

## The Social Consequences of Expressive Suppression

Emily A. Butler  
Stanford University

Boris Egloff  
Johannes Gutenberg-Universität Mainz

Frank H. Wilhelm, Nancy C. Smith, Elizabeth A. Erickson, and James J. Gross  
Stanford University

At times, people keep their emotions from showing during social interactions. The authors' analysis suggests that such expressive suppression should disrupt communication and increase stress levels. To test this hypothesis, the authors conducted 2 studies in which unacquainted pairs of women discussed an upsetting topic. In Study 1, one member of each pair was randomly assigned to (a) suppress her emotional behavior, (b) respond naturally, or (c) cognitively reappraise in a way that reduced emotional responding. Suppression alone disrupted communication and magnified blood pressure responses in the suppressors' partners. In Study 2, suppression had a negative impact on the regulators' emotional experience and increased blood pressure in both regulators and their partners. Suppression also reduced rapport and inhibited relationship formation.

It occasionally seems desirable to reduce or even entirely suppress emotional expressions that arise during our interactions with others. For example, when a friend angers us, we may try to prevent further conflict by suppressing our outward signs of anger until we can figure out how best to resolve the issue, or we may hide our distress about witnessing a disturbing event because we expect that talking about the event will only increase our feelings of upset.

In the emotion regulation literature, the process of consciously inhibiting emotional expressions while emotionally aroused has been referred to as *expressive*

*suppression*. It has been systematically studied both in solitary situations (Gross, 1998a; Gross & Levenson, 1993, 1997; Richards & Gross, 1999, 2000) and in noninteractive social situations such as being observed by strangers (Harris, 2001). Surprisingly little is known, however, about either the personal or social outcomes that accompany suppression during social exchanges. This is a particularly unfortunate gap in our understanding, given that expressive suppression is quite common during social interaction (Gross & John, 2002) and that diverse lines of evidence suggest important links between emotion expression, social relationships, and health (House, Landis, & Unger, 1988; Schwarzer & Leppin, 1991; Seeman, 2001; Uchino, Cacioppo, & Kiecolt-Glaser, 1996).

To generate hypotheses regarding the consequences of expressive suppression during social interaction, we turn to the literatures on emotion regulation (Gross, 1998b, 1999a, 1999b) and interpersonal communication (H. H. Clark, 1996; Kappas & Descoteaux, in press; Keltner & Kring, 1998). As we describe here, the picture that emerges from the various literature is that expressive suppression may be a particularly costly form of emotion regulation that disrupts multiple aspects of social exchange, creating stress for both the regulator and the interaction partner alike.<sup>1</sup>

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Emily A. Butler, Frank H. Wilhelm, Nancy C. Smith, Elizabeth A. Erickson, and James J. Gross, Department of Psychology, Stanford University; Boris Egloff, Department of Psychology, Johannes Gutenberg-Universität, Mainz, Germany.

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Correspondence concerning this article should be addressed to James J. Gross, Department of Psychology, Stanford University, Building 420, Jordan Hall, Stanford, California 94305-2130. E-mail: james@psych.stanford.edu

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### Personal Consequences of Expressive Suppression

Gross's (1998b, 2002) process model of emotion regulation provides a general framework for studying how expressive suppression affects the regulator. This model emphasizes that emotions unfold over time and distinguishes between different forms of emotion regulation on the basis of when they have their primary impact on the emotion-generative process. Expressive suppression is seen as a type of response-focused emotion regulation because it selectively down-regulates the behavioral component of an emotional response after the emotional response is already underway (Gross, 1998b, 1999a, 1999b).

In this model, although we would expect suppression to decrease emotion-expressive behavior, we would not expect decreases in the subjective experience of emotion, which is not the target of regulation. Given the cognitive and physical work required to monitor and suppress ongoing emotion-expressive behavior, we would expect increases in physiological measures that are sensitive to effort. We also would expect decreases in measures of cognitive functioning that are sensitive to the multitasking required to suppress emotional behavior. Several experiments have examined these predictions regarding behavioral, experiential, physiological, and cognitive consequences of suppression.

These studies show that by early adulthood, individuals are quite adept at inhibiting the outward signs of emotion. In both solitary slide- and film-viewing paradigms (Gross, 1998a; Gross & Levenson, 1993, 1997; Richards & Gross, 1999, 2000), and in non-interactive social contexts (Friedman & Miller-Herringer, 1991; Harris, 2001), participants are able to substantially reduce positive and negative expressive behavior. With respect to changes in emotion experience, several studies have found that suppressing negative emotion expressions does not decrease negative emotion experience. For example, suppressing emotion expressions in response to either a disgusting or a sad film (Gross, 1998a; Gross & Levenson, 1997) and suppressing signs of embarrassment in public (Harris, 2001) did not alter the experiences of those negative emotions. Interestingly, suppression does seem to dampen positive experience. Amusement was decreased both when participants suppressed their expressive behavior while watching an amusing film (Gross & Levenson, 1997) and while reading cartoons (McCanne & Anderson, 1987; Strack, Martin, & Stepper, 1988). It is not yet clear

what leads to this discrepancy between suppressing positive and negative emotion in noninteractive settings (Gross & Levenson, 1997).

Findings regarding the physiological consequences of expressive suppression are more mixed. Although occasional studies have found either no differences between expressive suppression and spontaneous responding (Bush, Barr, McHugo, & Lanzetta, 1989) or even decreases in physiological activation associated with suppression (Zuckerman, Klorman, Larrance, & Spiegel, 1981), the more typical finding is that suppression is accompanied by increased sympathetic and cardiovascular responding (Gross, 1998a; Gross & Levenson, 1993, 1997; Harris, 2001; Richards & Gross, 1999, 2000). Thus, even though the bulk of the evidence points toward a physiological cost of suppression, the magnitude and boundary conditions of these effects are by no means clear.

In terms of the cognitive consequences of suppression, several slide- and film-viewing studies have shown that suppression reduces memory for social information (e.g., individuals' names and occupations) presented at the time of the regulatory effort, which suggests increases in cognitive load (Richards & Gross, 1999, 2000). This finding is particularly relevant when we consider the social consequences of suppression. If suppression is cognitively costly, then it might be expected to distract the regulator from his or her partner. This should sorely tax the regulator's ability to carry out the basic processes required for conversation maintenance, including the generation of appropriately contingent responses, and this in turn could be quite disruptive to the interaction (Lieberman & Rosenthal, 2001).

### Social Consequences of Expressive Suppression

Theories of interpersonal communication posit that face-to-face interaction involves not only information exchange but also (a) interpersonal coordination in the service of accomplishing various joint goals (e.g., exchanging goods, complying with an experimenter to have a conversation about a specific topic); and (b) the ongoing negotiation of the relative status and intimacy of the interaction partners (H. H. Clark, 1996; Fridlund, 1994; Harker & Keltner, 2001; Kappas & Descoteaux, in press; Keltner & Kring, 1998). These functions are both intentionally signaled and unintentionally indexed through multiple communicative channels including verbal content, facial expression, voice intonation, and gesture. If expressive suppression results in reduced positive and negative emotion expression, as well as distraction, what consequences

would we expect for the regulator's partner and for the relationship between them?

Consider the first function, interpersonal coordination. Many authors have emphasized that responsiveness—the provision of appropriately contingent responses—is the minimal requirement for coordination among individuals (Berg & Derlega, 1987; Cappella, 1997; Davis, 1982; Davis & Perkowski, 1979; Laurenceau, Barrett, & Pietromonaco, 1998; Reis & Shaver, 1988). It does not matter whether you are discussing a film or asking about the price of bread, if the other person does not respond, or responds with irrelevant content, then the interaction breaks down. Thus, if expressive suppression distracts the regulator from the conversation and decreases responsive behavior, it should disrupt interpersonal coordination.

Now consider the second function, negotiating relationship parameters. Emotion expressions provide information to observers about a person's social intentions and his or her feelings regarding the current relationship. For example, a smile communicates a willingness to affiliate, but a frown suggests that conflict is likely. As such, emotion expressions are central to establishing interpersonal distance and relative status (Fridlund, 1994; Harker & Keltner, 2001; Kappas & Descoteaux, in press; Keltner & Kring, 1998). Given that expressive suppression explicitly involves inhibiting emotional content across communicative channels, we would expect suppression to dramatically disrupt the relationship negotiation aspect of social exchange.

