Emotion regulation in romantic relationships: The cognitive consequences of concealing feelings

Jane M. Richards

University of Washington

Emily A. Butler & James J. Gross

Stanford University

ABSTRACT

People frequently regulate the emotions that arise during tense social interactions. Common regulation strategies include *cognitive reappraisal*, which involves interpreting a situation in positive terms, and *expressive suppression*, which involves inhibiting overt signs of inner emotional states. According to our analysis, during tense social interactions reappraisal should (i) increase memory for what was said, whereas suppression should (ii) decrease memory for what was said, and (iii) increase memory for emotions. To test these predictions, we experimentally manipulated reappraisal and suppression in dating couples as they discussed a relationship conflict. As predicted, memory for conversation utterances was increased by reappraisal and decreased by suppression, and memory for emotional reactions was increased by suppression. Self-monitoring mediated the effect of suppression on memory for emotional reactions, but not for conversation utterances. These findings suggest that, if it is important to preserve the fidelity of cognitive functioning during emotionally trying social interactions, some forms of emotion regulation may have more to recommend them than others.

KEY WORDS: affect • conflict • conversation • emotion • interpersonal • memory • regulation

Preparation of this article was supported by Grant MH-58147 from the National Institute of Mental Health. The authors would like to thank Kate Didech and Shelly Vernick for their memory coding, and Meg Given and Jessica Letchamanan for their behaviour coding. All correspondence concerning this article should be addressed to Jane M. Richards, now at the Department of Psychology, 1 University Station, A8000, The University of Texas, Austin, TX 78712 USA. [E-mail: richards@psych.utexas.edu].

Even the most satisfying romantic relationships are punctuated by occasional disagreements. Some of these disagreements are mundane: One partner wants to eat leftovers, but the other wants to dine out. Other conflicts are momentous: One partner wants to have a child, but the other cannot imagine becoming a parent.

Conventional wisdom prescribes talking openly with our partners about conflicting preferences and beliefs in order to resolve them (for a review, see Kennedy-Moore & Watson, 1999). Yet, for all the potential long-term benefits of these conversations, they can be emotionally difficult in the shorter-term. Indeed, telling our partners that we are not happy with certain aspects of their behavior and the relationship's dynamics – or being on the receiving end of such revelations – is pleasant for neither party. At these times, strong emotions can arise – such as shame, anger, and sadness – that generate thoughts, sensations, and expressive behaviors one would rather not have. It is not terribly surprising, therefore, that individuals frequently intervene in the emotion-generative process with the aim of influencing the extent to which their emotions will be experienced or expressed.

Emotion regulatory strategies typically are used to preempt negative emotion altogether or to decrease the magnitude or duration of an emotion response that already has arisen (Gross, Richards, & John, 2003; Tice & Bratslavsky, 2000). To down-regulate anger, for example, individuals might reconstrue a critical remark as meant to be helpful as opposed to hurtful, or they might simply hide any offense that *was* taken. Such emotion regulatory efforts are evoked with the explicit aim of producing affective consequences (e.g., to decrease anger); however, recent research suggests that these efforts may have unintended consequences for cognitive functioning (Muraven, Tice, & Baumeister, 1998; Richards & Gross, 1999, 2000).

In view of increasing evidence that romantic partners' memories of their interactions with each other may have important implications for relationship quality (e.g., Sillars, Weisberg, Burggraf, & Zietlow, 1990), the present research focused specifically on whether emotion regulation influences couples' memories of emotionally important conversations about relationship conflict. By way of introduction, first we define what we mean by emotion regulation. We then consider why two forms of emotion regulation that individuals frequently use in everyday life might be expected to differentially influence partners' memories for conflict conversations.

Emotion regulation

Emotions may be regulated using a dizzying array of strategies (e.g., Gross, 1998a; Morris & Reilly, 1987; Thayer, Newman, & McClain, 1994); however, we have found it useful to adopt a consensual process model of emotion for operationalizing conceptually distinct forms of emotion regulation (Gross, 1998b; Richards & Gross, 2000). According to this model, emotion regulatory efforts may be directed at two different points in the emotion-generative process that unfolds over time. *Antecedent-focused*

emotion regulation is evoked at the front-end, or very early on in the emotion-generative process, whereas *response-focused emotion regulation* occurs at the back-end, or after emotion response tendencies have been triggered. Thus, response-focused regulation is aimed at quelling emotional responses that are evoked by a situation; antecedent-focused regulation is aimed at keeping these responses from arising in the first place.

In the context of a potentially upsetting situation, antecedent-focused emotion regulation might take the form of construing the situation in a way that decreases its aversiveness (Beck, 1991; Lazarus & Alfert, 1964), a strategy that has been called *reappraisal* (Gross, 1998b). Commonly, reappraisal involves adopting a positive mindset (e.g., Jackson, Malmstadt, Larson, & Davidson, 2000) before entering into a potentially negative situation. Linking this emotion regulatory strategy to conversations about relationship conflicts, reappraisal might entail taking stock of the *positive* aspects of one's romantic partner and the larger relationship before entering into these conversations. By calling to mind thoughts of romantic camping trips, particularly tender gestures of affection, or touching instances in which our partner was 'there' for us, for example, we may be able to construe a subsequent conversation about problems in the relationship in less aversive terms. Thus, the work of reappraisal occurs in advance of a potentially upsetting event, and, if effective, should preempt full-blown emotional responses. Consistent with this analysis, prior research has shown that giving participants reappraisal instructional sets before a potentially emotional event decreases the magnitude of emotional responding once this event occurs (Gross, 1998b; Lazarus & Alfert, 1964; Richards & Gross, 2000; Tomaka, Blascovich, Kibler, & Ernst, 1997).

In contrast to antecedent-focused emotion regulatory strategies such as reappraisal, response-focused emotion regulatory strategies are evoked after an event already has been construed in aversive terms and, therefore, has already triggered emotional impulses. Thus, the work of response-focused emotion regulation occurs online, while an event unfolds. Frequently, this form of emotion regulation entails inhibiting behavioral manifestations of underlying emotional impulses, a strategy that we have called *expressive suppression* (Richards & Gross, 2000). Linking this to conversations about relationship conflicts, expressive suppression would entail attending carefully to one's face and tone of voice throughout a conversation so that overt signs of emotion, such as grimaces and frowns, are inhibited. Experimental manipulations of this strategy during emotionally upsetting films and slides indicate that people are highly adept at appearing neutral (Gross & Levenson, 1993; Richards & Gross, 1999). Although one might think that expressive suppression should decrease the subjective experience of emotion, research shows clearly that this is not the case (Gross, 1998b; Gross & Levenson, 1993; Richards & Gross, 1999, 2000). That is, despite allowing us to appear calm and collected, on the inside, expressive suppression leaves us just as emotionally aroused as people who are not regulating their emotions.

Emotion regulation and memory

During a conflictual conversation, there are at least two kinds of things one might later seek to recall. The first is the content of the conversation, that is, conversation utterances. The second is the emotional quality of the conversation. In the following sections, we describe how emotion regulation might affect each.

