENSITIZATION

A growing body of empirical data suggests that expressing stress-related thoughts and feelings can improve physical and mental health (Lepore and Smyth, 2002; Pennebaker, 1993; Smyth, 1998). For example, talking and writing about emotional responses to stressors have been linked to better role and physical functioning (Kelley *et al.*, 1997; Pennebaker *et al.*, 1990; Smyth *et al.*, 1999; Spera *et al.*, 1994), fewer reports of illness and physician visits (Lepore and Greenberg, 2002; Pennebaker and Beall, 1986; Pennebaker *et al.*, 1990), decreased distress (Lepore, 1997), enhanced immune system functioning (Esterling *et al.*, 1994; Pennebaker *et al.*, 1988; Petrie *et al.*, 1995), decreased autonomic arousal (Pennebaker *et al.*, 1987), fewer intrusive thoughts (Klein, 2002; Lange *et al.*, 2002; Lepore *et al.*, 2000), and increased positive affect (Mendolia and Kleck, 1993).

The act of expressing stress-related thoughts and feelings may influence adjustment by stimulating positive cognitive changes (for a detailed discussion, see Kennedy-Moore and Watson, 2001). For example, disclosure may help people to understand their emotional responses to stressors (Clark, 1993; Cordova *et al.*, 2001; Lepore, 2001; Lepore *et al.*, 2000, 2002), which can help to enhance strategies for regulating emotions (Greenberg *et al.*, 1996; Kennedy-Moore and Watson, 2001). Expressing one's emotional responses to stressors may increase insight by helping people to impose a cognitive structure on stressful experiences (Harber and Pennebaker, 1992; Pennebaker, 1989). By putting a stressful experience into words, individuals can potentially construct a coherent narrative, which may render the experience more understandable to themselves and to others to whom they disclose (Clark, 1993; Meichenbaum and Fitzpatrick, 1993). The narrative then becomes part of individuals' cognitive representation of the experience. Thus, engaging in expressive tasks can potentially change the content of stress-related thoughts and memories. More specifically, individuals may be able to interpret stressors in personally meaningful terms, integrate threatening or confusing aspects of the experience into a coherent and non-threatening conceptual framework, and reach a state of emotional acceptance.

Foa and colleagues, among others, have developed a desensitization model to explain how expression of trauma-related thoughts and feelings aids in adjustment (Foa and Kozak, 1986; Foa and Rothbaum, 1998). According to Foa's model, adjustment requires activation of trauma-related fear memories and incorporation of new (benign) information that is incompatible with the fear response. Through this process new, non-threatening memories are formed and individuals habituate to trauma-related stimuli. Other investigators have extended this idea to explain how the social context of disclosure can help desensitize disclosers to stress-related stimuli. Results of many studies suggest that exposure to stress-related stimuli in a "safe" social context can facilitate recovery by desensitizing individuals to traumatic stimuli, particularly intrusive thoughts related to a traumatic or stressful experience (Devine *et al.*, 2003; Kliever *et al.*, 1998; Lepore, 1997; Lepore and Greenberg, 2002; Lepore *et al.*, 2002; Lepore and Helgeson, 1998; Major and Gramzow, 1999; Zakowski *et al.*, 2001). To the extent that listeners convey emotional support and comforting feelings to the discloser, or indicate that it is safe and beneficial to discuss distressing feelings, the listeners may help the discloser to confront rather than avoid stressful memories and to establish non-threatening emotional associations to stressful memories, thus facilitating desensitization (Lepore, 2001). In this way, disclosing to an emotionally validating and supportive other can ameliorate distress in stress-exposed individuals.

Social contexts, of course, are not always emotionally supportive and validating. It is not clear what happens, for instance, when others do not respond to emotional disclosures with sympathy or empathy. Clark (1993) has argued that listeners can challenge disclosers, and in so doing might broaden disclosers' perspective on the stressor or their emotional response to the stressor (Clark, 1993). For example, a listener might help someone positively reframe the loss of a job by pointing out certain advantages, such as having more time for family and leisure pursuits or an opportunity to get a better job. When disclosers are already motivated to distance themselves from a stressor—as they often are when they witness the victimization of a person similar to them (Coates *et al.*, 1979)—it may be beneficial for them to hear that they should not be so distressed or that the situation is not so bad. Of course, responses of this type can also backfire and amplify disclosers' distress if they perceive that the listener does not really understand their situation or is somehow being dismissive (Tait and Silver, 1989; Wortman and Lehman, 1985). In a previous study, we found that socially invalidating a person's expressed distress about a stressor tended to attenuate the benefits of expression (Lepore *et al.*, 2000).

In summary, expressing stress-related thoughts and feelings is expected to contribute to emotional adjustment through mechanisms of desensitization and cognitive restructuring. The social context of disclosure is expected to influence both mechanisms. In a supportive social context, desensitization can be facilitated because individuals may be more likely to engage in extended discussion and thinking about their stress-related thoughts and feelings than they would in an unsupportive social context. When others provide new information, or alternative ways of framing an experience, this may facilitate beneficial cognitive restructuring. In particular, presenting an alternative, less-threatening view of a stressor could foster the creation of an optimistic or less fearful perspective. Furthermore, some challenging responses may facilitate individuals' ability to gain emotional distance from the event, which has been found to have some beneficial effects on emotional adjustment (Rusting and

Nolen-Hoeksema, 1998). However, there is a danger that challenging social responses can also impede cognitive processing, as such responses may lead individuals to perceive that their thoughts and feelings are invalid or something to be avoided.

OVERVIEW OF THE TWO EXPERIMENTAL STUDIES

In the present experiments, we tested whether talking about stress-related thoughts and feelings facilitates emotional and physiological adjustment to an acute stressor under different social conditions. We also examined whether the beneficial effects of talking under different social conditions could be explained by reduced avoidance of stress-related thoughts and stimuli, enhanced cognitive resolution processes, and/or desensitization to intrusive thoughts.