Disrupting both interpersonal coordination and relationship negotiation within a conversation would make it more difficult for the participants to accomplish even the simplest joint tasks and would create an ambiguous situation with respect to their relationship. Taken together, this should produce a fairly stressful encounter (Tomaka, Blascovich, Kelsey, & Leitten, 1993). We thus may expect expressive suppression to result in physiological signs of stress in both the regulator and his or her partner. Similarly, the disruption of implicit relationship negotiation should inhibit a sense of connection, and so we thus may expect individuals who interact with someone suppressing his or her emotions to experience lower levels of rapport (feeling close and connected to the other person) and to be less willing to establish or maintain an intimate relationship.

Indirect support for these hypotheses can be found across research areas, including investigations of marital interaction, emotion expression, responsiveness, and social support. Marital researchers have in-

vestigated *stonewalling*, characterized by low levels of emotion expression, and have linked this process with increased physiological responding and negative emotion experience in the regulator, along with reduced marital satisfaction in both partners (Gottman & Levenson, 1988; Levenson, 1994). Clinically oriented researchers have examined links between patterns of emotional expression and the social difficulties associated with psychopathology (Keltner & Kring, 1998); for example, part of the aversive social quality of depressed individuals may be their decreased levels of positive expressivity (Gotlib, 1992). There is also evidence that appropriate emotion expression has positive consequences. Expressivity is considered to be a component of social skill (Riggio, 1986; Riggio & Friedman, 1982), positive emotion expression has been linked with the development of affiliation and rapport (Bernieri, Gillis, Davis, & Grahe, 1996; Harker & Keltner, 2001; Tickle-Degnan & Rosenthal, 1990), and the self-disclosure of emotions appears to be central to both initial attraction and the development of intimacy (Berg & Derlega, 1987; Collins & Miller, 1994; Hornstein & Truesdell, 1988; Laurenceau et al., 1998). Along similar lines, responsiveness has also been shown to predict attraction, affiliation, and rapport (Davis & Perkowski, 1979; Laurenceau et al., 1998; Reis & Shaver, 1988). Finally, a series of experimental studies of the stress-reducing capacity of social support (Christenfeld et al., 1997; Glynn, Christenfeld, & Gerin, 1999; Lepore, 1995; Lepore, Allen, & Evans, 1993) has demonstrated that supportive behavior, characterized by high levels of positive emotion expression and responsiveness, reduces cardiovascular stress-responding in the recipient, and nonsupportive behavior, characterized by a lack of expressive behavior and responsiveness, increases cardiovascular stress-responding.

### The Present Research

On the basis of both theory and prior findings, we expected expressive suppression to result in the following outcomes for the regulator: (a) reduced negative and positive emotion expression, (b) reduced positive emotion experience, (c) increased distraction, (d) decreased responsiveness, and (e) increased physiological responding. In terms of social consequences, we expected expressive suppression to lead to (f) decreased rapport, (g) decreased willingness to affiliate, and (h) increased physiological responding for the partners of the suppression regulators.

A strong test of these hypotheses requires experi-

mental manipulation of expressive suppression within an ecologically valid social context. To provide such a test, we conducted two studies that involved unscripted two-person interactions. One person in each of the experimental dyads, unbeknownst to her partner, was asked to regulate her emotions during the conversation. We chose this methodology, rather than using confederates, because it allowed us to ask whether engaging in expressive suppression provides a sufficient condition for producing significant interpersonal outcomes. We used single-sex dyads to simplify our design and chose to focus on women both because they tend to be more emotionally expressive than men (Kring & Gordon, 1998) and because they show more consistent physiological stress responses to supportive behavior (Glynn et al., 1999). We focused on interactions between previously unacquainted women because we thought that if participants were familiar with each others' typical communication styles, they might be suspicious when a normally expressive individual began to suppress her emotion expressions. An additional motivation for using unacquainted individuals was to better understand relationship formation. The formation of new friendships is an important process in our increasingly mobile social world, and there is evidence that the quality of an initial social interaction between two partners can play an important role in determining whether the interactants go on to become friends (Berg & Clark, 1986).

### Study 1: Comparing Expressive Suppression With Cognitive Reappraisal

When assessing the personal and social consequences of expressive suppression, one crucial issue is what comparison standard to use. One natural comparison condition is an uninstructed condition in which both members of the conversation dyad are free to respond as they typically do. This comparison standard makes it possible to examine the personal and social consequences of emotion suppression versus free expression. However, an uninstructed comparison condition alone does not address the possibility that any observed effects of suppression simply reflect the imposition of a second task.

To address this issue, we also used a second comparison group in Study 1. In this comparison group of dyads, one member of each dyad had been randomly assigned to engage in a second common form of emotion down-regulation, namely cognitive reappraisal, which entails altering how a situation is construed so as to change its emotional impact (Gross, 1998b).

Similar to expressive suppression, survey data show that cognitive reappraisal is common in daily life (Gross & John, 2002), and experimental data show that it can be manipulated in a lab setting (Gross, 1998a; Richards & Gross, 2000). On the basis of our prior experience with these two forms of emotion regulation, we expected that participants would find the two tasks equally difficult to perform.

Despite these similarities, we expected suppression alone to disrupt communication and hence to be uniquely associated with social consequences. As previously outlined, expressive suppression should reduce both positive and negative expressivity. In contrast, cognitive reappraisal should reduce negative emotion experience, and hence negative expressive behavior, but leave positive experience and expression unscathed (Gross, 1998a; Richards & Gross, 2000). In addition, previous research in nonsocial settings illustrates that cognitive reappraisal does not entail the decrements in memory that are associated with suppression (Richards & Gross, 2000). As a result, we expected cognitive reappraisal to interfere less with responsiveness than would expressive suppression. These expected differences in expressivity and responsiveness led us to predict that only the partners of participants engaging in expressive suppression, and not the partners of participants engaging in cognitive reappraisal, would experience lower levels of rapport and increased blood pressure during a conversation.

### *Method*

#### *Participants*

Seventy-two women from the Stanford University community participated in this study. Participants were paid \$15. The mean age of participants was 20.3 years ( $SD = 5.2$  years). Of the participants, 51% described themselves as Caucasian, 33% as Asian American, 10% as Latin American, 3.5% as African American, and 2.5% as other.

#### *Procedure*

Unacquainted pairs of women were briefly introduced to each other, and it was verified that the women had never spoken to each other before. They were then seated 2 m apart on either side of an opaque partition. The experimenter explained that the purpose of the study was to better understand conversational processes. The participants were informed that blood pressure would be measured and that their conversation would be videotaped.

After blood pressure cuffs were attached, a television monitor was positioned so that each participant

could view the monitor but not each other. Participants first watched a 3-min nature film, which provided our blood pressure reference baseline. To create a shared negative emotion experience, participants were shown an upsetting 16-min documentary war film. This film shows graphic footage of the aftermath of the nuclear bomb being dropped on Hiroshima and Nagasaki during World War II. Pilot testing showed that this film elicits high levels of negative emotions such as disgust, anger, and sadness, as well as strong political and religious opinions.

Random assignment to conditions took place immediately after viewing the war film. The first step was to assign a dyad to either the suppression, reappraisal, or control group. This process resulted in 12 suppression dyads, 12 reappraisal dyads, and 12 uninstructed control dyads. Next, the women in the regulation dyads were assigned to be either the regulator or the uninstructed partner. The suppression regulator received tape-recorded suppression instructions via headphones ("During the conversation, behave in such a way that your partner does not know you are feeling any emotions at all"). The reappraisal regulator received tape-recorded reappraisal instructions ("During the conversation, think about your situation in such a way that you remain calm and dispassionate"). Their 24 partners, plus the 24 individuals in the control condition, simply heard a bland musical segment.

The experimenter then removed the partition and asked participants to discuss their thoughts and feelings, the implications of the film for human nature, and its relevance to their religious and political beliefs. Participants were free to signal the end of the conversation when they so chose. After the conversation, the opaque partition was replaced, and participants privately responded to the self-report measures (see the *Measures of Rapport, Emotion Experience, Task Difficulty, and Distraction* section). Finally, participants were fully debriefed and given a chance to converse with each other about the experiment.