Conversation utterances. Our distinction between antecedent-focused emotion regulatory efforts that are marshaled before a conversation (e.g., reappraisal) and response-focused emotion regulatory efforts that are evoked during a conversation (e.g., expressive suppression) suggests that these two strategies might have different effects on remembering conversation utterances because they differentially influence how finite attentional resources are distributed during a conversation (Ellis & Ashbrook, 1989). Specifically, we derived the predictions that (i) expressive suppression (but not reappraisal) decreases the extent to which individuals pay attention to conversations about relationship conflict, thereby degrading memory for what is said, but that (ii) reappraisal increases the extent to which individuals pay attention to these conversations, thereby enhancing memory. Thus, both predictions converge on the expectation that suppression should be associated with poorer memory (relative to reappraisal).

The foundation for our first prediction (i.e., suppression degrades memory) follows from cybernetic control models of self-regulation (e.g., Carver & Scheier, 1981; Larsen, 2000), which suggest that suppressing unwanted grimaces, smiles, and frowns should require continual monitoring of the emotional impulses that give rise to these expressions. These self-monitoring efforts allow individuals to both detect and correct for any lapses in the desired façade of stoicism. However, the self-regulatory work that underlies expressive suppression should divert finite attentional resources away from ongoing events in the environment, thereby decreasing the extent to which individuals are able to encode the details of these events into memory. Thus, in a conversational context, expressive suppression should degrade memory for conversation utterances, and this effect should be mediated by heightened self-monitoring. Although we would expect that self-monitoring accompanies most forms of response-focused emotion regulation, this should not be true of antecedent-focused emotion regulation strategies, including reappraisal. In contrast to suppression, the cognitive work of reappraisal occurs before an event. For this reason, it would not be expected to compete with ongoing events for finite attentional resources. Moreover, if reappraisal is highly successful, it should preempt a full-blown emotional response from ever arising in the first place, and thus obviate the need for self-monitoring. Reappraisal, therefore, would not be expected to degrade memory for conversation utterances.

Although no studies have examined directly the relationship between emotion regulation and memory for conversations, empirical evidence from two separate literatures is consistent with the prediction that suppression –

but not reappraisal – should degrade memory. First, the dual-task literature (e.g., Miyake, Witzki, & Emerson, 2001; Seitz & Schumann-Hengsteler, 2000) has shown repeatedly that self-control tasks of many types interfere with an individual's ability to perform concurrent attentional tasks. To the extent that suppression classifies as an instance of self-control, it stands to reason that it would produce interference as well. Second, a modest number of studies have linked suppression – but not reappraisal – to decreases in memory for standardized auditory information. Richards and Gross (1999, 2000), for example, found that participants who were instructed to appear emotionally neutral while watching emotion-eliciting slides of badly injured individuals or while viewing a film of an emotionally heated interpersonal interaction showed poorer memory for what they heard during the period of self-regulation (relative to no regulation controls).

By contrast, research has not linked reappraisal with either heightened self-monitoring or a memory decrement. Rather, a conceptual analysis of the thought patterns that should be part and parcel of reappraisal bolster the prediction that this strategy should enhance memory. Specifically, adopting a positive mindset about our partner and the larger relationship, in effect, may remind us of just how important, satisfying, and emotionally pleasant our relationship *can* be. With these positive thoughts and feelings activated, individuals may be particularly interested in discussing issues that could threaten this relationship. The allocation of attentional resources to such conversations should follow suit, thereby increasing the extent to which the details of these conversations are encoded into memory. Reappraisal, therefore, would be expected to enhance memory for conversation utterances in this context, and this enhancement should be mediated by heightened engagement in the conversation. We would not expect this effect for suppression, however, because this strategy does not entail adopting a positive mindset before entering into a potentially upsetting situation. The cascade of thought patterns that are associated with reappraisal – thought patterns that should have memory enhancing effects – simply are not part of the phenomenology of suppression.

Although no studies have examined the cognitive consequences of reappraisal in conversational contexts, one prior study indicated that reappraisal had a memory enhancing effect. This study, which manipulated both expressive suppression and reappraisal (Richards & Gross, 2000, Study 2), found that participants who received a reappraisal instructional set before watching slides of injured people showed better memory for the slide details (relative to both no regulation controls and suppressors). Although this study did not assess whether reappraisal enhanced memory because it increased engagement in the task, directed attention studies do suggest links between enhanced engagement and memory. For example, Stafford and colleagues (Stafford, Burggraf, & Sharkey, 1987) revealed that participants who were given face valid instructions to attend carefully to laboratory-based conversations remembered these conversations better than participants who were not given these instructions. Clearly, adopting a positive mindset as part of reappraising an event is not tantamount to

receiving explicit directed attention instructions from an experimenter. The thought patterns that are part and parcel of reappraisal emanate from the individual him- or herself. Yet, we suggest that, just as external conditions can increase one's interest and engagement in a task, so too may internal processes such as reappraisal. For this reason, we predicted that reappraisal in the context of a conflict conversation with one's romantic partner would enhance memory for what was said.

Emotions. In the preceding section, we explained how and why reappraisal and expressive suppression should differentially influence memory for conversation utterances. However, it stands to reason that these strategies may differentially influence memory for non-factual *emotional* information as well. Specifically, we might expect that suppression actually *enhances* memory for the emotional impulses and the emotion-expressive behaviors that are being regulated during a conversation. That is, if suppression entails active self-monitoring of emotional cues and emotion-expressive behavior, as cybernetic control theories of self-regulation suggest (Carver & Scheier, 1981), it stands to reason that the allocation of attentional resources toward this information would be increased. Thus, we might expect that suppression enhances memory for emotions, and that this enhancement is mediated by heightened self-monitoring. We would not expect the same of reappraisal. As discussed earlier, this form of emotion regulation would not be expected to evoke self-monitoring.

The present research

In this article, we present a laboratory-based study in which we manipulated expressive suppression and reappraisal in heterosexual romantic dating couples who discussed an area of conflict in their relationship. Memory for this discussion was assessed with a free recall test that was coded for memories of conversation utterances and emotions (Stafford & Daly, 1984). Our first goal was to assess whether participants who received the suppression manipulation would show poorer memory for what was said than participants who received the reappraisal manipulation. Our second goal was to examine whether participants who received the suppression manipulation would show more memories of emotions that arose during the conversation. Our third goal was to examine why reappraisal and suppression were differentially associated with memory, if indeed they were. To this end, we included a control condition that might serve as a standard of comparison, and we obtained measures of self-monitoring and engagement for use in mediational analyses.

Our study goals follow directly from theoretical and empirical rationales described earlier, all of which are relevant to hypothesizing about the effects of regulating emotion on the individual who is doing the regulating (i.e., 'the actor'). Clearly, however, our tests of these hypotheses in a naturalistic conversational context entail having two individuals talk to each other. A question arises, then, as to whether memory might depend not

only on being a reappraisor or a suppressor, but also on whether one's partner is a reappraisor or suppressor. Although there are neither empirical nor theoretical grounds for deriving a priori hypotheses concerning partner effects, we thought it important to explore this possibility after conducting tests relevant to our hypotheses. Thus, our fourth goal was to confirm that, as expected, any memory effects of suppression or reappraisal in a dyadic context are limited to the individuals who receive the suppression and reappraisal manipulations.