The experiments build on our previous work in three significant ways. First, the studies are conducted in two countries, the United States and Spain, to see whether the effects of talking on adjustment to stressors will generalize to different cultures. Second, we included a modified Stroop task as a marker of cognitive processing, rather than relying solely on self-reports of intrusive thoughts. The Stroop task provides additional, objective evidence on the effects of disclosure on cognitive processing of stressors. Klein (2002) has suggested that the emotional expression can free-up working memory by reducing intrusive thoughts. One implication of this is that during exposure to stress-related stimuli in a Stroop-type task, research participants who have had an opportunity to disclose should have faster reaction times to stress-related stimuli than participants who have not disclosed. Third, we examined blood pressure and heart rate, because physiological arousal is a plausible mediator of the putative benefits of disclosure on physical health. In addition, we felt it was necessary to examine physiological outcomes because prior research has yet to show reliable effects of disclosure on physiological arousal (Davidson *et al.*, 2002; Lepore *et al.*, 2000; Mendolia and Kleck, 1993).

The present experiments also build on prior research on the social context of disclosure. Social responses to disclosures can take different forms and could potentially have differential effects on adjustment. We examined the psychological and physiological effects of validating or challenging a person's disclosures about a stressful stimulus. In an earlier study, Lepore and colleagues (2000) found that relative to participants who did not talk, participants who talked to a confederate who validated their disclosures had fewer stress-related intrusive thoughts and less distress when re-exposed to a stressor. Thus, we expected to find in the present studies that validating a person's negative emotional responses to an acute stressor would result in the greatest benefits for the discloser. Our previous study also showed that participants who talked to a confederate who invalidated their disclosures did not benefit as much from talking. It appeared that the invalidation attenuated the benefits of talking, but it did not make participants more distressed than those who did not talk at all. As mentioned above, talking with others who challenge a negative perspective or thought pattern could potentially facilitate adjustment by broadening or modifying that perspective in a positive way. Based on prior findings, however, we expected to find null effects from challenging a person's negative emotional responses to an acute stressor in the present studies.

STUDY 1 (USA): EFFECTS OF DISCLOSURE, SOCIAL VALIDATION AND SOCIAL CHALLENGES ON COGNITIVE PROCESSING, EMOTIONS, AND AROUSAL

Based on prior research findings (Lepore, 1997; Lepore *et al.*, 1996, 2000; Major and Gramzow, 1999), we predicted that talking about a stressor would reduce participants' negative psychological and physiological responses during re-exposure to that stressor by facilitating cognitive resolution (i.e. reducing the frequency of intrusive thoughts) (Lepore *et al.*, 2000) or desensitization (i.e. reducing the emotional and physiological impact of intrusive thoughts) (Lepore, 1997). We also predicted that talking would reduce avoidance of thoughts about a stressor (Lepore *et al.*, 2000) and possibly attenuate the association between avoidance to negative psychological and physiological responses to a stressor (Jacobsen *et al.*, 2002). We predicted that disclosing stress-related thoughts and feelings in a validating social context would result in better adjustment than would disclosure alone, because it would further facilitate cognitive processing and desensitization (Lepore *et al.*, 2000). We anticipated null effects of the challenging social response.

METHODS

Overview

A randomized, four-group (*no talk*, *talk*, *validate*, and *challenge*) repeated measures (Session 1, Session 2) design was used. In Session 1, female participants came to the laboratory individually and were asked to watch an 11 min scene from the movie, *The Accused*, depicting a woman being gang raped in a bar. We chose this stimulus because it depicts a situation that college students could relate to (i.e. socializing at a bar) and we deemed it to be a topic that would be stressful for women in both the US and Spain. In addition, the video depicts a scene that challenges commonly held core beliefs about personal safety and goodness in the world and in others (Janoff-Bulman, 1992). For 3 min after viewing the rape scene, participants randomized to a *talk* condition remained alone while they talked aloud about their thoughts and feelings about the rape scene. Participants randomized to a *validate* condition disclosed their thoughts and feelings about the rape scene to a female confederate who had not seen the video and who validated the participant's disclosure. Participants randomized to a *challenge* condition disclosed their thoughts and feelings about the rape scene to a female confederate who had not seen the video and who challenged them to consider taking a less threatening perspective on the rape scene. Participants randomized to the *no-talk* control condition remained alone and did not disclose. In Session 2, 48 hours later, participants returned to the lab and were asked to relax for 5 min, and then were re-exposed to the same videotaped rape scene. In Sessions 1 and 2, data were collected on physiological responses (blood pressure and pulse rate) and psychological distress related to viewing the rape scene. In Session 2, participants completed measures related to cognitive processing (intrusive thoughts and avoidance).

Participants

We recruited 130 women through a college research participant pool, advertisements on electronic bulletin boards, and flyers at local universities. Of these, 115 (88.46%) completed all phases of the study. The average age of the participants was 19 years ($SD = 3.01$); 63.5% was European American, 22.6% was Asian American, 1.7% was African American, 1.7% was Hispanic, and 10.4% was of other ethnic origins. Exclusion criteria included currently taking medication to control blood pressure, not being able to speak fluent English, and having previously seen the stimulus film, *The Accused*. Participants were compensated with money (\$10) or course credit.

Procedure

Session 1 On arrival at the laboratory, participants were told that the study was designed to examine college students' reactions to sexual assault. We then collected data on demographics and knowledge and exposure to sexual assault issues. Next, participants were left alone throughout a 5-min adaptation period, a 6-min relaxation period, and an 11-min video scene depicting a gang rape in the movie, *The Accused* (Paramount Pictures, 1996). They were instructed to watch the video carefully and to not look away from it. They also were informed that the experimenter would be asking them for their reaction to the video when it concluded. Four blood pressure and pulse-rate measures were taken during the relaxation period and five were taken during the rape scene presentation. Participants then completed a self-report measure of psychological distress.