### *Measures of Expressive Behavior*

Participants were videotaped during the conversation with two cameras hidden behind darkened glass and positioned so that one camera focused on each participant's face and upper torso. The two camera images were then combined into a single split-screen image using a special effects generator. The videos were used to score the participants' emotion-expressive behavior and responsiveness using a coding system adapted from the Specific Affect Coding System

(SPAFF; Gottman & Levenson, 1992). The SPAFF uses a "cultural informant" approach to coding in which the gestalt of all simultaneously occurring communicative signals, both verbal and nonverbal, is taken into account when assigning a behavioral segment to one of the coding categories. Some modifications were necessary for our purposes because the SPAFF tracks specific emotions such as anger, whereas our hypotheses were framed at a broader level of analysis and includes categories appropriate for marital interaction that did not appear in our data set, such as "whining" or "affection." Therefore, aggregates of only the relevant categories were used and each turn of speech was classified as emotionally neutral, positive expression, or negative expression. Some turns contained both positive and negative expression, and so a turn could be double-coded. Finally, the SPAFF does not include an equivalent category to responsiveness. In developing such a category, we followed Davis' (1979, 1982) approach and focused on nonresponsiveness because the lack of response is more salient than its presence. A *nonresponse* was thus defined as a sequence in which one person finished an utterance and the other person either did not respond within 2 s, or they responded with an utterance of less than three words followed by silence, or they responded with content that was unrelated to the previous person's contribution.

Because conversations differed in length, proportions were used for our analyses. For expressive behavior, the number of either positive or negative expressive utterances was divided by the total number of utterances. For nonresponse, one woman's number of nonresponses was divided by her partners' total number of utterances (i.e., the total number of conversational turns that could be responded to). For ease of interpretability, this was then translated into a responsiveness score using the conversion of "1 - % nonresponse."

Coders were blind to the participants' experimental condition. One person coded all videotapes, and two other coders provided reliability ratings on 25 of the 36 tapes. For tapes that were coded by multiple raters, the mean of the ratings was used for final analyses. Reliabilities were excellent (positive expression:  $r = .90$ ; negative expression:  $r = .92$ ; responsiveness:  $r = .87$ ).

Two other behavioral measures were obtained: speaking time and general somatic activity. Speaking time was recorded from the videotapes using a stopwatch. Any utterance of more than two syllables was considered as speaking. To measure somatic activity

levels, piezo-electric sensors were attached to the legs of the participants' chairs, which generated electrical signals proportional to the amount of movement in any direction.

#### *Measures of Rapport, Emotion Experience, Task Difficulty, and Distraction*

All self-report responses used an 11-point Likert scale (0 = *none*, 10 = *a great deal*). To assess participants' experience of rapport during the conversation, they were asked to report on the degree to which they felt the conversation had been warm and smooth and the extent to which they felt they had "clicked" with their partner. The alpha for this three-item rapport scale was .85.

To assess emotion experience, after the conversation, participants provided a retrospective report of the emotions that they had felt during the conversation. Participants indicated how much they had felt 12 negative emotions (anger, anxiety, self-consciousness, contempt, disgust, fear, sadness, tension, frustration, embarrassment, guilt, shame), and 8 positive emotions (amusement, happiness, joy, love, interest, excitement, pride, pleasantness). The alpha for the Negative Emotion scale was .87; the alpha for the Positive Emotion scale was .78.

We expected that our instructions to engage in expressive suppression and in cognitive reappraisal would be equally difficult for our participants to carry out but that the unique self-monitoring demands imposed by expressive suppression would result in higher levels of distraction in the suppression regulators. To obtain evidence pertinent to these hypotheses, our regulation participants were asked, following the conversation, to report on the item "How difficult was it to follow your instructions during the conversation?" and both the regulation and uninstructed participants were asked to report on the item "How distracted were you during the conversation?"

#### *Measures of Physiological Responding*

In the domain of physiological responding, blood pressure responses were chosen to be the focus for two reasons. First, blood pressure is the key-regulated variable of the cardiovascular system (Vander, Sherman, & Luciano, 1990). This makes it a sensitive index in situations such as an emotional conversation where both the sympathetic and the parasympathetic autonomic systems are expected to be activated. Second, blood pressure appears to be particularly sensitive to social cues of evaluative threat (Cacioppo & Petty, 1986), social support (Uchino et al., 1996), and

to attempting to suppress emotion in a social situation (Harris, 2001).

Participants' blood pressure was measured continuously throughout the baseline film and conversation using an Ohmeda 2300 Finapres (Ohmeda Monitoring System, Englewood, CO). The continuous finger arterial pressure waveform was manually edited for artifacts, and beat-by-beat systolic (SBP) and diastolic blood pressure (DBP) values were computed. SBPs and DBPs were highly correlated ( $r = .95$ ) and so were combined into mean arterial blood pressure (MAP), following standard guidelines ( $MAP = DBP + 1/3 [SBP - DBP]$ ; Vander, Sherman, & Luciano, 1990). Change scores were then computed by subtracting mean neutral-film baseline values from mean conversation values.

#### *Data Analysis*

One feature of any unscripted social interaction is that the responses of the two individuals within a conversational dyad may be correlated. For example, if one person acts in a hostile manner, it is very likely that her partner will reciprocate. This lack of independence violates the assumptions of standard analyses of variance (ANOVAs) and regression models, and if ignored can render the significance tests inaccurate (Kashy & Kenny, 1997; Kenny, 1988, 1996a, 1996b).

Therefore, to test our hypotheses, we used Kenny's actor-partner interdependence model, which not only deals appropriately with dyadic data but actually takes advantage of it to address questions of mutual influence (Kashy & Kenny, 1997; Kenny, 1996b). This model entails calculating "actor effects" and "partner effects." An *actor effect* represents the influence that an individual's score on a predictor variable has on her own score on a dependent variable, whereas a *partner effect* represents the influence that an individual's score on a predictor has on her partner's score on the dependent variable. For example, if suppressing emotion expressions raised the regulators' blood pressure, then this would be captured by an actor effect, but if suppressing raised the regulator's partner's blood pressure, then this would appear as a partner effect. Full details of how to implement the method are provided in Kashy and Kenny (1997).

For each actor or partner effect of interest, the following two hypothesis tests were conducted: (a) the difference between the uninstructed control participants and the combined mean of both regulation groups—actor effects reflect the mean of the two types of regulators compared with the controls, whereas partner effects reflect the mean of the part-

ners of the two types of regulators compared with the controls; and (b) the difference between the two regulation groups—actor effects reflect the difference between suppressors and reappraisers, whereas partner effects reflect the difference between the partners of suppressors and the partners of reappraisers.

To balance the demands of limiting Type I and Type II error, our hypothesis tests were divided into three families and the Type I error rate was restricted within each family by using a stepwise Bonferroni procedure (Howell, 1992). The first family of tests includes the emotion experience items because these bear on the question of the effects of emotion regulation on subjective experience. This family required a total of 8 hypothesis tests. The second family includes all other primary measures and required a total of 15 tests. The third family included the secondary measures and involved five tests. Following Howell (1992), the obtained  $p$  values were ordered for the tests within a set in decreasing order of significance and the critical  $p$  value was set for the first test (the most significant one) at  $.05/c$ , where  $c$  equals the total number of tests to be made within the set. Assuming this test was significant, the critical  $p$  value was set for the next test (the second most significant one) at  $.05/(c - 1)$ , reflecting the total number of tests left to be made within the set. This process continued until a test was nonsignificant.

### Results

We first present results relevant to the personal consequences of suppression (actor effects). We next present results relevant to the social consequences (partner effects). Finally, we present secondary analyses intended to address several alternative accounts of our findings.

#### *Personal Consequences: Behavior*

As predicted, the regulators were less expressive of negative emotion than were the uninstructed controls. An actor-partner analysis contrasting the mean of the two regulation groups with the controls showed that this difference was significant (actor effect =  $-0.06$ ),  $t(62) = -2.76$ ,  $p < .008$ , whereas the two types of regulators did not differ from each other. This pattern was also observed for positive expressivity. The combined means of the two regulation groups differed significantly from the controls (actor effect =  $-0.05$ ),  $t(67) = -3.67$ ,  $p < .001$ , but the suppression and reappraisal regulators again did not differ. In contrast, the suppression regulators were uniquely impover-

ished in terms of responsiveness. Although the combination of the two regulation groups did not differ from the controls, the suppressors were significantly less responsive than the reappraisers (actor effect =  $-0.07$ ),  $t(67) = -3.53$ ,  $p < .001$ . Thus, although both forms of regulation reduced expressivity, suppression alone interfered with responsiveness. Group means and standard errors for interpersonal behavior are shown in Figure 1.