Method

Participants

One hundred and seventy-two participants (86 heterosexual couples) who took part in a larger project on dating couples participated in this study. On average, participants were 20.3 years old ($SD = 1.3$), with 58% identifying themselves as Caucasian, 24% as Asian, 14% as Hispanic, 3% as African American, and 1% as other. Participants were all attending colleges in northern California, and had been dating for at least six months ($M = 19.2$, $SD = 11.4$).

Procedure

One week prior to a laboratory session, each partner signed a consent form and individually completed a questionnaire packet. Of interest in the present study were questionnaires assessing demographic information and disagreements in participants' romantic relationship (described below). The laboratory session procedures were modeled after studies that elicited conflictual conversations about marital conflict (e.g., Carstensen, Gottman, & Levenson, 1995). Specifically, upon arrival for their session, participants were informed that the study was aimed at understanding how couples communicate with each other, and that they would be asked to discuss a point of conflict in their relationship for ten minutes. To determine a topic for the couple's conversation in a standardized fashion, we selected randomly either the male's or the female's 'greatest area of disagreement' from the questionnaire packet they had completed earlier. Based on procedures adapted from Levenson and Gottman (1983), the experimenter (blind to condition assignment) then asked partners several questions about this topic 'to get some concrete thoughts and ideas out there so that you two, without my involvement, can discuss this topic of disagreement for ten minutes.'

Following this facilitation phase, each dyad was assigned randomly to one of three conditions: *uninstructed, expressive suppression,* or *reappraisal.* Specifically, in the uninstructed dyads (28 dyads/56 participants), both partners received no regulation instructions (see below). In the expressive suppression dyads (31 dyads/62 participants), one partner received no regulation instructions and one partner received expressive suppression instructions (see below), as determined by a second stage of random assignment. In the reappraisal dyads (27 dyads/54 participants), one partner received no regulation instructions and one partner received reappraisal instructions (see below), as determined by random assignment. Thus, to simplify our design, we held constant the instructional condition of the partners interacting with regulators; these partners always received no regulation instructions. Within the two regulation

conditions (i.e., expressive suppression, reappraisal), approximately equal numbers of men and women were assigned randomly to be the regulator.

Participants who received regulation instructions (i.e., expressive suppression, reappraisal) were informed that their partner had received no such instructions; participants who received no regulation instructions were unaware that their partners had been instructed to regulate their emotions in any way. This was accomplished by delivering instructions over headphones connected to different tape recorders. Participants assigned to receive the *no regulation instructions* were informed that: (i) the study was designed to understand how dating couples naturally talk about conflict, and that (ii) we would like for them to prepare for the conversation by calling to mind the major issues related to the conflict topic they would be discussing. Thus, no regulatory instructions were given; however, participants were asked to write down their thoughts and feelings surrounding their conflict topic for two minutes.

The *expressive suppression instructions* informed participants that: (i) the study was designed to understand the link between the emotional expressions a person makes and the kind of conversation they have; (ii) we'd like for them to inhibit the expression of emotion through their faces and tone-of-voice so that their partner would not know they were experiencing any emotions at all; and (iii) we would like for them to prepare for the conversation by calling to mind (for two minutes) the major issues related to the conflict topic they would be discussing. This listing task (iii) was identical to that of the no regulation participants.

The *reappraisal instructions* were designed to help participants interpret the upcoming conversation and the relationship in a positive light. These instructions, which traded on heightening the salience of positive aspects of the relationship, informed participants that: (i) the study was designed to understand the link between the kind of mindset a person adopts before entering into a conversation and the kind of conversation they then have; (ii) we would like for them to keep in mind that all couples have conflicts and that discussing them can make it hard to remember the positive aspects of one's partner or relationship; and (iii) we would like for them to prepare for the conversation by calling to mind (for two minutes) some of the positive aspects of their relationship and partner, as well as some of the good times they have had together. This listing task (iii) was included to give participants the opportunity to generate their positive mindset.

After participants' listing tasks, they rated their overall positive and negative emotional experience, and then began their 10-minute videotaped conversation. Participants were not given any instructions concerning how to approach the conversation task. Following the conversation, participants were asked to complete questionnaire items concerning their emotions, their engagement in the conversation, and their self-monitoring efforts. After a 10-minute distractor task comprised of verbal and quantitative problems, participants were administered an unanticipated free-recall test that asked them to write down specifically what occurred during the conversation. Finally, participants were debriefed and thanked for their participation.

Measures

Couples Problem Inventory. To determine a topic for the conflict conversation, we asked participants to complete the Couples Problem Inventory (CPI; Gottman, Markman, & Notarius, 1977), which we adapted for dating couples.

The CPI asks respondents to rate the extent to which they disagree about 14 relationship issues (e.g., sex, communication, family/friends, jealousy, other) on a 101-point scale (0 = *don't disagree at all; 100 = disagree very much*). Because this rating was made before the laboratory session, topic selection could not have been influenced by condition assignments (no regulation, expressive suppression, reappraisal).

Emotion experience. To assess whether the reappraisal manipulation induced a positive mindset, participants used a Likert scale (0 = *not at all; 10 = a great deal*) to rate the extent to which they experienced 'positive emotion' and 'negative emotion' after their pre-conversation instructions and listing tasks, but immediately before the conversation. To assess whether the instructions differentially influenced emotion experience by the end of the conversation, negative emotion (i.e., disgust, annoyance, anxiety, sadness, embarrassment) and positive emotion (i.e., pride, joy, amusement, pleasure, love) ratings were made immediately following the conversation. Responses to each of the five negative emotion terms (alpha = .76) and the five positive emotion terms (alpha = .78) were averaged to form separate composite scores.

Emotion expression. To confirm that the expressive suppression manipulation led to the expected reductions in emotion-expressive behavior, participants' behavioral responses during the conversation were recorded unobtrusively by remotely controlled high-resolution video cameras placed behind darkened glass.

Memory. To assess memory for conversation utterances and for emotion, we administered a free-recall test that asked participants to make every effort to write down precisely what occurred during the conversation. They were prompted specifically to reproduce what was said. The memory testing period was standardized at 10 minutes in order to reduce within-cell variability in memory performance due to differing levels of effort or motivation to comply with instructions.

Engagement. To assess the extent to which participants attended to the conversation, they used a Likert scale (0 = *not at all; 10 = a great deal*) to rate three face-valid items (e.g., 'To what extent were you attentive and interested in what your partner had to say?'). The items were averaged to form a composite score for engagement (alpha = .70).