Next, participants in the *talk*, *validate*, and *challenge* conditions talked for 3 minutes about the thoughts and feelings that were evoked by watching the rape scene. Specifically, they received the following instructions:

I now need you to speak for several minutes about the thoughts and feelings you had while watching the rape scene. It is important that you do not hold anything back; try to be as honest as possible and describe exactly what you were feeling and thinking. I will instruct you when to begin talking and when to stop talking. It is important that you continue talking until I tell you to stop. Everyone responds differently to this situation. I mainly want to know how this experience made you feel.

Participants in the *no-talk* condition were not given an opportunity to talk. Participants in the *talk* condition did not have an audience, other than the implied audience of the experimenter in the control room. Before participants in the *validate* and *challenge* conditions disclosed, the experimenter introduced them to a female confederate. She was described as another study participant who had not seen the film, but was being asked to listen and respond to another participant's reaction to the film. This situation would be comparable to one in which a person discloses to a peer who had not personally experienced a stressor. Multiple confederates were trained and used in both *validate* and *challenge* roles.

The validating confederate sympathetically nodded in agreement and maintained mutual eye contact with the participant while she disclosed. In response to the disclosure, the confederate identified and agreed with several thoughts and feelings that were expressed by the participant ("I don't know what happened in the video, but from what you said, I think anyone would feel <something the participant felt >. I can

definitely see why you felt <something the participant felt >. I could really imagine myself sitting and watching the scene and thinking <something participant thought > “). She also shared a scripted response to convey emotional involvement (“...when I was listening to you talk about this upsetting experience, I felt like I wanted to say something to you but I wasn’t sure if I could. It must have been very unpleasant to watch”).

The challenging confederate maintained a neutral rather than sympathetic countenance and did not maintain eye contact with the participant while she disclosed. In response to the disclosure, the confederate expressed an alternative perspective and less emotional involvement and distress than was typically expressed by participants (“I don’t know exactly what happened in the video, but from what you said, I don’t think everyone would be <something the participant felt >. I can’t really see why you would feel <something the participant felt > just from watching the video. I could really imagine myself sitting and watching the scene, but I wouldn’t have thought <something the participant thought >). The confederate also shared a scripted response to convey emotional detachment (“...when I was listening to you talk about the video, I found it hard to keep my mind on what you were saying. I was thinking about all the stuff I have to do today.”). We sought to make the behaviors of the confederate consistent with her verbal responses so that the participant would not perceive a mixed message. In other words, we wanted to make sure that the participant clearly perceived that the confederate had a different perspective on the video.

At the end of Session 1, participants were reminded to refrain from discussing the experiment with anyone and to return to the lab two days later. We did not tell them anything about what will happen in the second session.

Session 2 Participants first completed a questionnaire that measured the frequency with which they had intrusive thoughts about the rape scene/sexual assault and avoided thinking about the rape scene/sexual assault in the 2-day interim. Next, the experimenter played the rape scene video and repeated the procedures from Session 1 to assess physiological and psychological responses to the video. Participants also were asked whether they had talked to anyone about the experiment. At the end of Session 2, participants in the *validate* and *challenge* conditions completed questionnaires designed to test the confederate manipulation. The experimenter debriefed participants and again attempted to ascertain whether they had talked about the experiment.

Measures

Background Information We collected the following demographic information: Age, ethnicity/race, year in college, and blood pressure medication status. We also assessed participants’ knowledge and awareness of sexual assault issues based on their responses to these six questions:

1. Have you ever studied issues related to sexual assault (e.g. taken a class, read intensively on the topic)?
2. Have you ever watched a news program or documentary on sexual assault (e.g. rape or date rape)?
3. Have you ever watched a popular film that depicts sexual assault (e.g. *Higher Education*)?

4. Have you attended rallies or conferences about sexual assault (e.g. Take Back the Night)?
5. Do you know anyone personally who is a sexual assault survivor?
6. Compared to the average person, would you say that your knowledge about sexual assault is 0: Far below average, 1: slightly below average, 2: average, 3: slightly above average, 4: far above average.

We summed the number of affirmative responses to the first five items to create an awareness index. Higher scores indicate greater awareness of sexual assault issues.

Manipulation Checks Two questionnaires were administered to assess whether the validation and challenge manipulations worked as intended. One consisted of four items that assessed the degree to which the participant felt that the confederate's thoughts and feelings about sexual assault were similar to their own. These items were rated on a 5-point scale ranging from 1 (*we completely disagreed*) to 5 (*we completely agreed*) and had good reliability ($\alpha = 0.95$). The other scale consisted of 20 items that the participant used to rate the confederate's interpersonal qualities and knowledge of sexual assault on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). This scale included four sub-scales: a 10-item friendliness scale (e.g. easy to talk to, friendly, warm), a 6-item empathy scale (e.g. understanding of my feelings, supportive, accepting of my ideas, compassionate), a 2-item appeal scale (e.g. interesting, boring), and a 2-item knowledgeable scale (e.g. informed, uninformed) (Lepore *et al.*, 2000). The friendliness and empathy scales had good reliability, with alphas = 0.90 and 0.93, respectively. The two-item measures did not have acceptable reliability, so they were dropped from further analyses.

Physiological Stress Responses Cardiovascular responses (systolic blood pressure = SBP; diastolic blood pressure = DBP, and pulse rate = PR) were measured from the participant's non-dominant arm using a DinaMap XL (Model 9300; Johnson and Johnson Medical Inc., Tampa, FL) vital signs monitor. The experimenter operated the monitor from a control room adjacent to the laboratory. Participants' readings taken during the resting period were used to calculate an average resting response, and the readings taken during the video presentation of the rape scene were used to calculate an average stress response. We calculated reactivity by subtracting resting levels of BP and PR from those taken during the video presentation (e.g. video SBP-resting SBP).