#### *Personal Consequences: Difficulty and Distraction*

Because only the regulators received task instructions, an independent samples  $t$  test was adequate to compare their responses on the difficulty item. As expected, the suppressors' difficulty in following the instructions ( $M = 8.4$ ,  $SD = 1.8$ ) did not differ from that of the reappraisers ( $M = 7.3$ ,  $SD = 2.5$ ). With respect to distraction, we expected suppression to distract the regulators from the conversation more than reappraisal would. As shown in Figure 1, this was in fact the case. Actor-partner analyses showed that the combination of the two types of regulation differed significantly from the control group (actor effect =  $-0.38$ ),  $t(48) = -3.07$ ,  $p < .004$ , and that the suppressors were also significantly more distracted during the conversation than were the reappraisers (actor effect =  $0.48$ ),  $t(65) = 3.43$ ,  $p < .001$ .

#### *Personal Consequences: Emotion Experience*

Actor-partner analyses on the positive and negative emotion experience composites did not show predicted differences among regulation groups. For positive emotion, there were no significant differences between the suppressors ( $M = 1.4$ ,  $SD = 0.6$ ), the reappraisers ( $M = 2.5$ ,  $SD = 1.4$ ), and the controls ( $M = 2.0$ ,  $SD = 1.3$ ). Similarly for negative emotion, the means and standard deviations for the suppressors, reappraisers, and controls were 2.3 ( $SD = 1.9$ ), 2.5 ( $SD = 2.0$ ), and 2.9 ( $SD = 1.9$ ), respectively, with no significant differences.

#### *Personal Consequences: Blood Pressure*

We also predicted that the suppressors would show enhanced blood pressure responses during the conversation relative to reappraisal or control participants. Again, this hypothesis was not supported. Consistent with prior literature on the effects of vocalization (al'Absi et al., 1997; Egloff, Wilhelm, Neubauer, Mauss, & Gross, 2002), blood pressure increased during the conversation for all participants. However, there were no significant differences in increases in

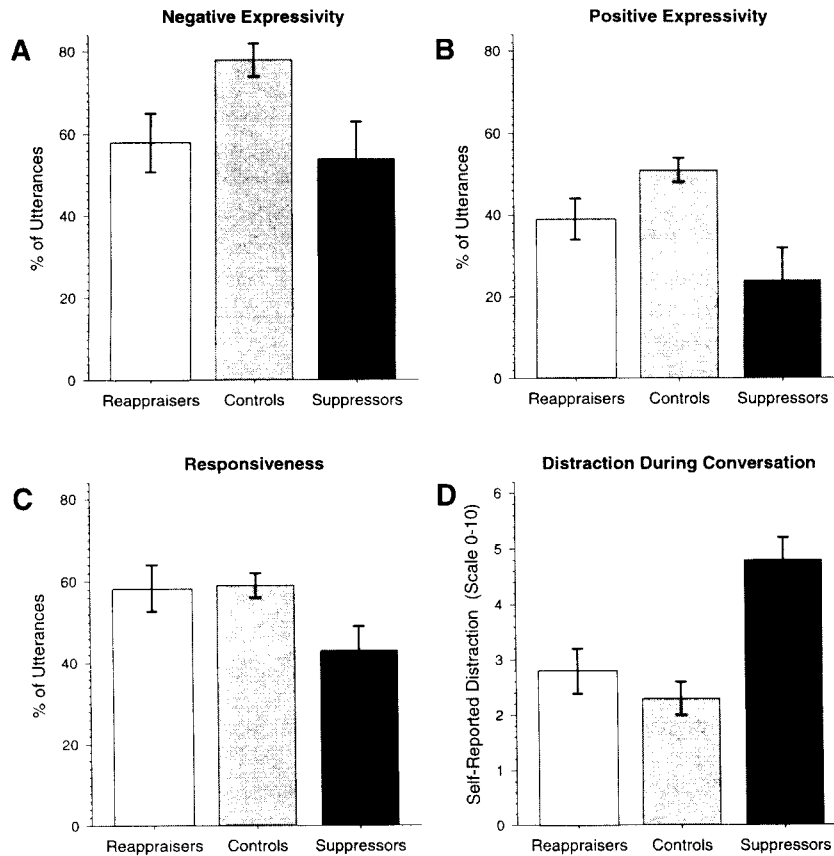


Figure 1. Interpersonal behaviors and distraction by instructional group in Study 1.

mean blood pressure for suppressors ( $M = 17.1$ ,  $SD = 10.9$ ), reappraisers ( $M = 19.8$ ,  $SD = 10.0$ ), and controls ( $M = 18.1$ ,  $SD = 11.7$ ).

*Social Consequences: Rapport*

We expected the differences in suppressors' and reappraisers' interpersonal behavior to result in differences in their partners' experiences of rapport. Although the partners of suppressors did report feeling less rapport during the conversation ( $M = 5.4$ ,  $SD = 1.9$ ) than did either the partners of the reappraisers ( $M = 6.2$ ,  $SD = 1.6$ ) or the uninstructed controls ( $M = 7.2$ ,  $SD = 1.6$ ), our stringent control of Type I error prevented this result from reaching significance.

*Social Consequences: Blood Pressure*

Increases in mean arterial blood pressure for the partners of the regulators as compared with the uninstructed controls are presented in Figure 2. As predicted, the partners of the suppressors showed the largest increases. An actor-partner analysis confirmed that although the combination of the two types of

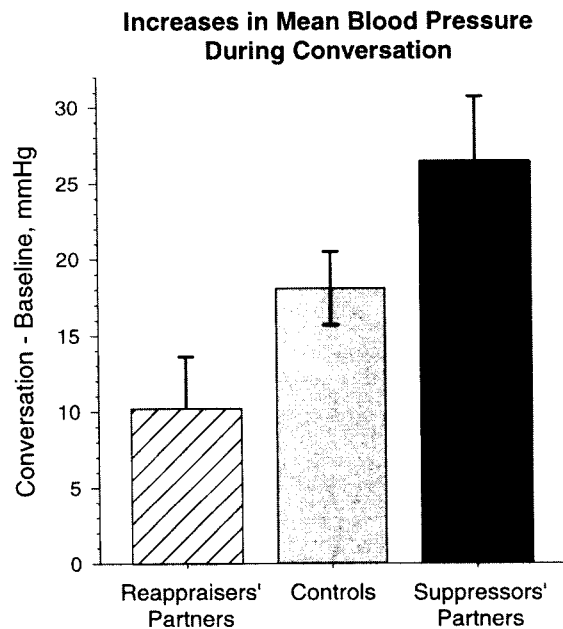


Figure 2. Increases in blood pressure by instructional group in Study 1.



regulation partners did not differ from the controls, the suppressors' partners experienced significantly larger increases than did either the reappraisers' partners (partner effect = 4.03),  $t(63) = 3.24$ ,  $p < .002$ , or the controls (partner effect = 4.67),  $t(58) = 2.49$ ,  $p < .016$ .

### *Social Consequences: Emotion Experience*

We had not predicted any differences in the subjective experience of emotion for the partners of the regulators. Reports of positive emotion by the suppressors' partners ( $M = 1.9$ ,  $SD = 2.0$ ), the reappraisers' partners ( $M = 2.4$ ,  $SD = 1.1$ ), and the uninstructed controls ( $M = 2.0$ ,  $SD = 1.3$ ) did not differ. Similarly, there were no differences in reports of negative emotion experience by the suppressors' partners ( $M = 1.4$ ,  $SD = 1.1$ ), the reappraisers' partners ( $M = 2.0$ ,  $SD = 1.0$ ), and the controls ( $M = 2.9$ ,  $SD = 1.9$ ).

### *Secondary Analyses*

To ascertain whether the observed differences between suppressors' and reappraisers' partners' blood pressure responses could be attributed to general somatic activity, we conducted an additional actor-partner analysis. There were no differences between any of the groups (means ranged from .17 to .19, with standard deviations from .004 to .008). We similarly wished to rule out conversation length and speaking time as explanations of the blood pressure differences. Conversations ranged in length from 2.5 min to 22 min ( $M = 7.4$  min,  $SD = 4.0$  min). A one-way ANOVA, with regulation instructions as a between-subjects variable (suppression, reappraisal, control), showed that although suppression conversations ( $M = 6.8$  min,  $SD = 3.6$  min) and reappraisal conversations ( $M = 6.4$  min,  $SD = 2.8$  min) tended to be slightly shorter than control conversations ( $M = 9.1$  min,  $SD = 5.0$  min), this difference was not significant.