Self-monitoring. To assess the extent to which participants engaged in self-monitoring during the conversation, they used a Likert scale (0 = *not at all; 10 = a great deal*) to rate three face-valid items (e.g., 'To what extent did you try to monitor your facial expressions and/or tone of voice during the conversation?'). The items were averaged to form a composite score for self-monitoring (alpha = .85).

Conversation density. Conversation length was fixed at 10 minutes for all participants in order to avoid confounding how much was said with suppression or reappraisal. Despite this, it was conceivable that the two emotion regulation conditions could produce conversations that varied in how much was said. In view of prior research suggesting that conversation length could influence

memory (Sillars et al., 1990), we wished to assess whether any conversation memory differences between suppression and reappraisal participants could be explained by how much was said during the conversation. Thus, computer text files of the transcribed conversations were subjected to a word counting routine (Linguistic Inquiry and Word Count; Pennebaker, Francis, & Booth, 2001) to derive total word counts for each conversation. After establishing whether expressive suppression and reappraisal differentially influenced conversation memory, we then re-ran the analysis including conversation density as a covariate. This allowed us to assess whether a suppression–reappraisal difference in conversation memory remained reliable when controlling for any influence of conversation density.

Data reduction

Behavior coding. After the experimental session, participants' emotion-expressive behaviors were coded from videotape by female coders who were blind to participant information. Using a system derived from Ekman and Friesen's (1975) description of specific behavioral expressions, coders counted the frequency of positive and negative facial expressions that occurred during each minute of the conversation. Each participant's behavior was viewed in isolation (and with no sound). The two coders overlapped for 10% of participants, yielding high levels of reliability for both positive ($r = .95$) and negative ($r = .91$) scales. Final values for each of the codes were determined by using one of the coder's frequency counts, which were summed across the entire 10-minute conversation to create an overall expressivity score.

Memory coding. To assess memory for specific utterances and emotions, participants' hand-written recall protocols were submitted to a multi-stage memory coding procedure adapted from previous research on conversational memory (Stafford & Daly, 1984). First, both the actual conversations and the recall protocols were transcribed to create computerized text file versions that were given to two trained coders. Second, coders (blind to all participant information) broke down the recall protocols into 'idea units' (Stafford & Daly, 1984), which were defined as the smallest unit of meaning that has informational or affective value. Third, coders determined whether an idea unit could be placed into one of the following categories of interest: *conversation utterances* or *emotions*.

The first memory coding category, *conversation utterances*, captured idea units contained in the recall protocol that preserved the gist of original conversation idea units. Verbatim recollections or paraphrases of what was said during the conversation were categorized as utterances by cross-referencing the recall protocol against the transcript of the conversation. Thus, this category taps into objectively verifiable details (e.g., 'He said I never do the dishes.'). The second memory coding category, *emotions*, captured emotionally valenced remarks about the conversational experience – independent of orally stated factual content – such as how one felt about the conversation (e.g., 'He made me upset.'). Overall, this categorization system accounted for 79% of the recall protocol idea units. Eighty percent of the recall protocols were coded by one rater only, with 20% coded by both raters in order to perform interrater reliability analyses on their categorization of recall protocol units. Interrater reliability was good for conversation utterances ($r = .90$) and

emotions (r = .86). For subsequent analyses, two proportion scores were computed by dividing the sums of utterances and emotions (separately) by the total number of idea units in a given participant's recall protocol. The resultant values were multiplied by 100 in order to derive percentage scores that were used in subsequent analyses. We interpret these percentage scores as measuring how much of what a person remembered was: (i) specific conversation content (conversation utterance category), and (ii) emotion-related (emotion category).

Results

Data analysis

The Actor–Partner Interdependence Model. The dyadic methodology employed here meant that observations within a dyad were not independent, and that the instructional manipulation (i.e., whether a participant received expressive suppression instructions, reappraisal instructions, or no regulation instructions) would be a mixed variable in which variation existed both between dyads and within dyads. This second design feature rules out the conventional analysis of variance (ANOVA) approach because all sources of variance within the ANOVA model must be either between- or within-groups.

We therefore implemented Kenny's (1996; Kashy & Kenny, 2000) statistical approach, called The Actor–Partner Interdependence Model. This model, which simultaneously accommodates both interdependent data and mixed variables, entails calculating 'actor effects' and 'partner effects'. An actor effect represents the influence that an individual's score on a predictor variable (e.g., emotion regulation instructional condition) has on his or her own score on a dependent variable (e.g., memory). A partner effect represents the influence that an individual's score on a predictor variable has on his or her partner's score on the dependent variable. To calculate actor and partner effects using this model, two regression equations are generated, the first of which predicts a dyad's mean score ((person 1 + person 2)/2) on the dependent variable from its mean on the independent variable. The second equation predicts the dyad's deviation score (person 1 – person 2) on the dependent variable from its deviation score on the independent variable. The unstandardized regression coefficients derived from these regressions then can be used to calculate the actor and partner effects. Both of these effects can be interpreted as unstandardized regression coefficients and can be tested for significance using a t-test with a pooled standard error and modified degrees of freedom, provided by Kashy and Kenny (2000), which take into account the degree of interdependence for a given variable. Categorical independent variables, such as our instructional manipulation, can be dummy-coded following standard categorical regression procedures in order to conduct group comparisons.

The theoretical and empirical bases for our a priori hypotheses speak to actor effects. By contrast, we had no basis for forming predictions concerning partner effects. Still, if we neglected to explore the possibility that these effects could exist, we might obscure a set of relations between emotion regulation and memory for conversations that are more complicated than we had anticipated. Thus, after testing our a priori hypotheses concerning actor effects, exploratory analyses were conducted on partner effects for all variables. No partner effects

attained significance. For this reason, we maintain the focus of our data presentation on actor effects.

Finally, in view of prior research (Richards & Gross, 2000), we had no reason to predict that the effects of emotion regulation on memory would vary as a function of sex. However, to assess this possibility initially, we included the main effect of sex and the Sex × Instructional Condition interaction in the actor–partner analysis of the two memory variables. No effects attained significance. Thus, we present our results of actor effects analyses omitting sex as a factor.

Type I and Type II error control. The necessity of conducting manipulation checks and tests of mediation – in addition to evaluating core memory effects – requires multiple statistical tests. To balance the demands of limiting Type I and Type II error when addressing actor effects, we constructed three sets of a priori hypotheses, with each set pertaining to a conceptually distinct analytic task, namely, (i) providing manipulation checks, (ii) establishing memory effects, and (iii) assessing putative mediators of any memory effects. Within each of these three analytic tasks, we conducted three hypothesis tests of pairwise differences for each of the dependent variables that were relevant to these tasks. Specifically, we tested (i) the difference between expressive suppression regulators and reappraisal regulators, (ii) the difference between uninstructed control participants and expressive suppression regulators, and (iii) the difference between uninstructed control participants and reappraisal regulators. The first comparison (i) was used to test our primary hypotheses regarding the differences between engaging in expressive suppression and reappraisal, whereas the second two comparisons facilitated interpretation of these predicted differences.