Psychological Distress We used the Profile of Moods Scale-Short Form (POMS-SF) (Curran *et al.*, 1995; Shacham, 1983) to assess mood disturbance after the video presentation on Day 1 and Day 2. The POMS-SF consists of 37 items tapping anxiety, depression, anger, vigor, fatigue and confusion. We did not include the confusion sub-scale, because the items did not appear to reflect mood as much as cognitive states. The POMS-SF sub-scales and total scale are highly correlated with the original POMS (McNair *et al.*, 1971), and is a reliable indicator of mood disturbance. We added several items to the measure to assess feelings of calm (e.g. calm, relaxed). The calm items tap degree of arousal, or physiological activation, and help to break up the negative response set that can be induced by responding to a series of many negative mood items on the POMS-SF. The items related to calmness were taken from the Stress/Arousal Adjective Checklist (King *et al.*, 1983; Lepore *et al.*, 2000). For the present study, we created a composite distress score by averaging across all of the items. The distress

measure had good reliability ($\alpha = 0.89$ Day 1, 0.94 Day 2). All items were scored so that higher scores indicated higher distress.

Cognitive Processing We assessed the frequency of both unbidden intrusive thoughts about sexual assault and *The Accused* video during the intersession period. We also assessed avoidance of such thoughts. All items were rated on a 6-point scale ranging from 0 (*not at all*) to 5 (*very often*). We used five high-loading items from the Intrusive Thought sub-scale of the Impact of Events Scale (IES; Horowitz *et al.*, 1979; Lepore *et al.*, 2000) to assess intrusive thoughts (e.g. “Had thoughts about the video or sexual assault when you didn’t mean to?”). We used four high-loading items from the Avoidance sub-scale of the IES to assess level of avoidance of thoughts and feelings concerning the video (e.g. “Tried to remove thoughts and images about the video from your memory?”). The scales had adequate reliability (Cronbach alphas intrusions = 0.81 , avoidance = 0.83). These variables were moderately intercorrelated (Pearson’s $r = 0.57$, $p < 0.001$), but we chose to analyse them separately for theoretical reasons.

RESULTS

For all analyses, we used two-tailed statistical tests and a significance criterion of $p < 0.05$. We used analysis of variance (ANOVA) techniques to test most hypotheses. We conducted univariate tests and pairwise comparisons (Least Squares Difference (LSD)) to isolate specific group differences when the overall effects of the ANOVAs were statistically significant.

Attrition and Baseline Characteristics

Fifteen participants who did not return on Day 2 were comparable in age and ethnic background to those who completed both parts of the study. However, psychological distress scores on Day 1 were significantly lower among those who did not return on day two ($M = 2.99$, $SD = 0.55$) than among those who did return ($M = 3.38$, $SD = 0.50$) [$t(128) = 2.78$, $p < 0.01$], and increases in heart rate on Day 1 were significantly lower among non-returners ($M = -0.64$ BPM, $SD = 5.04$) than among returners ($M = 2.45$ BPM, $SD = 5.39$) ($t(128) = 2.10$, $p < 0.05$). There was no evidence of selective attrition across conditions. All analyses reported below include just those participants ($n = 115$) who completed both days of the experiment.

Table I shows the means and standard deviations for the major study variables measured on Day 1 and Day 2. ANOVAs revealed no between-group differences on any variables at Day 1—including demographics, knowledge, and awareness of sexual assault—which indicates that randomization was successful. Further, as the means show, exposure to the stressful video was associated with elevated distress, BP, and PR on both days.

Manipulation Check

As shown in Table II, there were significant between-group (*validate* vs. *challenge*) differences in participants’ perceptions of the confederate. Relative to participants in the *challenge* condition, participants in the *validate* condition perceived that they were

TABLE I Mean levels of distress, cognitive processing, blood pressure reactivity, and pulse rate reactivity on Days 1 and 2 ($n = 115$)

Variable	Experimental condition			
	No talk ($n = 29$) Mean (SD)	Talk ($n = 30$) Mean (SD)	Validate ($n = 28$) Mean (SD)	Challenge ($n = 28$) Mean (SD)
<i>Day 1</i>				
Distress	3.38 (0.54)	3.42 (0.39)	3.28 (0.52)	3.15 (0.44)
Systolic baseline (mmHG)	106.24 (7.05)	104.36 (7.81)	103.27 (8.52)	105.99 (11.01)
Systolic increase (mmHG)	9.20 (7.50)	8.14 (4.74)	8.13 (4.58)	7.07 (5.08)
Diastolic baseline (mmHG)	63.26 (6.18)	63.47 (5.20)	61.81 (6.70)	63.13 (7.26)
Diastolic increase (mmHG)	5.94 (4.10)	5.27 (3.82)	5.41 (4.22)	4.52 (4.03)
Pulse rate baseline (BPM)	75.17 (10.83)	73.38 (10.28)	75.51 (11.91)	74.87 (11.35)
Pulse rate increase (BPM)	3.33 (6.78)	2.18 (5.66)	3.85 (5.98)	2.71 (5.41)
<i>Day 2</i>				
Distress	3.31 (0.60)	3.46 (0.47)	3.22 (0.62)	2.83 (0.41)
Systolic baseline (mmHG)	106.76 (8.64)	104.68 (6.43)	104.57 (9.67)	105.57 (10.79)
Systolic increase (mmHG)	6.95 (6.50)	5.73 (5.34)	4.47 (5.62)	3.71 (4.03)
Diastolic baseline (mmHG)	62.82 (6.83)	63.66 (5.45)	62.57 (6.37)	62.34 (4.78)
Diastolic increase (mmHG)	3.81 (4.22)	3.39 (3.82)	3.73 (4.20)	2.87 (3.95)
Pulse rate baseline (BPM)	75.02 (10.46)	76.80 (10.18)	78.55 (10.11)	79.65 (11.50)
Pulse rate increase (BPM)	3.18 (6.75)	3.40 (4.50)	2.32 (7.77)	-0.77 (4.75)
Intrusive thoughts	2.55 (0.98)	2.27 (0.97)	2.02 (0.99)	1.80 (1.01)
Avoidance	2.40 (1.26)	2.13 (1.10)	1.86 (1.34)	1.62 (1.04)

Notes. SD = standard deviation; mmHG = millimeters of mercury; BPM = beats per minute.

more similar to the confederate, and rated the confederate higher in friendliness and empathy. Anecdotally, participants in both the American and Spanish samples, often commented to the experimenter that they thought the confederate in the challenge condition was unfriendly and, possibly, rude, using descriptors such as “witch”, “bitch” and “mean”. Thus, the demeanor of the confederate may have gone beyond being “neutral” and could have had some influence on outcomes above and beyond her verbal responses.