Although regulation instructions did not affect conversation length, they nonetheless could have influenced participants' speaking time. To test this possibility, we conducted an actor-partner analysis on individual speaking times. This demonstrated that the combined speaking length of the two types of regulator was shorter than that of the controls (actor effect =  $-24.94$ ),  $t(65) = -2.77$ ,  $p < .007$ , but that the two types of regulator did not differ from each other. The partners of the regulators did not differ from either the controls or from each other. The means and standard deviations were suppression regulators ( $M = 2.3$  min,

$SD = 1.4$  min), reappraisal regulators ( $M = 2.6$  min,  $SD = 1.6$  min), suppressors' partners ( $M = 3.7$  min,  $SD = 2.4$  min), reappraisers' partners ( $M = 2.7$  min,  $SD = 1.5$  min), and controls ( $M = 4.3$  min,  $SD = 2.8$  min). To be certain that neither activity levels nor speaking time contributed to the blood pressure differences, we reran our actor-partner analyses of blood pressure, including those variables as predictors, and established that this did not alter the findings.

### *Discussion*

Study 1 tested the hypothesis that expressive suppression would have personal and social consequences, and that these consequences would be specific to suppression. To test this hypothesis, we compared two forms of emotion regulation—expressive suppression and cognitive reappraisal—with each other and with an uninstructed control group. We found that suppression, and suppression alone, distracted the regulators from the conversation, reduced their responsiveness, and led to the regulators' partners experiencing heightened blood pressure increases. Furthermore, the cardiovascular impact on the regulators' partners could not be accounted for by factors such as task difficulty, general activity levels, or speaking times. It appears, therefore, that expressive suppression was particularly disruptive to communication and produced a uniquely physiologically stressful encounter for the regulators' partners.

These findings are intriguing, but several important limitations of Study 1 must be noted. Perhaps the most important limitation is the relatively small sample size. On the basis of the observed data, we required a very large effect size to obtain significance given our tight control of Type I error. On the one hand, this fact gives us confidence that those results that did attain significance are substantial. On the other hand, we did not have the statistical power to detect even fairly large group differences. This fact may account for several null results. For example, suppressors experienced less positive emotion than the controls, whereas the reappraisers experienced more positive emotion. Similarly, the partners of suppressors felt less rapport than either the reappraisers' partners or the uninstructed controls. Both of these results were predicted a priori and have effect sizes in the range of .80, but the lack of statistical power prevented them from reaching significance. It should be noted that this lack of power does not weaken the conclusion that suppression uniquely drove up the regulators' partners' blood pressure because the re-

appraisers' partners actually experienced smaller blood pressure increases than did the uninstructed controls.

Another factor that may have contributed to null results is that our emotion experience measure, despite having been used successfully in numerous non-social studies, may not have been optimal in a conversational setting. Within the context of a social interaction, a distinction needs to be made between emotional experiences arising from the topic of conversation and emotional experiences provoked by one's partner. For example, in our context, suppression may have resulted in conversations that avoided the topic of the film, and so when responding to emotion items such as "disgust," the suppressors might have reported reduced feelings because the film would have been less salient during the conversation. In contrast, when responding to negative emotion items such as "frustration," the suppressors may have referred to their experience of disrupted communication and given high ratings to these items. When the items are combined, they would cancel out and we would see no differences between the groups.

The bulk of prior research has concluded that suppression is accompanied by increased sympathetic activity and increased blood pressure responses in the regulators (Gross, 1998a; Gross & Levenson, 1993, 1997; Harris, 2001; Richards & Gross, 1999), but this was not borne out in our results. In this case, even the direction of the group means does not support the prediction, and so this is not purely a power issue. Although it is possible that the cardiovascular effect found in the prior research was overwhelmed by the demands of a conversational setting, it is also possible that with only 12 suppression regulators, we were observing an anomalous sample.

One final limitation concerns mediation. In the context of this study, the only way that one woman's emotion regulation could affect her partner was via her behavior. Although Study 1 provided clear evidence that expressive suppression was particularly disruptive to interpersonal behavior, the small sample size meant that mediation analyses would not be reliable (Baron & Kenny, 1986). This means that it is not yet clear what behavioral changes in suppression regulators mediated the observed effects.

### Study 2: The Personal and Social Costs of Expressive Suppression

To replicate and extend findings from Study 1, and to address the limitations described above, we con-

ducted Study 2. Because Study 1 showed that expressive suppression had consequences not evident in a second common form of emotion down-regulation that matched suppression in terms of task difficulty, Study 2 focused on just two conditions to maximize cell size: suppression and uninstructed control. We retained most of the procedures from Study 1 but included a more differentiated sampling of emotion experience in which we distinguished between emotional responses as a result of recalling the film and those arising in response to one's partner. In addition, we aimed to more directly assess the impact of suppression on the potential for relationship development, and so we included a self-report measure tapping the participants' liking of each other and their willingness to form a friendship.

With respect to emotion experience, when referring to emotions about their partners, we expected suppressors would be conscious of the disruptions in communication brought about by their own purposeful regulatory efforts and might therefore report more negative and less positive emotional experiences. As for the suppressors' partners, studies of social support routinely show that participants' do not report differences in experience because of interacting with non-supportive confederates, although they do show increased physiological responding and reduced liking for the confederate (Christenfeld et al., 1997; Glynn et al., 1999; Lepore et al., 1993). This may be due to the fact that physiological responding and simple like-dislike evaluations occur more automatically than consciously evaluated and articulated emotion experiences. We thus expected the partners of the regulators would not report any changes in emotion experience, although they would show increased physiological stress responses and more negative evaluations of the conversation and of their partners (e.g., decreased rapport and affiliation).

### Method

#### Participants

Eighty-four undergraduate women at Stanford University participated in this study. They either received partial course credit or were paid \$25. The mean age of participants was 18.7 years ( $SD = 1.0$  years). Of the participants, 53% described themselves as Caucasian, 32% as Asian American, 8.6% as Latin American, 1.2% as African American, and 4.9% as other.

#### Procedure

The only differences from Study 1 were that a longer baseline nature film was used (6 min) to in-

crease the reliability of our blood pressure measures and the self-report measures were improved and extended (see the *Measures of Affiliation and Emotion Experience* section). Randomization resulted in 21 suppression dyads and 21 uninstructed control dyads.

#### *Measures of Expressive Behavior*

Using the same procedures as in Study 1, one coder rated all videotapes while two others provided reliability ratings on 28 of the 42 tapes. Reliabilities were again excellent (positive expression:  $r = .94$ ; negative expression:  $r = .88$ ; responsiveness:  $r = .85$ ).

#### *Measures of Affiliation and Emotion Experience*

In addition to the measures from Study 1, following the conversation, the participants' mutual liking and willingness to form a friendship were assessed with the following five questions: (a) "To what extent do you like your partner?" (b) "How well do you think you would get along with your partner?" (c) "To what extent do you think your partner likes you?" (d) "To what extent would you be interested in talking to your partner again?" (e) "To what extent is your partner the type of person you could become close friends with?" The alpha for this affiliation composite was .89.

Emotion experience was again assessed, following the conversation, but this time the referent of our questions was clearly specified. Participants were first asked to indicate "the extent to which your partner made you feel the following emotions during the conversation." Participants were then asked to indicate "the extent to which recalling the film made you feel the following emotions during the conversation." For each questionnaire (emotions about partner, emotions about film), participants indicated how much they had felt the same 12 negative and 8 positive emotions as in Study 1. Alphas ranged from .79 to .93.

#### *Data Analysis*

The same analytic strategy was used as in Study 1. This resulted in one family of eight comparisons relevant to emotional experience, a second family of eight comparisons to evaluate all other primary outcomes, and a third family of five comparisons to evaluate secondary factors.

### *Results*

#### *Personal Consequences: Behavior*

Compared with the controls, we expected that suppression would decrease both the regulators' negative

and positive emotion expression, and their responsiveness. As shown in Figure 3, this was indeed the case. Actor-partner analyses demonstrated that compared with the controls, during the conversation suppressors expressed less negative emotion (actor effect =  $-0.11$ ),  $t(58) = -3.99$ ,  $p < .001$ , less positive emotion (actor effect =  $-0.11$ ),  $t(44) = -4.84$ ,  $p < .001$ , and were significantly less responsive (actor effect =  $-0.12$ ),  $t(62) = -4.82$ ,  $p < .001$ .

#### *Personal Consequences: Distraction*

As predicted, and as shown in Figure 3, the suppressors reported higher levels of distraction during the conversation than did the controls (actor effect =  $1.19$ ),  $t(68) = 5.72$ ,  $p < .001$ .