We controlled Type I error for each of the three sets of hypothesis tests by using a stepwise Bonferroni procedure (Howell, 1992). The first set included manipulation checks (5 dependent measures, with therefore 15 hypothesis tests). The second set included memory measures (2 dependent measures, with therefore 6 hypothesis tests). The third set involved the putative mediators (2 dependent measures, with therefore 6 hypothesis tests). In accordance with Howell's (1992) recommendation, we ordered the obtained p-values for the tests within a set in decreasing order of significance, and we set the critical p-value for the first test (i.e., 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, we set the critical p-value for the next test (i.e., the second most significant one) at $.05/c\text{-}1$, reflecting the total number of tests left to be made within the set. This process continued until a test returned a non-significant result. This approach provides an appropriate balance of Type I and Type II error control (Cliff, 1987; Howell, 1992).

Manipulation checks

Emotion-expressive behaviour. Based on prior research (Gross, 1998b; Gross & Levenson, 1993), we expected that the suppression instructions would lead to decreases in emotion-expressive behavior (relative to no regulation and reappraisal instructions). To assess whether this was the case in the present sample, we computed actor effects for the overall emotional expressivity score (i.e., sum of emotional expressions made during the 10-minute conversation).

As expected, significant effects emerged both when the suppression group (M = 29.05, SD = 12.47) was compared to the reappraisal group (M = 39.84, SD = 13.27) and when the suppression group was compared to the uninstructed group (M = 39.25, SD = 14.22). Specifically, the suppression group made fewer facial expressions during the conversation than both the reappraisal group (actor-effect = −2.70, $t(156) = -2.79$, $p = .006$) and the uninstructed group (actor-effect = −5.10, $t(126) = -2.97$, $p = .004$). The reappraisal group did not differ from the uninstructed group.

Emotion experience. Based on prior research, we did not expect that the expressive suppression instructions would influence subjective emotion experience (Gross, 1998b; Gross & Levenson, 1993); however, to the extent that the reappraisal instructions led to a more positive mindset, we expected that these instructions would be reflected in emotion experience reports. First, we computed actor effects for the positive emotion rating obtained immediately before the conversation (but after the instructions). As expected, a significant actor effect emerged when the reappraisal group (M = 7.40, SD = 2.06) was compared to the suppression group (M = 5.68, SD = 2.30), indicating that reappraisal led to greater positive affect immediately before the conversation (actor-effect = .43, $t(165) = 3.40$, $p = .001$). In addition, a significant actor effect emerged when the reappraisal group was compared to the uninstructed group (M = 5.50, SD = 1.68), indicating greater positive affect among the reappraisal group (actor-effect = .95, $t(142) = 4.14$, $p < .001$). The suppression group did not differ from the uninstructed group. Consistent with this pattern of findings, significant actor effects emerged for negative affect. The reappraisal group (M = 1.70, SD = 1.56) reported less negative affect relative to both the suppression group (M = 3.38, SD = 2.40; actor-effect = −.42, $t(167) = -2.97$, $p = .001$) and the uninstructed group (M = 3.53, SD = 1.90; actor-effect = −.92, $t(150) = -3.62$, $p < .001$). The suppression group did not differ from the uninstructed group.

To assess whether the reappraisal, expressive suppression, and uninstructed groups differed with respect to positive emotion experience (Ms [and SDs] = 4.23 [2.01], 3.88 [2.31], and 4.30 [2.12], respectively) and negative emotion experience (Ms [and SDs] = 1.96 [1.46], 2.20 [1.78], and 2.00 [1.48], respectively) by the end of the conversation, similarly structured analyses were conducted on the ratings that were obtained immediately following the conversation. No effects attained significance.

Memory

Conversation utterances. To test whether reappraisal and suppression differentially influenced memory for what was said during the conversation, we computed actor effects for conversation utterance memory. As expected (see Figure 1), a significant effect emerged when the reappraisal group (M = 81.74, SD = 16.25) was compared to the suppression group (M = 69.26, SD = 24.97), indicating that the reappraisal group showed better memory (actor-effect = 3.12, $t(166) = 2.56$, $p = .01$). To facilitate interpretation of this finding, we compared the reappraisal and suppression groups separately to the uninstructed group (M = 75.28, SD = 17.76). No effects attained significance, suggesting that the significant difference between the regulation groups (reappraisal, suppression) may have been produced by a combination of the

suppression group remembering a lower proportion of conversation utterances than the uninstructed group, and the reappraisal group remembering a higher proportion of conversation utterances than the uninstructed group.

Emotions. To test our hypothesis that reappraisal and expressive suppression differentially influence memory for emotional feelings and emotion-expressive behaviors during the conversation, we computed actor effects for the emotion memory score. Results partially supported our hypothesis (see Figure 2). A significant effect emerged when the suppression group ($M = 6.18$, $SD = 12.24$) was compared to the uninstructed group ($M = 1.55$, $SD = 4.24$), indicating that the suppression group reported more memories of emotions (actor-effect = 2.32, $t(146) = 2.79$, $p = .006$). However, the two regulation groups did not differ significantly from each other. Similarly, the reappraisal group ($M = 2.00$, $SD = 5.83$) did not differ from the uninstructed group. Thus, while the suppression group clearly showed increased emotional memory relative to the uninstructed controls, the reappraisal group did not.

Mediation

To address whether (i) heightened engagement in the conversation, (ii) self-monitoring during the conversation, or (iii) both processes would help to explain the reappraisal–suppression difference in memory for conversation utterances, and the uninstructed–suppression difference in memory for emotions, we conducted mediational analyses following Baron and Kenny's (1986) 3-step approach. Having already established the effects of emotion regulation on memory (Step 1), we conducted the second step in the mediation analysis, which entails demonstrating that instructional condition predicts the putative mediators. First, we tested our hypothesis that the reappraisal group would be more engaged in the conversation than the suppression group. As

FIGURE 1
Effects of expressive suppression and reappraisal on memory for conversation utterances.

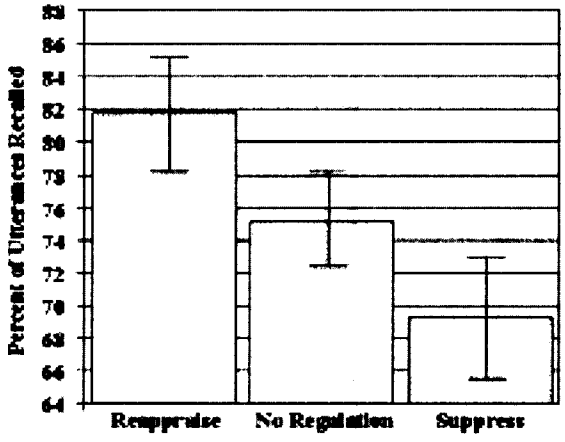
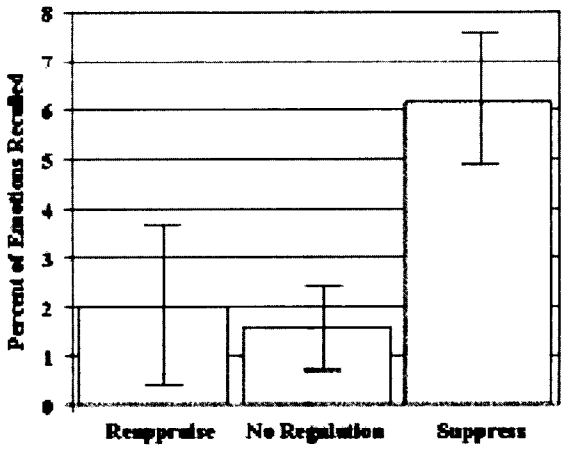