Physiological Outcomes

We ran a series of 2 (day) \times 4 (condition) ANOVAs to examine the effects of the experimental manipulations on systolic blood pressure (SBP) reactivity, diastolic blood pressure (DBP) reactivity, and pulse rate (PR) reactivity. On PR reactivity, there was

TABLE II Mean level of participants' ratings of level of perceived friendliness, empathy, and similarity of the confederate ($n = 56$)

	Experimental condition		t (df)	p -value (2-tailed)
	Validate Mean (SD)	Challenge Mean (SD)		
Perceived friendliness	4.30 (0.46)	2.13 (0.73)	9.79 (54)	0.001
Perceived empathy	3.59 (1.10)	2.63 (1.21)	3.13 (54)	0.01
Perceived similarity	4.44 (0.46)	2.13 (0.73)	14.01 (53)	0.001

Note. SD = standard deviation.

a significant main effect of day ($F(1,109) = 6.13, p < 0.05$) and a significant day \times condition interaction ($F(3,109) = 3.22, p < 0.05$). One-way ANOVAs revealed no significant main effect of condition on PR reactivity on day 1 ($F(3,109) = 1.04, ns$), but a significant effect on Day 2 ($F(3,109) = 2.94, p < 0.05$). Pairwise comparisons revealed that participants in the *challenge* condition had significantly lower PR reactivity on Day 2 than participants in the *validate* ($p < 0.01$), *talk* ($p < 0.01$) and *no talk* ($p < 0.05$) conditions (see means in Table I). On SBP reactivity, there was a significant effect of day ($F(1,111) = 48.94, p < 0.001$), but no other significant effects. Overall, participants exhibited greater SBP reactivity on day 1 ($M = 8.15$ mmHG increase, $SD = 5.58$) than on Day 2 ($M = 5.24$ mmHG increase, $SD = 5.52$). On DBP reactivity, there was a significant effect of day ($F(1,111) = 17.74, p < 0.001$), but no other significant effects. Overall, participants exhibited greater DBP reactivity on Day 1 ($M = 5.29$ mmHG increase, $SD = 4.02$) than on Day 2 ($M = 3.45$ mmHG increase, $SD = 4.01$).

Psychological Distress

We ran a 2 (day) \times 4 (condition) ANOVA to examine the effects of the experimental manipulations on psychological distress. There was a significant main effect of day ($F(1,111) = 8.59, p < 0.01$) and a significant day \times condition interaction ($F(3,111) = 4.73, p < 0.01$). One-way ANOVAs revealed no significant main effect of condition on level of distress on Day 1 ($F(3,111) = 1.88, ns$), but a significant effect on Day 2 ($F(3,111) = 7.16, p < 0.001$). Pairwise comparisons revealed that participants in the *challenge* condition had significantly lower distress on Day 2 than participants in the *validate* ($p < 0.01$), *talk* ($p < 0.001$) and *no talk* ($p < 0.001$) conditions (see means in Table I). Participants in the *validate* condition tended to have less distress than those in the *talk* condition, but the effect was statistically marginal ($p < 0.10$).

Cognitive Processing

Intrusive and avoidant thoughts were assessed only on day two (see means in Table II). One-way ANOVA revealed a significant main effect of condition on intrusive thoughts ($F(3,111) = 3.07, p < 0.05$). Pairwise comparisons revealed that participants in the *challenge* and *validate* conditions had significantly lower levels of intrusive thoughts than participants in the *no talk* ($p < 0.01$) condition. Participants in the *challenge* condition also tended to have a lower level of intrusive thoughts than participants in the *talk* condition, but the effect was statistically marginal ($p < 0.10$). There were no other differences between groups. There was only a marginally significant effect of experimental condition on avoidance ($F(3,111) = 2.24, p < 0.10$), so we did not conduct pairwise comparisons.

Mediation

In our final analyses, we examined whether intrusive thoughts mediated the effects of the experimental conditions on PR and distress. To test the mediating effects of intrusive thoughts on PR, we conducted an ANOVA on Day 2 PR reactivity, statistically controlling for Day 1 PR. Results indicated that level of intrusive thoughts was significantly related to PR reactivity on Day 2 ($F(1,110) = 3.92, p < 0.05; r = 0.23, p < 0.01$). However, after statistically controlling for level of intrusive thoughts,

there was no longer a statistically significant main effect of condition on PR reactivity on Day 2 ($F(3,110)=2.01$, ns). This suggests that level of intrusive thoughts may account for some of the relation between experimental condition and PR reactivity on Day 2. Recall, however, the main effects of condition on intrusive thoughts is not parallel to the main effects of condition on PR, so the mediation analyses are not conclusive.

Using the same logic, we examined whether intrusive thoughts mediated the effects of experimental condition on distress. Results indicated that level of intrusive thoughts was significantly related to distress on Day 2 ($F(1,110)=34.86$, $p < 0.001$), but condition remained a statistically significant predictor of distress on Day 2, after covarying level of intrusive thoughts ($F(3,110)=5.49$, $p < 0.001$), suggesting that intrusive thoughts did not account for the effects of condition on distress. We did not examine the mediating effects of avoidance, because there was no significant effect of condition on avoidance.

Desensitization

The desensitization hypothesis is tested by a statistical interaction between condition and the cognitive processing variables (i.e. condition \times intrusive thoughts). One of the assumptions of such a test is that the interacting variables are independent and there is an equal distribution of participants across the cells. In the present data set there were marginally significant associations between condition and the cognitive processing variables. Specifically, there were very few participants in the invalidate and validate conditions who reported a high level of intrusive thoughts or avoidance. Thus, we were unable to adequately test the desensitization hypothesis.