#### *Personal Consequences: Emotion Experience*

We predicted that the suppressors would experience reduced positive and increased negative emotion about their partners. As can be seen in Table 1, these hypotheses were supported. Suppressors reported significantly less positive emotions about their partners than did the controls (actor effect =  $-4.90$ ),  $t(66) = -2.61$ ,  $p < .009$ , as well as significantly more negative emotions about them (actor effect =  $9.80$ ),  $t(60) = 3.38$ ,  $p < .001$ . By contrast, there were no significant effects for emotion experience in response to the film.

#### *Personal Consequences: Blood Pressure*

As in Study 1, blood pressure increased during the conversation for all participants. Unlike Study 1, but as originally predicted, the suppressors showed larger increases in blood pressure during the conversation than did the controls. The means and standard errors are provided in Figure 4. An actor-partner analysis of increases in mean arterial blood pressure showed that this difference was significant (actor effect =  $2.32$ ),  $t(77) = 2.18$ ,  $p < .032$ .

#### *Social Consequences: Rapport and Affiliation*

As predicted, and as shown in Figure 5, the partners of suppressors reported feeling less rapport during the conversation than did the uninstructed control participants. An actor-partner analysis confirmed that this difference was significant (suppression partner effect =  $-0.64$ ),  $t(55) = -2.32$ ,  $p < .025$ . In addition, we predicted that the partners of suppressors would report less liking and willingness to form a friendship with their partners (i.e., the suppressors) than would the controls. An actor-partner analysis of the affiliation composite clearly supported these hypotheses. As is also shown in Figure 5, the partners of suppressors

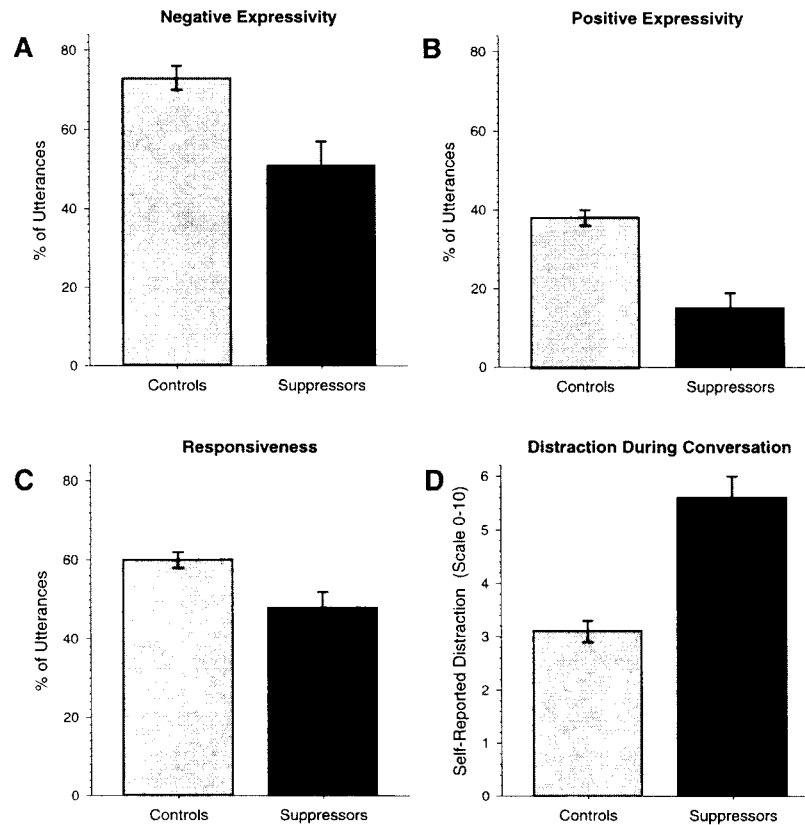


Figure 3. Interpersonal behaviors and distraction by instructional group in Study 2.

liked their partners (i.e., the suppressors) less than did the controls and were decidedly uninterested in ever speaking with them again or in forming a friendship (partner effect =  $-2.75$ ),  $t(63) = -2.48$ ,  $p < .016$ .

#### Social Consequences: Emotion Experience

We did not expect any differences in subjective emotion experience in the partners of the suppressors either with respect to recalling the film or in response to their partners. Descriptive statistics are provided in

Table 1, and actor-partner analyses confirmed that there were no significant differences between the regulation partners and the controls.

#### Social Consequences: Blood Pressure

Increases in mean arterial blood pressure for the partners of the suppressors and the controls are presented in Figure 4. As in Study 1, the partners of the suppressors showed the largest increases. Actor-partner analyses confirmed that this difference was

Table 1  
Mean Emotion Experience Reports (and Standard Deviations) in Study 2

| Variable                 | Controls               | Suppressors            | Suppressors' partners    |
|--------------------------|------------------------|------------------------|--------------------------|
| Experience about partner |                        |                        |                          |
| Negative experience      | 1.0 (0.9) <sup>a</sup> | 2.3 (2.2) <sup>b</sup> | 1.7 (1.1) <sup>a,b</sup> |
| Positive experience      | 4.0 (1.8) <sup>a</sup> | 2.6 (1.6) <sup>b</sup> | 3.4 (1.7) <sup>a,b</sup> |
| Experience about film    |                        |                        |                          |
| Negative experience      | 3.3 (1.5) <sup>a</sup> | 3.4 (2.1) <sup>a</sup> | 3.9 (1.8) <sup>a</sup>   |
| Positive experience      | 2.5 (1.3) <sup>a</sup> | 1.4 (1.2) <sup>a</sup> | 2.8 (1.4) <sup>a</sup>   |

Note. Means and standard deviations based on an 11-point scale (0 = none, 10 = a great deal). Means in a given row with different superscripts differ from one another at  $p < .01$ , two-tailed.

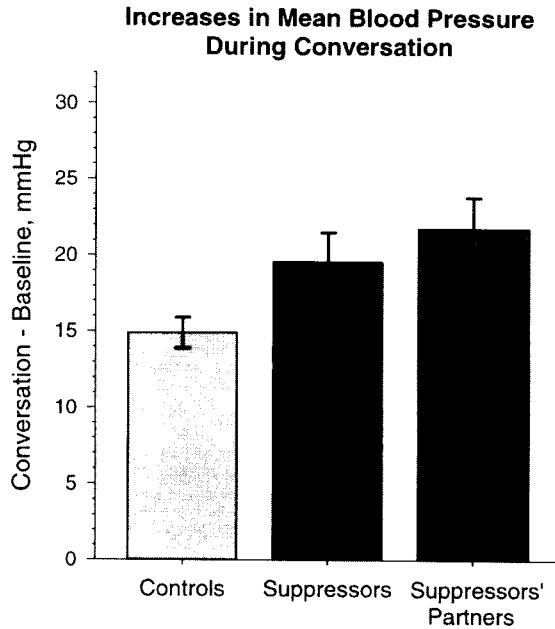


Figure 4. Increases in blood pressure by instructional group in Study 2.

significant (partner effect = 3.45),  $t(77) = 3.24$ ,  $p < .002$ . These results indicate that interacting with someone who is suppressing her emotional expressions can result in heightened cardiovascular responding.

#### Secondary Analyses

As in Study 1, an actor-partner analysis of somatic activity revealed that neither the suppressors ( $M = 0.4$ ,  $SD = 0.2$ ) nor their partners ( $M = 0.3$ ,  $SD = 0.2$ ) differed from the controls ( $M = 0.5$ ,  $SD = 0.4$ ) in terms of general body movement. Turning to conversation length, conversations ranged from 4.0 min to 25.2 min ( $M = 9.1$  min,  $SD = 4.7$  min). An independent samples  $t$  test showed that although suppression conversations ( $M = 8.5$  min,  $SD = 4.9$  min) tended to be slightly shorter than control conversations ( $M = 9.8$  min,  $SD = 4.9$  min), this difference was not significant. We also investigated whether expressive suppression would impact individual speaking times. An actor-partner analysis demonstrated that neither the suppressors' speaking times ( $M = 6.0$  min,  $SD = 5.9$  min) nor their partners' ( $M = 5.7$  min,  $SD = 4.8$  min) differed from that of the controls ( $M = 5.8$  min,  $SD = 4.9$  min).