FIGURE 2
Effects of expressive suppression and reappraisal on memory for emotion.



expected, the reappraisal group (M = 7.43, SD = 1.70) did report greater engagement than the suppression group (M = 6.39, SD = 1.85; actor-effect = .26, $t(167) = 2.40$, $p = .016$). When comparing the two regulation groups to the uninstructed control group, we found that the suppression group was less engaged in the conversation than the uninstructed group (M = 7.52, SD = 1.43; actor-effect = –.56, $t(146) = -3.05$, $p = .003$), but that the reappraisal group did not differ from the uninstructed group.

Turning to our second putative mediator – self-monitoring – results confirmed our hypothesis that the suppression group would show heightened self-monitoring (M = 7.04, SD = 2.06) relative to the reappraisal (M = 1.90, SD = 1.54; actor-effect = 1.28, $t(167) = 10.87$, $p < .001$) and uninstructed groups (M = 1.83, SD = 1.68; actor-effect = 2.61, $t(150) = 13.06$, $p < .001$). The reappraisal group did not differ from the uninstructed group.

Having established that the instructional conditions did predict the putative mediators, we conducted the final step in the mediation analysis using four regressions, the first two predicting conversation utterance memory from equations including (i) both instructional condition and engagement, and (ii) both instructional condition and self-monitoring. The second two regressions aimed to predict emotion memory using similarly structured equations. Neither regression predicting conversation utterance memory provided any evidence of mediation by either engagement or self-monitoring. Similarly, there was no evidence that engagement played a mediational role vis-à-vis emotion memory. By contrast, however, the regression predicting emotion memory from the combination of self-monitoring and instructional condition did provide support for our hypothesis that self-monitoring would function as a mediator. Specifically, self-monitoring was positively associated with emotion memory (actor-effect = 1.18, $t(161) = 3.89$, $p = .002$), but the previously reliable relationship between instructional condition and emotion memory was eradicated (Sobel

statistic = −4.38, $p < .001$). Thus, self-monitoring appears to have partially mediated the effect of suppression on memories for emotion during the conversation.

Control analyses

Finally, we conducted two types of post-hoc control analyses. Prior research suggests that longer conversations, which presumably involve more conversation utterances, are remembered less well (Sillars et al., 1990). Because it was possible that suppression and reappraisal could influence how much was said during the conversations, we therefore re-computed the actor effect that compared conversation utterance memory across reappraisal and suppression groups, entering the conversation density variable as a covariate. Results were unchanged (reappraisal vs. suppression: actor-effect = 3.09, $t(165) = 2.50$, $p = .013$). Thus, there was no support for the idea that the reappraisal–suppression conversation memory difference was due to how much was said during the conversation.

A second set of control analyses assessed whether pre-conversation emotion differences between suppression and reappraisal participants could account for the observed conversation memory difference. This possibility is unlikely, given that alterations in neither physiological arousal nor emotion experience appear to explain the effects of emotion regulation on memory (Richards & Gross, 1999, 2000). However, given prior research suggesting strong links between emotion and memory accuracy (for a review, see Christianson, 1992), we re-computed the actor effect that compared the reappraisal and suppression groups, entering the pre-conversation negative and positive affect variables as covariates. Results were unchanged when controlling for negative (reappraisal vs. suppression: actor-effect = 3.22, $t(165) = 2.55$, $p = .01$) or positive (reappraisal vs. suppression: actor-effect = 2.89, $t(165) = 2.26$, $p = .03$) pre-conversation affect levels. Thus, there was no support for the idea that the reappraisal–suppression conversation memory difference was due to pre-conversation emotion levels that distinguished between the groups.

Discussion

Does the way we regulate our emotions during social interactions influence how we later remember these interactions? On the basis of both theory and prior research, we hypothesized that reappraisal and expressive suppression would differentially influence memory for conversation utterances. Results confirmed this hypothesis: In the context of a naturalistic conversation between romantic partners, participants who were assigned randomly to the reappraisal condition evidenced better memory for what was actually said than participants who were assigned randomly to the suppression condition. This result extends the memory effects of expressive suppression and reappraisal reported previously (Richards & Gross, 1999, 2000) from a solitary to a social setting, from slides and films to a self-relevant conversation, and from discrete list-like auditory information to naturalistic conversation utterances. Moreover, the dyadic design allowed us to examine whether the effects of the emotion regulation manipulations might extend beyond the people who received them. As expected, however,

the manipulations only affected memory in the individuals who received these manipulations.

In addition, results supported our second hypothesis: As cybernetic control models would suggest (Carver & Scheier, 1981; Larsen, 2000), suppression led to increased memories of emotional impulses and expressive behaviors (relative to uninstructed controls). Moreover, this emotion memory difference was mediated by self-monitoring. This suggests that response-focused efforts to regulate emotions may turn attention inward, thereby heightening the salience of emotion-related memories.

Although we obtained mediational evidence for emotion memories, this was not the case for conversation memories. Recall that we examined whether the suppression–reappraisal conversation memory difference would be due to a memory-enhancing effect of reappraisal and a memory-degrading effect of expressive suppression. Concerning the first of these propositions, we suggested that adopting a positive mindset about one's relationship (i.e., reappraisal) may have the effect of increasing engagement in a subsequent conversation about its problems. An initial step in our mediation sequence revealed that reappraisal was in fact associated with greater engagement in the conflict conversation (relative to expressive suppression). However, engagement did not explain the reappraisal–suppression memory difference. We also examined whether the suppression–reappraisal conversation memory difference was due to cognitively costly self-monitoring among suppressors. Although suppression was associated with heightened self-monitoring, this variable did not play a mediational role.

At this stage, therefore, it is not yet clear why suppression and reappraisal differentially influenced memory for conversation utterances. We can, however, address the broader question of whether this difference was driven primarily by reappraisal, suppression, or both. When results are viewed in relation to the uninstructed group, we see that memory for conversation utterances in this group fell between the levels observed for the reappraisal and suppression groups. This is precisely what we would expect if (i) reappraisal enhances memory for conversation utterances, and (ii) suppression degrades it. Although the uninstructed group's memory performance was not statistically distinguishable from the two regulation groups, it is possible that this was caused by a subset of the uninstructed participants who evoked emotion regulatory efforts during the conversation despite having not been given instructions to do so. This is a point to which we return in our discussion of study limitations and future directions.