BRIEF SUMMARY OF STUDY 1

As expected, talking about a stressful stimulus appeared to facilitate adjustment, but only under certain social conditions. Somewhat unexpectedly, however, was the finding that participants in the *challenge* condition showed the greatest adjustment to the stressor, as indicated by their lower PR reactivity and distress during re-exposure to the stressor, as well as their lower level of intrusive thoughts in the 2 days after the initial stressor exposure. Mediation analyses suggested that the declines in intrusive thoughts potentially explained the lower PR reactivity on Day 2 in the *challenge* condition. Participants in the *validate* condition also showed some benefits, but they were not as strong as those evidenced in the *challenge* condition. Specifically, those in the *validate* condition had a lower level of intrusive thoughts than those in the *no talk* condition, and they had marginally lower distress than those in the *talk* condition. Another unexpected outcome was the null effects of talking without an audience. In our previous study, we found that talking was associated with better adjustment to an acute stressor (Lepore *et al.*, 2000). Finally, we found that the social manipulation worked as expected: the *validating* confederate was rated as more similar to the participant, friendlier, and more empathic than the *challenging* confederate.

STUDY 2 (SPAIN): EFFECTS OF DISCLOSURE, VALIDATION AND CHALLENGE ON COGNITIVE PROCESSING AND EMOTIONS

To test the generalizability of the findings from Study 1, hypotheses were tested a second time with participants from a different cultural background. We were especially interested in whether the strong effects of the *challenge* condition observed in Study 1 would be replicated in Study 2. In addition, a Stroop task was included as a more objective measure of cognitive processing than intrusive thoughts. Based on previous work (e.g. Klein, 2002), we predicted that talking about a stressor would lead to reduced response times to an emotional Stroop task. Individuals who have achieved emotional or cognitive resolution after a stressor should have greater cognitive resources for processing stress-related stimuli and less interference when processing stress-related information. Consistent with these notions, Klein and colleagues (2002) found that writing about stressful events results in improved working memory. We also predicted that disclosing stress-related thoughts and feelings in a validating social context would result in faster response times than would disclosure alone, because it would further facilitate cognitive processing and possibly desensitization. Again, we did not have firm predictions about the effects of challenging social responses. To the extent that the challenge condition would allow individuals to emotionally distance themselves from the distressing video, or to positively reframe the situation, it could result in faster response times on the Stroop. However, to the extent that the challenge condition interferes with individuals' cognitive processing, it could undermine the benefits of disclosure. No physiological measures were taken.

METHODS

Overview

Study 2 used the same design and procedures as Study 1 with two exceptions: There were no physiological recordings and on Day 2 participants completed a Stroop task designed to tap degree of cognitive processing. All measures were administered in Spanish and had excellent reliability (Cronbach alphas ranged from 0.70 to 0.96). The stimulus film, *The Accused*, was dubbed in Spanish. Because the procedures and measures were generally the same, we will only describe the participants in Study 2 and the Stroop task procedures.

Participants

We recruited 146 female psychology students from the University of Malaga. The average age of the participants was 20.6 years ($SD = 3.60$). All participants were White, Western Europeans. Participants were compensated with course credit.

Stroop Task

We used a computerized version of the Stroop color-naming task (Fernandez-Berrocal *et al.*, 1999) to investigate the degree of cognitive interference from the rape video. We reasoned that individuals who had reached cognitive and emotional resolution would experience less interference and exhibit faster reactions times to high threat,

rape-related words. Participants named the colors of positive words (e.g. love, friendship; $\alpha = 0.91$), neutral words (e.g. melon, apple; $\alpha = 0.92$), moderate-threat words (e.g. death, anxiety; $\alpha = 0.92$), and high-threat words (e.g. rapist, cry; $\alpha = 0.91$). The words were presented in a random order in four different colors (red, green, yellow, and blue). Participants were told that their task was to ignore the meaning of the words, and to name out loud the colors in which the words appeared as quickly but as accurately as possible. For each participant, the mean color-naming latency (in *msec*) was computed for each word category.

RESULTS

Attrition and Baseline Characteristics

All participants returned on day two and completed both parts of the study. Table III shows the means and standard deviations for the major study variables measured on Day 1 and Day 2. ANOVA revealed no between-group differences on distress at Day 1, which shows that randomization was successful.

Manipulation Check

As shown in Table IV, there were significant between-group (validate vs. challenge) differences in participants' perceptions of the confederate. As in Study 1, participants in the *validate* condition perceived that they were more similar to the confederate, and rated the confederate higher in friendliness and empathy than participants in the *challenge* condition.

Distress

We ran a 2 (day) \times 4 (condition) ANOVA to examine the effects of the experimental manipulations on distress. As in Study 1, there was a significant main effect

TABLE III Mean levels of distress, cognitive processing, and Emotional Stroop on Days 1 and 2 ($n = 146$)

Variable	Experimental condition			
	No talk ($n = 30$) Mean (SD)	Talk ($n = 30$) Mean (SD)	Validate ($n = 40$) Mean (SD)	Challenge ($n = 46$) Mean (SD)
<i>Day 1</i>				
Distress	3.46 (0.57)	3.30 (0.66)	3.23 (0.60)	3.20 (0.61)
<i>Day 2</i>				
Distress	3.48 (0.51)	3.20 (0.73)	3.18 (0.70)	2.84 (0.67)
Positive words (msec)	751.07 (94.65)	726.60 (105.11)	712.19 (70.54)	700.79 (75.29)
Neutral words (msec)	733.88 (96.88)	707.27 (93.92)	702.09 (71.50)	709.03 (74.34)
Moderate-threat words (msec)	734.97 (97.94)	710.49 (107.61)	709.56 (77.01)	698.03 (74.06)
High-threat words (msec)	760.51 (104.39)	712.58 (102.10)	718.29 (80.64)	699.27 (72.76)
Intrusive thoughts	2.51 (0.91)	2.21 (1.10)	2.29 (0.95)	1.91 (1.08)
Avoidance	2.22 (1.18)	2.02 (1.36)	2.19 (1.09)	1.60 (1.33)

Notes. SD = standard deviation.