Because neither the suppressors nor their partners differed from the controls in terms of activity levels or speaking times, these factors should not have contrib-

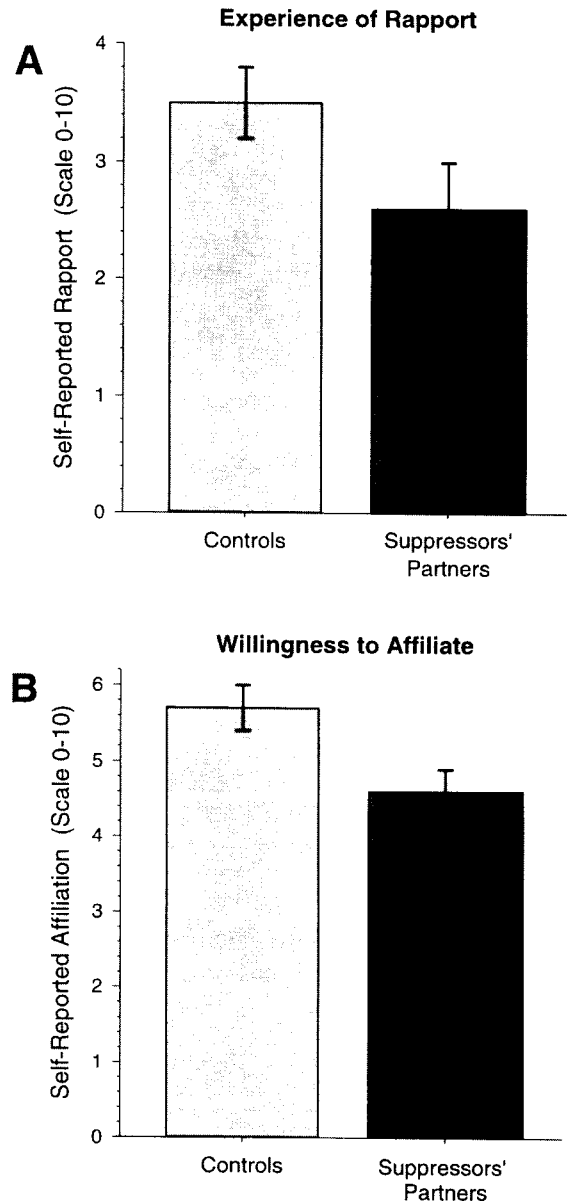


Figure 5. Experiences of rapport and affiliation by instructional group in Study 2.

uted to the blood pressure differences. Nevertheless, we reran our actor-partner analyses of blood pressure, including general activity levels and speaking times as predictors. As in Study 1, these secondary analyses did not alter our findings.

#### Mediation of Partner Outcomes

We reasoned that the replicated social consequences of expressive suppression must be mediated by the regulators' behavior. In the following sections,

we present mediation analyses following Baron and Kenny (1986). In these analyses, we first predicted each partner outcome (rapport, affiliation, and blood pressure) from each of the behaviors that differentiated between the suppressors and the controls (positive and negative expressivity, responsiveness). If a behavior–outcome pairing showed a significant association, we then took the final step in a mediation analysis by predicting the given outcome from an equation, including both regulation condition (suppress vs. control) and the behavior. Mediation is demonstrated when (a) the slope for the regulation condition is no longer significant but the one for the mediating behavior is, and (b) the reduction in the slope for the regulation condition is significantly different from zero.

*Rapport.* A sequence of actor–partner analyses predicting rapport from each of the three behaviors showed that only responsiveness produced a significant partner effect (2.76),  $t(77) = 2.73, p < .008$ . Thus, individuals who produced high levels of responsive behavior had partners who felt high levels of rapport. The next steps in the analysis showed that responsiveness did in fact mediate the partners' experience of rapport. When both regulation condition and responsiveness were included in an actor–partner analysis predicting rapport, the partner effect for condition, which was originally significant, no longer was, but the partner effect for responsiveness continued to be significant (partner effect = 2.65),  $t(76) = 2.35, p < .021$ . Furthermore, the Sobel reduction test demonstrated that the reduction in the partner effect of regulation condition was significant (Sobel:  $z = -2.13, p = .03$ ).

*Affiliation.* A similar analysis of the participants' responses to the affiliation measure showed that both negative expressivity and responsiveness, but not positive expressivity, predicted the partners' willingness to form a friendship (negative expressivity partner effect = 9.00),  $t(80) = 2.28, p < .025$ ; (responsiveness partner effect = 10.80),  $t(63) = 2.40, p < .019$ . Thus, individuals who expressed high levels of negative emotion during the conversation, and those who were responsive, had partners who were willing to form a friendship. Unlike rapport, however, the next step in the analysis showed that these behaviors did not mediate the partners' affiliation; in both cases, neither condition nor behavior remained a significant predictor when both were included in the equation.

*Blood pressure.* Unlike rapport and affiliation, a series of actor–partner analyses predicting blood pressure responses from the behaviors that had character-

ized the suppression dyads yielded no significant associations either for actors or for partners. In other words, a woman's expressivity and responsiveness were not associated with either her own or her partner's blood pressure response.

### Discussion

Study 2 replicated and extended the findings from Study 1. Expressive suppression distracted the regulators from the conversation, led to major decrements in their expressivity and responsiveness, and produced heightened cardiovascular responding in their partners. Whereas in Study 1 there was a trend for the suppressors' partners to feel less rapport than the controls, in Study 2 this difference was clearly apparent and reached statistical significance. In addition, Study 2 extended our investigation by including the impact of expressive suppression on the potential for the women to develop a friendship, finding that when one woman inhibited her emotion expressions, it dramatically reduced her partner's motivation to become further acquainted. These findings indicated that expressive suppression not only directly impacted the regulators' partners in negative ways but it also undermined the relationship between them.

Turning to the personal consequences of expressive suppression, Study 2 provided support for the generalizability of effects that previously have been seen in nonsocial situations. Compared with the uninstructed control group, women who were asked to suppress experienced less positive and more negative emotion about their partners and had larger blood pressure responses. Although we had not observed these effects in Study 1, this discrepancy may be accounted for by the lack of statistical power and less clearly defined emotion experience items in the first study.

The increased sample size of Study 2 permitted us to examine mediating processes. Our mediational analyses revealed that the suppressors' reduced responsiveness mediated their partners' reduced rapport. This is in accord with theory and research that posits responsiveness as the minimal requirement for interpersonal coordination and the experience of rapport (Bernieri & Rosenthal, 1991; Cappella, 1997; Tickle-Degnan & Rosenthal, 1990). In addition, across both the suppression and the control dyads, one woman's responsiveness and expression of strong negative emotions about the film predicted her partner's willingness to establish a friendship. This is not surprising given the extensive literature on the importance of both responsiveness and emotional disclosure

for initial attraction and friendship formation (see e.g., Berg & Derlega, 1987; Collins & Miller, 1994; Laurenceau et al., 1998; Reis & Shaver, 1988). Unlike rapport, however, these behaviors did not mediate the group differences in affiliation. Finally, despite these clear links between the regulators' behaviors and their partners' evaluations of the conversation and the relationship, these behaviors did not predict cardiovascular responding in either the suppressors or their partners.

### General Discussion

Emotion theorists since Darwin (1872/1998) have emphasized the communicative value of emotion. Emotions are not always allowed free reign during social interaction, however. Occasionally, we want to suppress our emotional expressions. For example, we may want to avoid a troubling topic or keep from betraying hidden preferences. Research on emotion suppression generally has focused on the consequences for the person who is doing the regulating and has been limited to solitary or noninteractive settings. The present research moves the study of emotion regulation into the social domain and shows that, in some contexts at least, suppressing emotion disrupts communication, hinders the development of social bonds, and is physiologically taxing for both the suppressor and her social partner.

#### *Implications for Social Functioning*

Our results suggest that the use of expressive suppression may have implications for the regulator's social functioning, both because suppression may limit access to new relationships and because it may hinder the maintenance and growth of existing relationships. We observed initial interactions between same-sex strangers and found that suppression led the regulators' partners to be less willing to establish a friendship. Initial measures of attraction and affiliation have been found to predict which relationships go on to become close and which do not (Berg & Clark, 1986), implying that these first impressions are indeed important for relationship formation. Furthermore, both theory and research suggest that intimacy depends on an interactive process involving emotional self-disclosure and responsiveness (Berg & Derlega, 1987; Laurenceau et al., 1998; Reis & Shaver, 1988). Thus, during subsequent interactions, the suppressors' reduced expressivity and responsiveness could further hinder the development of close relationships.

Even if some degree of intimacy were to be estab-

lished, expressive suppression may still have the effect of degrading the quality of longer term relationships. This speculation receives support from research on marriage. Marital researchers have shown that a conflict-avoidance behavior referred to as *stonewalling*, which appears to be similar if not identical to what we have called expressive suppression (Gottman & Levenson, 1988; Levenson, 1994), is associated with reduced marital satisfaction in both partners. It appears that at each stage of relationship development, inhibiting emotion expressions is an effective way of avoiding interpersonal connection whether the regulator intends that goal or not.