Implications

Emotion regulation. The present research breaks new ground in the study of emotion regulation, demonstrating that two specific strategies can be manipulated in naturalistic contexts, and that efforts to influence emotion may have unintended consequences for memory. Specifically, results can be brought to bear on clarifying theoretical accounts of the functional

consequences of emotion regulation, which encourage the notion that diverse forms of self-regulation should have similar effects (e.g., Baumeister, Bratslavsky, Muraven, & Tice, 1998; Muraven et al., 1998). Having found that two specific forms of emotion regulation had different cognitive consequences, however, our results speak to the importance of more fine-grained approaches to operationalizing emotion regulation. Our distinction between antecedent-focused and response-focused emotion regulation is a start; however, it will be important for future research to assess the broader applicability of this model. Such research is underway, as reflected by the work of Fraley and colleagues, who have distinguished between preemptive and reactive emotion regulation and their implications for memory (Fraley, Garner, & Shaver, 2000).

Relationship functioning. Talking about conflicts and disagreements in a relationship is the first step toward solving them. After all, if partners do not raise their concerns over such issues as intimacy, money, or child rearing, positive change and enhanced understanding in the relationship are also unlikely to occur. Yet, problems in a relationship are also unlikely to be resolved simply as a function of having talked about them. It stands to reason that the benefits of conversations about sensitive relationship issues crucially hinge on post-conversation processing of the thoughts and feelings that were shared on both sides - thoughts and feelings that can be accessed only by drawing on our memories. Although little research has directly examined relations between memory for relationship-relevant interactions and relationship functioning, Sillars et al. (1990) have found that couples who are better able to remember their conversations about relationship dynamics show greater understanding of each other's perspectives on important issues in the relationship (e.g., work pressures, money). These findings suggest that variability in conversation memory can predict relationship functioning. The present study builds on this work by providing some clues as to how this variability may arise in the first place. Future research is necessary, however, to determine whether the link between emotion regulation and memory may help to explain relationship functioning. One approach to doing this is to measure habitual styles of emotion regulation and assess their relations with both memory and relationship outcomes. One previous study has shown a link between dispositional expressive suppression and poorer memory for autobiographical experiences (Richards & Gross, 2000, Study 3); however, it is necessary to examine whether this finding generalizes to relationship-relevant memories in particular, and to demonstrate whether this link may in fact help to explain variability in longer-term relationship functioning.

Limitations and future directions

Although the present study contributes to our understanding of the intersection of cognition and emotion, several limitations warrant mention. First, we focused on just two emotion regulation strategies. Comparing them afforded the possibility of showing that different forms of emotion

regulation had different consequences for memory. However, with just two regulation conditions, we are unable to comment on the cognitive effects of diverse forms of emotion regulation. Thus, future research is necessary in which other forms of emotion regulation, such as thought suppression (Wegner, Erber, & Zanakos, 1993), rumination (Lyubomirsky & Nolen-Hoeksema, 1995), ingratiation (Gilbert, Krull, & Pelham, 1988), and emotion exaggeration (Muraven et al., 1998) are examined. Moreover, having manipulated emotion regulation with instructional sets, we cannot comment on how other means of inducing emotion regulation may influence memory. Relatedly, we have not compared how the memory effects of our instructional sets compare to those of tasks traditionally used in cognitive psychology to degrade (e.g., cognitive load instructions) or enhance (e.g., depth of processing instructions) memory. This work would be necessary in order to forge empirical links between the present line of research and the larger cognitive literature. Findings are also limited to the extent that the precise nature of the mechanisms that explain the reappraisal–suppression memory difference for conversation utterances remains to be specified.

Consistent with prior research suggesting that neither alterations in physiological arousal nor subjective emotion experience explain the effects of emotion regulation on memory (Richards & Gross, 1999, 2000), the present study found no evidence that the affective consequences of emotion regulation mediate its cognitive consequences. After all, reappraisal and expressive suppression differentially influenced affect, but control analyses revealed that these differences did not explain the reappraisal–suppression conversation memory difference. Moreover, neither engagement in the conversation nor self-monitoring explained this difference. Although one might be encouraged to conclude that these processes play no mediational role, we caution against doing so on the basis of a single study. The face valid self-report measures of the sort we used may be too temporally distal from the period of regulation or too coarse to withstand the rigors of mediational analyses. Thus, future research aimed at establishing such unobservable psychological processes may do well to deploy online thought sampling techniques in more controlled laboratory contexts. By opening a window onto stream of consciousness while individuals engage in various forms of emotion regulation, greater insight may be gained into the information processing goals and self-regulatory demands that follow from these efforts. A valuable adjunct to measuring these processes is to use implicit measures of self-focus and the relative salience of different goals during the conversation (e.g., information gathering vs. self-monitoring).

Although the present study does not explain fully the precise mechanisms that underlie the reappraisal–suppression conversation memory difference, it can speak to the question of whether this difference was due to a memory-enhancing effect of reappraisal or a memory-degrading effect of expressive suppression because we included an uninstructed group in the design. Results revealed that suppressors remembered less than controls, but that reappraisors remembered more than controls. However, these

differences only approached statistical significance. We suggest tentatively that this may be due to the fact that a subset of the uninstructed participants evoked emotion regulatory efforts during the conversation, despite having not been given instructions to do so. This would not be surprising in view of prior research, which suggests that both expressive suppression and reappraisal are called forth spontaneously during tense social interactions (Gross et al., 2003). If this were the case in the present study, the uninstructed group was not truly 'emotion-regulation free.' This could explain why the distributions of conversation memory scores overlapped for the uninstructed and regulation groups. Thus, our findings may represent a conservative test of the effects of these manipulations. To ameliorate this shortcoming and to better understand the magnitude of the effects of emotion regulation on memory, future research is needed that includes more comparison conditions. One possibility is to include an explicit 'do not regulate' condition. As well, it may be useful to include a condition in which participants are encouraged to 'fully experience or express' or to 'maintain' their emotions.

An additional limitation of the present study is that it focused exclusively on the consequences of expressive suppression and reappraisal on memories that were assessed after a delay of less than 30 minutes. Thus, results can not speak to whether the observed memory difference would remain after weeks or months. Relatedly, without examining longer-term memory, we cannot know how emotion regulation may influence post-conversation processes that have implications for memory. In view of our finding that reappraisal increased engagement in the conversation, one might speculate that reappraisal leads to more post-conversation thinking and talking about an emotionally important conversation, which in turn might decrease the forgetting of who said what during a conversation. If this is the case, the conversation memory gap between expressive suppression and reappraisal would be expected to widen over time. Future research that assesses memory on multiple occasions will be necessary in order to test this idea, and to confirm whether, even in the shorter-term, emotion regulation exerts an effect at the encoding stage as opposed to the retrieval stage. Such research would subserve not only the goal of better understanding the intersection of emotion regulation and memory, but also the broader endeavor of clarifying what 'emotionally intelligent' (Salovey & Mayer, 1990) emotion regulation truly is in the context of important social interactions.

REFERENCES

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173–1182.