TABLE IV Mean level of participants' ratings of level of perceived friendliness, empathy, and similarity of the confederate ($n = 86$)

	Experimental condition		t (df)	p -value (2-tailed)
	Validate Mean (SD)	Challenge Mean (SD)		
Perceived friendliness	4.42 (0.36)	2.45 (0.59)	18.26 (84)	0.001
Perceived empathy	4.40 (0.46)	1.71 (0.54)	24.25 (84)	0.001
Perceived similarity	4.61 (0.56)	1.66 (0.62)	22.96 (84)	0.001

Note. SD = standard deviation.

of day ($F(1,142) = 10.46$, $p < 0.01$) and a significant day \times condition interaction ($F(3, 142) = 5.22$, $p < 0.01$). To test the interaction, we performed univariate ANOVA tests on distress scores at Day 1 and Day 2, respectively, followed by pairwise comparisons (LSD). There was no significant main effect of condition on level of distress on Day 1 ($F(3, 142) = 1.27$, ns), but there was on Day 2 ($F(3, 142) = 5.71$, $p < 0.001$). Pairwise comparisons showed that participants in the *challenge* condition had significantly lower distress on Day 2 than participants in the *validate* ($p < 0.05$), *talk* ($p < 0.05$) and *no talk* ($p < 0.001$) conditions (see means in Table III). Participants in the *validate* condition tended to report less distress than those in the *no talk* condition, but the effect was statistically marginal ($p = 0.06$).

Cognitive Processing

As in Study 1, intrusive and avoidant thoughts were assessed only on Day 2 (see means in Table III). There was a marginal main effect of condition on intrusive thoughts ($F(3,142) = 2.30$, $p = 0.08$). There were no other differences between groups. There was a marginal main effect of experimental condition on avoidance ($F(3,142) = 2.15$, $p < 0.10$). Examination of the means revealed that participants in the *challenge* condition tended to have the lowest level of intrusive thoughts and avoidance.

Emotional Stroop

The experimental conditions were compared on each of the four groups of words of the Emotional Stroop task (see means in Table III). We conducted an ANOVA, followed by pairwise comparisons (LSD) to identify group differences on these variables. There was a significant main effect of condition on high-threat words ($F(3,142) = 3.02$, $p < 0.05$). Pairwise comparisons revealed that participants in the *no talk* condition had significantly higher response times than participants in the *talk* ($p < 0.05$), *validate* ($p < 0.05$), and *challenge* ($p < 0.01$) conditions. There were no other differences between groups. There was only a marginally significant effect of experimental condition on positive words ($F(3,142) = 2.28$, $p < 0.10$), so we did not conduct pairwise comparisons.

Mediation

In our final analyses, we considered whether intrusive thoughts mediated the effects of the experimental conditions on distress. We did not test the mediating effects of intrusions or avoidance, because there were no statistically significant effects of

condition on these variables. We next considered whether response times to high-threat words of the Emotional Stroop task mediated the effects of experimental condition on distress. Results indicated that the response time to high-threat words was not related to distress on Day 2 ($F(1,140)=0.007$, ns). Condition remained a statistically significant predictor of distress on Day 2, after covarying level of response times ($F(3,140)=6.15$, $p < 0.001$), suggesting no mediation. Furthermore, the pattern of means in Table III, suggest that response times to high-threat words could not account for the especially low level of distress in the *challenge* condition. We did not examine the mediating effects of positive, neutral, and moderate-threat words, because there was no significant effect of condition on these words.

Desensitization

As in Study 1, there was a marginally significant association between condition and the cognitive processing variables. Specifically, there were very few participants in the *invalidate* condition who reported a high level of intrusions or avoidance. Thus, we were unable to adequately test the desensitization hypothesis.

BRIEF SUMMARY OF STUDY 2

The findings from Study 2 provide a conceptual replication of the effects observed in Study 1 with participants from a different cultural background and multiple measures of cognitive processing. Our findings suggest that talking about a stressful stimulus enhanced adjustment to the stressor, but only under particular social conditions. As in Study 1, participants in the *challenge* condition displayed the greatest adjustment to the stressor, as evidenced by their lower distress and their marginally lower level of intrusive thoughts and avoidance. Mediation analyses revealed that level of intrusive thoughts did not appear to explain the effects of condition on distress. Interestingly, participants in all three talk conditions had faster response times to high-threat words on Day 2 than participants in the *no talk* condition. However, in contrast to our expectations, response times to high-threat words were not related to distress on Day 2, and did not mediate the relation between condition and distress. Finally, as in Study 1, we found that participants rated the *validating* confederate as more similar to themselves, friendlier, and more empathic than the *challenging* confederate, suggesting that the manipulation worked as intended in the Spanish population.

GENERAL DISCUSSION

The present studies provide additional evidence that verbalizing one's thoughts and feelings about an acute stressor can enhance emotional, cognitive, and physiological adaptation. However, unlike our previous work (Lepore *et al.*, 2001), we found that simply talking was not associated with greater benefits than not talking, and the benefits of talking were highly dependent on the social context. Specifically, in both of the present studies, having one's negative emotional reactions to a stressful video challenged by a peer resulted in the greatest benefits. The range of benefits of the *challenge* condition effects was somewhat surprising, as were the relatively weak effects

of the *talk* and *validate* conditions. Nevertheless, the effects are compelling because of the positive results of the manipulation checks and the conceptual replication across cultures.

In both the US and Spain, we found that when a confederate challenged female students' reactions to a rape video, the students reported significantly lower distress when re-exposed to the video 2 days later relative to students who did not talk, students who talked and did not receive social feedback, or students who talked and had their reactions validated by a confederate. In the US sample, the *challenge* condition resulted in a lower level of intrusive thoughts, but group differences in intrusions did not mediate the beneficial effects of challenge on distress. In the Spanish sample, the *challenge* condition also was associated with lower intrusive thoughts, but the effect was marginal. In both samples, challenge was associated with a marginally lower level of avoidance.