#### *Implications for Health*

We believe that our findings have implications for understanding how emotion, emotion regulation, and social support together may promote or inhibit healthy adaptation. It is an unfortunate fact of life that no one can entirely escape negative emotional experiences. Our results suggest, however, that the ways in which we regulate our emotional reactions may have important psychological and physical health consequences not only for ourselves but for the people who interact with us as well.

Kennedy-Moore and Watson (2001) recently reviewed extensive evidence that expressing upsetting emotions can help reduce the intensity of those emotions, limit intrusive thoughts, and increase insight and a sense of meaning, thereby making the negative emotions less aversive. All of these benefits would be lost if an individual chronically suppressed emotion expressions. The present studies showed that suppressing distressing emotions not only does not decrease aversive emotional experience but can actually exacerbate it. Given the importance of excessive negative emotion in defining many psychological disorders such as depression and anxiety, our findings suggest the possibility that expressive suppression may play a maintaining role in psychopathological conditions.

Another way that expressive suppression could impact both psychological and physical health is by limiting the regulator's access to supportive relationships. Social isolation has been linked with psychological problems ranging from loneliness to suicide and has been repeatedly associated with both physical morbidity and mortality (Cohen & Thomas, 1985; House et al., 1988; Seeman, 2001; Uchino et al., 1996). Although there is debate as to the precise mechanism by which social support fosters health, the fact that it does so is uncontested. Thus, if the chronic

use of suppression increases social isolation and weakens social bonds, we would expect suppression to lead to adverse health consequences.

Yet another route by which expressive suppression could impact physical health is via the increased cardiovascular responding that we observed in both the regulators and their partners. Repeated increases in blood pressure that are in excess of metabolic demand have been implicated in the development of coronary heart disease (Krantz & Manuck, 1984). Indeed, one of the mechanisms by which social support may foster health is by reducing such physiological stress responses (Christenfeld et al., 1997; Cohen & Thomas, 1985; Glynn et al., 1999; Lepore, 1995; Lepore et al., 1993; Uchino et al., 1996). In this regard, expressive suppression may be the "second-hand smoke" of emotion regulation—it not only exacerbates the suppressors' own physiological responding in response to an emotionally taxing conversation but it also increases the cardiovascular responding of their interaction partners as well. If such a pattern were repeated frequently enough in a relationship over the course of decades, suppression may exact a toll on the physical health of both partners (Krantz & Manuck, 1984).

### *Is Expressive Suppression Ever a Good Thing?*

Social commentators have long argued that expressive suppression is a form of self-restraint that is essential for social harmony (Elias, 1978). Our results paint a much more negative picture of suppression. How can the tension between these two views be resolved?

We believe that the answer to this question requires us to examine the boundary conditions for the effects we have identified in these two studies. We focused on conversations about a shared negative event because these are common in everyday life and provide a forum for social bonding and support (Cohen & Thomas, 1985; Luminet, Patrick, Manstead, & Rime, 2000; Reis & Shaver, 1988). We found that in this context, expressive suppression provided no benefits and entailed multiple costs. Nevertheless, not all social situations are like this one, and the consequences of expressive suppression may be expected to vary across contexts. What parameters might determine when suppression would be unproblematic or perhaps even beneficial?

As we have seen, expressive suppression should inhibit the development of intimacy. In addition, it should impede the interpersonal escalation of both positive and negative emotions by disrupting the unintentional transmission of emotion via behavioral

mimicry and contagion (Chartrand & Bargh, 1999; Neumann & Strack, 2000). Given this analysis, we would expect beneficial outcomes of expressive suppression when it (a) served to interrupt negative emotion escalation, including anxiety, hostility, and aggression; and (b) increased interpersonal distance when such distance was desirable. An example of the latter that has been empirically studied is the distinction between exchange and communal relationships (Berg & Clark, 1986; Clark & Taraban, 1991). In exchange relationships, individuals engage in a tit-for-tat kind of interaction, such as exchanging goods or services. Empirical work has demonstrated that in this context, people prefer reduced levels of emotion expression, and so some degree of suppression would be normative and should help to preserve smooth interaction (Clark & Taraban, 1991).

Another important moderator may be whether expressive suppression is used flexibly and sparingly or inflexibly and chronically. If a single use of expressive suppression serves to bring a halt to a fight, and the partners later manage to resolve the problem, then the benefits of suppression may justify its short-term costs. If, however, the use of suppression were chronic, then the problem may never be adequately discussed, and hence may never be resolved. At the same time, the suppressor and his or her partner would be repeatedly experiencing the relational and physiological costs that we observed in our studies. In addition, it is possible that in some situations suppression does not entail the acute costs that we have observed. If suppression were chronic, however, the regulator would not limit him- or herself to the low-cost situations. Thus, the value of expressive suppression would likely depend on what emotions are being suppressed, who they are being hidden from, what the relational and cultural context is, and whether acute or chronic outcomes are paramount.

### *Limitations and Future Directions*

To the best of our knowledge, the present studies represent the first direct experimental investigation of the social consequences of expressive suppression. Because we randomly assigned individuals to regulate their emotions in specified ways, we can be sure that the effects we observed were due to suppression per se rather than to some unmeasured characteristic of individuals who typically suppress. Our results thus give us confidence that inhibiting emotion expressions is sufficient, at least in the given context, to generate undesirable personal and social consequences.



One limitation of our approach, however, derives directly from its core strength: It is possible that the instructions that we gave, or the social situation that we created, do not faithfully represent actual events in everyday life. For example, if our experimental task was experienced by our participants as artificial, either because suppression was instructed or because it seemed out of place, this artificiality itself might account for the physiological and relational effects that we observed. Although the generalizability of our results cannot be ascertained without further research, several factors suggest that artificiality alone cannot account for our findings. First, across both studies, some individuals in our control groups appeared to have spontaneously engaged in suppression, suggesting that suppression was normative in this situation for at least some of our participants. One corollary of this observation is that our replicated findings may have been subjected to a particularly stringent test by comparing a "suppression" condition with an uninstructed condition in which at least some participants suppressed. It is also noteworthy that during debriefing, our suppression participants reported that they understood our instructions, tried hard to follow them, and generally felt that they had done a good job of doing so. Even more telling, during debriefing not one of the partners of the suppressors showed any signs of awareness that her partner had been behaving in an artificial manner. All reported amazement that her partner had received suppression instructions. Thus, although further research is needed to fully explicate the mechanisms underlying our effects, we do not believe artificiality provides an adequate account.

In a related vein, our use of an upsetting film to provide a comparable basis for moderately emotional conversations is also a limitation. Our goal was to create a conversational context in which emotional expression was appropriate but in which expressive suppression was also a plausible regulatory goal. This led us to focus on conversations involving shared emotional content. Such conversations are common in everyday life (Luminet et al., 2000), are central to the development of interpersonal bonds (Laurenceau et al., 1998; Reis & Shaver, 1988), and are often characterized by mutual emotional disclosure and supportive responses (Berg & Derlega, 1987; Laurenceau et al., 1998). Nevertheless, such expressiveness is not inevitable, as demonstrated by the spontaneous suppression that occurred in our uninstructed control group. It is not known whether emotion regulation during more intense emotional interchanges (e.g., about more personally relevant conversation topics),

or interchanges that have a quite different affective character (e.g., a predominantly positive emotional tone) would have similar consequences.

A third important limitation of these studies is our focus on same-sex female dyads. One important direction for future work will be to examine the personal and social consequences of expressive suppression in the context of male-male and mixed-sex dyads. Given evidence that men are more likely to use expressive suppression than are women in everyday life (Gross & John, 2002), it is possible that the effects of suppression, versus uninstructed controls, will be less evident for male-male pairs. As the generalizability of these findings to dyad types and social contexts becomes clear, it will be important to further probe the processes that mediate the personal and social effects of expressive suppression. Only the second of our two studies permitted us to consider issues of mediation, and we were only partially successful in our efforts to delineate the behavioral changes wrought by suppression that were responsible for its social consequences. Future studies will be needed if we are to fully understand the processes by which this and other forms of emotion regulation exact social costs.

These limitations notwithstanding, our results suggest the intriguing possibility that attempts to regulate negative emotional responses when interacting with another person can have personal and social consequences spanning multiple domains, including behavior, subjective experience, physiological responding, and relationship outcomes. We regard these findings as an initial glimpse of an exciting new domain at the intersection of social and personality psychology.

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