Baumeister, R. F., Bratslavsky, E., Muraven, M., & Tice, D. M. (1998). Ego depletion: Is the self a limited resource? *Journal of Personality and Social Psychology, 74*, 1252–1265.

Beck, A. T. (1991). Cognitive therapy: A 30-year retrospective. *American Psychologist, 46*, 368–375.

Carstensen, L. L., Gottman, J. M., & Levenson, R. W. (1995). Emotional behavior in long-term marriage. *Psychology and Aging, 10*, 140–149.

Carver, C. S., & Scheier, M. F. (1981). *Attention and self-regulation: A control-theory approach to human behavior*. New York: Springer.

Christianson, S.-Å. (1992). Emotional stress and eyewitness memory: A critical review. *Psychological Bulletin, 112*, 284–309.

Cliff, N. (1987). *Analysing multivariate data*. New York: Harcourt Brace Jovanovich.

Ekman, P., & Friesen, W. V. (1975). *Unmasking the face: A guide to recognizing emotions from facial clues*. Englewood Cliffs, NJ: Prentice-Hall.

Ellis, H. C., & Ashbrook, P. W. (1989). The 'state' of mood and memory research: A selective review. In D. Kuiken (Ed.), Mood and memory: Theory, research, and applications [Special issue]. *Journal of Social Behavior and Personality, 4*, 1–21.

Fraley, R. C., Garner, J. P., & Shaver, P. R. (2000). Adult attachment and the defensive regulation of attention and memory: Examining the role of preemptive and postemptive defensive processes. *Journal of Personality and Social Psychology, 79*, 816–826.

Gilbert, D. T., Krull, D. S., & Pelham, B. W. (1988). Of thoughts unspoken: Social inference and the self-regulation of behavior. *Journal of Personality and Social Psychology, 55*, 685–694.

Gottman, J. M., Markman, H., & Notarius, C. (1977). The topography of marital conflict: A sequential analysis of verbal and nonverbal behavior. *Journal of Marriage and the Family, 39*, 461–477.

Gross, J. J. (1998a). The emerging field of emotion regulation: An integrative review. *Review of General Psychology, 2*, 271–299.

Gross, J. J. (1998b). Antecedent- and response-focused emotion regulation: Divergent consequences for experience, expression, and physiology. *Journal of Personality and Social Psychology, 74*, 224–237.

Gross, J. J., & Levenson, R. W. (1993). Emotional suppression: Physiology, self-report, and expressive behavior. *Journal of Personality and Social Psychology, 64*, 970–986.

Gross, J. J., Richards, J. M., & John, O. P. (2003). *Emotion regulation in everyday life: Sex, ethnicity, and social context*. Manuscript in preparation.

Howell, D. C. (1992). *Statistical methods for psychology* (3rd ed.). Belmont, CA: Duxbury Press.

Jackson, D. C., Malmstadt, J. R., Larson, C. L., & Davidson, R. J. (2000). Suppression and enhancement of emotional responses to unpleasant pictures. *Psychophysiology, 37*, 515–522.

Kashy, D. A., & Kenny, D. A. (2000). The analysis of data from dyads and groups. In H. Reis & C. M. Judd (Eds.), *Handbook of research methods in social and personality psychology* (pp. 451–477). New York: Cambridge University Press.

Kennedy-Moore, E., & Watson, J. C. (1999). *Expressing emotion: Myths, realities, and therapeutic strategies*. New York: Guilford Press.

Kenny, D. A. (1996). Models of non-independence in dyadic research. *Journal of Social and Personal Relationships, 13*, 279–294.

Larsen, R. J. (2000). Toward a science of mood regulation. *Psychological Inquiry, 11*, 129–141.

Lazarus, R. S., & Alfert, E. (1964). Short-circuiting of threat by experimentally altering cognitive appraisal. *Journal of Abnormal and Social Psychology, 69*, 195–205.

Levenson, R. W., & Gottman, J. M. (1983). Marital interaction: Physiological linkage and affective exchange. *Journal of Personality and Social Psychology, 45*, 587–597.

Lyubomirsky, S., & Nolen-Hoeksema, S. (1995). Effects of self-focused rumination on negative thinking and interpersonal problem solving. *Journal of Personality and Social Psychology, 69*, 176–190.

Miyake, A., Witzki, A. H., & Emerson, M. J. (2001). Field dependence-independence from a working memory perspective: A dual-task investigation of the Hidden Figures Test. *Memory, 9*, 445–457.

Morris, W. N., & Reilly, N. P. (1987). Toward the self-regulation of mood: Theory and research. *Motivation and Emotion, 11*, 215–249.

Muraven, M., Tice, D. M., & Baumeister, R. F. (1998). Self-control as a limited resource: Regulatory depletion patterns. *Journal of Personality and Social Psychology, 74*, 774–789.

Pennebaker, J. W., Francis, M. E., & Booth, R. J. (2001). *Linguistic Inquiry and Word Count: LIWC 2001*. Mahwah, NJ: Erlbaum.

Richards, J. M., & Gross, J. J. (1999). Composure at any cost? The cognitive consequences of emotion suppression. *Personality and Social Psychology Bulletin, 25*, 1033–1044.

Richards, J. M., & Gross, J. J. (2000). Emotion regulation and memory: The cognitive costs of keeping one's cool. *Journal of Personality and Social Psychology, 79*, 410–424.

Salovey, P., & Mayer, J. D. (1990). Emotional intelligence. *Imagination, Cognition and Personality, 9*, 185–211.

Seitz, K., & Schumann-Hengsteler, R. (2000). Mental multiplication and working memory. *European Journal of Cognitive Psychology, 12*, 552–570.

Sillars, A. L., Weisberg, J., Burggraf, C. S., & Zietlow, P. H. (1990). Communication and understanding revisited: Married couples' understanding and recall of conversations. *Communication Research, 17*, 500–522.

Stafford, L., Burggraf, C. S., & Sharkey, W. F. (1987). Conversational memory: The effects of time, recall, mode, and memory expectancies on remembrances of natural conversations. *Human Communication Research, 14*, 203–229.

Stafford, L., & Daly, J. A. (1984). Conversational memory: The effects of recall mode and memory expectancies on remembrances of natural conversations. *Human Communication Research, 10*, 379–402.

Thayer, R. E., Newman, J. R., & McClain, T. M. (1994). Self-regulation of mood: Strategies for changing a bad mood, raising energy, and reducing tension. *Journal of Personality and Social Psychology, 67*, 910–925.

Tice, D. M., & Bratslavsky, E. (2000). Giving in to feel good: The place of emotion regulation in the context of general self-control. *Psychological Inquiry, 11*, 149–159.

Tomaka, J., Blascovich, J., Kibler, J., & Ernst, J. M. (1997). Cognitive and physiological antecedents of threat and challenge appraisal. *Journal of Personality and Social Psychology, 73*, 63–72.

Wegner, D. M., Erber, R., & Zanakos, S. (1993). Ironic processes in the mental control of mood and mood related thought. *Journal of Personality and Social Psychology, 58*, 409–418.