These findings suggest that providing individuals with alternative perspectives (i.e. positive reappraisal, threat minimization) and responses (i.e. don't be so upset) to a stressor may attenuate some of the negative psychological reactions commonly associated with exposure to stressors, such as distress and cognitive preoccupation. This is consistent with the theory of cognitive restructuring, which suggests that talking with others may give individuals opportunities to learn new perspectives on stressful situations. For instance, in the present studies, we observed that when participants talked about the video, they often found ways to distance themselves by blaming the victim (e.g. criticizing her behaviors and manner of dress as being too sexually provocative), possibly as a psychological defense mechanism (Hafer, 2000). Of course, individuals who provide a challenging or alternative perspective to someone coping with a stressor may be perceived as insensitive or uncaring, and their message may be dismissed or, worse yet, it may evoke resentment or anger in the recipient. In the present studies, the confederate suggested through her words and demeanor that the participant was over-reacting to a contrived laboratory situation. Perhaps by adopting the confederate's perspective, participants gained emotional distance from the stressful video.

In the US sample, the *challenge* condition also had a significant dampening effect on heart rate responses in participants re-exposed to the rape video. This observation makes an important link between emotional expression and bodily reactions to stressors. There is mounting empirical evidence that emotional expression can result in physical health benefits, but there is relatively little evidence for plausible physiological mechanisms, such as arousal reduction. The reductions in heart rate in the challenge condition appeared to be mediated by reductions in intrusive thoughts about the rape video, but the results were inconclusive. It is intriguing that the reduction in intrusions may have accounted for some of the reductions in arousal, but did not account for reductions in psychological distress in either the American or Spanish samples. We would expect that intrusions, affect, and arousal would all be interrelated. Instead it appears that changes in cognition may have effects on physiological arousal that are independent of affective states. Alternatively, we may not have effectively measured affective states during the presentation of the video. The physiological measure was taken during the actual viewing of the video, whereas the distress measure was administered after the video. Thus, the physiological measure may have been a more sensitive measure of emotional states than the self-report measure. It

is also possible that intrusive thoughts are related to specific affective states, such as fear or apprehension, which were inadequately measured.

In the Spanish sample, we did not take physiological measures, but used multiple methods of assessing cognitive processing. The results are intriguing, in that participants who showed the greatest cognitive interference in responding to the rape-related words were in the *no talk* condition. This finding is consistent with previous research (Lepore *et al.*, 2001), which showed that talking *per se* was beneficial. It also suggests new ways to tap cognitive processes in emotional expression studies. The Stroop task picked up differences between groups that were not picked up by the self-report measure of intrusive thoughts in the Spanish sample. Further, the Stroop task is not subject to social desirability and memory lapses. Unfortunately, the reaction time measure did not reveal anything about the mechanisms linking emotional expression and distress. It is possible that it would have predicted physiological responses, but these were not measured in the Spanish sample. Future research should use this paradigm to examine the physiological correlates of the cognitive interference tapped by the Stroop test.

Relative to the challenge condition, the effects of the other talking conditions were not as robust across samples. The *talk* condition generally had null effects relative to the *no talk* condition, with the exception of a faster reaction time to high-threat words on a Stroop task. The *validate* condition resulted in only marginally significant beneficial effects on distress and level of intrusive thoughts in the US and Spanish samples, and a significant effect on reaction time to high-threat words during the Stroop task. There are several explanations for the weak effects of talking alone and talking to a validating confederate.

One possibility is that there is a demand characteristic in the experiment that encourages women to report that they are highly distressed by the stimulus. Only after hearing the challenging confederate does any participant get the message that an alternative response is acceptable. This could explain why there is little evidence of decreased distress or intrusive thoughts in the talk and validate conditions relative to the challenge condition. It could also explain why the Stroop task revealed beneficial cognitive effects in the three talk conditions, because reaction times are less sensitive to social desirability. However, this explanation does not explain why the talk and validate groups had higher pulse rates on Day 2, unless one were to argue that socially desirable responding (i.e. inhibiting one's true feelings), can elevate arousal levels.

A second possibility is that the amount of talking and validation was too limited, preventing individuals from fully processing and recovering from the stressor. Although the duration of disclosure and validation was similar to a previous study (Lepore *et al.*, 2001), in the present studies the stimulus was much stronger and emotionally salient. In the Lepore *et al.* study, we used a stimulus that focused on the horrors of the Nazi holocaust, which for many of the participants was something they could not imagine happening in their lifetime or to them personally, even though they found the stimulus to be disturbing. To the extent that participants in the present study were more negatively affected by the stimulus than the participants in the earlier study, they may have needed more time to talk about or socially process the stimulus.

In conclusion, the present studies suggest that challenging negative emotional responses to an acute stressor has the potential to facilitate adjustment, possibly by facilitating cognitive restructuring. The findings suggest several directions for future

research. First, it would be informative to examine the effects of social challenges in the context of real-life stressors and social relationships. Second, it would be valuable to examine the benefits of social challenges when they are presented in a more supportive manner than in the present study, and when the social status of the challenger is manipulated. We wonder, for instance, do the benefits of social challenge increase when presented in a supportive versus matter-of-fact manner or when the intimacy of the social connection increases (e.g. peers vs. parents, teacher, or therapist)? The relationship between the speakers is quite critical, we imagine. For example, one might be less surprised or bothered if contradicted by a stranger than if contradicted by a friend. Third, there is more research needed to explain when talking alone versus talking to a validating other is beneficial. Finally, what accounts for the beneficial effects of disclosure across different social conditions? Is it through physiological, affective, or cognitive pathways? While intrusive thoughts appear to be important, they do not account for all of the effects of disclosure. Identifying the various moderators (e.g. personality) and mediators of the effects of emotional expression on adjustment to stressors will help us to resolve the paradox of emotional expression.

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