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Capturing naturally occurring emotional suppression as it unfolds in couple interactions

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Abstract

Most research examining the consequences of suppressing emotional expression has focused on either experimentally manipulated and conscious suppression, or self-reported suppression behavior. This study examined suppression as it naturally occurred in couple ($n = 105$) discussions regarding a challenging topic. A *Suppression Index (SI)* was created by calculating the difference between continuous self-reports of emotional experience, obtained using cued video recall, and coders' continuous ratings of expressed emotion. Suppression was common for both men and women, though there was also substantial individual variation. Autocorrelations of the *SI* were used to tap *Suppressive Rigidity (S_{rig})*, or the tendency to inflexibly use suppression throughout the discussions. S_{rig} scores were consistent within individuals across repeated conversations and varied across individuals, suggesting that S_{rig} captures stable individual differences. Women's greater suppression of negative emotions combined with more rigid use of suppression was associated with their own lower relationship satisfaction but not their partners'. These findings indicate that suppressive behavior may be linked to relationship quality, and that it is not just the use of suppression that may matter but how rigidly one applies this regulatory approach.

Capturing naturally occurring emotional suppression as it unfolds in couple interactions

In social situations, individuals are regularly faced with choices about the utility of expressing the emotions they are feeling. In some situations, individuals are more likely to achieve their goals by altering their expression of emotions. Sometimes, this modification involves an embellishment of an emotion, perhaps in the service of creating a stronger connection to someone. At other times, the modification consists of limiting one's outward expression – what has been referred to as suppression¹ – perhaps to avoid hurting a person who has made one angry. In the context of intimate connections, these regulatory strategies are likely to influence the satisfaction and quality of these relationships (Bloch, Haase, & Levenson, 2014; Schulz & Waldinger, 2010). Little, however, is known about the extent, nature, and consequences of emotion suppression in close relationships. This study addresses this void by closely examining streams of emotion experience, expression, and suppression in actual couple interactions.

Emotion and Emotion Regulation

Emotion is often thought of as an adaptive system of organized responses to stimuli with three distinct channels of output, typically referred to as the physiological, experiential, and expressive components (e.g., Rosenberg & Ekman, 1994; Bulteel, Ceulemans, Thompson, Waugh, Gotlib, Tuerlinckx, & Kuppens, 2014). The physiological component consists of autonomic bodily changes (e.g., heart rate, skin conductance), the experiential component refers to a person's subjective experience of emotion, and the expressive component includes the body language, verbalizations and facial expression that accompany emotion and are observable to others.

While previous research has demonstrated that the expressive and experiential components show coherence over time (Rosenberg & Ekman, 1994; Sze, Gyurak, Yuan, & Levenson, 2010), situations often arise in which a particular emotional response is perceived as having the potential to be detrimental to one's goals. In such situations, people often attempt to adjust the response of one or more of the three channels of the emotion system to better facilitate

¹Importantly, the term “suppression” has been used to refer to both efforts to reduce the expression of emotion and efforts to dampen the feeling of an emotion. In this work, we focus on efforts to reduce *expressed* emotion. Therefore, all references to *suppression*, *emotion suppression*, and *suppression of emotional expression* are intended to describe the inhibition of outward emotional expression during an emotional experience.

the achievement of those goals (Schulz & Lazarus, 2012). The formal term for this emotional adjustment is *emotion regulation*, which is defined as “the process by which individuals influence which emotions they have, when they have them, and how they experience and express these emotions” (Gross, 1998, p. 275).

Emotion Suppression

One type of emotion regulation is the dampening of emotional expression, often referred to as emotion suppression. Emotion suppression is characterized by the inhibition of outward expression when a person experiences emotion (Gross & Levenson, 1993). Like all efforts at emotion regulation (Gross & Jazaieri, 2014; Schulz & Lazarus, 2012), suppression is motivated by personal goals that might vary across contexts and emotions. Motivations may include protecting a relationship by suppressing the expression of anger, reducing one’s vulnerability by suppressing sadness, or being gracious to a valued other by suppressing personal happiness or pride.

Most of the research examining correlates and consequences of suppression has employed approaches that involve (1) asking participants to indicate how much they suppressed their emotional expression in a particular time period, or (2) asking participants to consciously and intentionally suppress their emotional expression (Gross, 2002; Gross & John, 2003; Butler, Egloff, Wilhelm, Smith, Erickson, & Gross, 2003). These approaches seem to be at odds with the idea that emotion regulatory strategies are “often executed automatically, without much conscious awareness or deliberation” (Gross, 2002 p. 348). If, in fact, much of suppression occurs outside of awareness or without conscious deliberation, then researchers are not capturing important instantiations of suppression. Thus, because of the study designs typically employed, we currently do not know much about how common suppression is in everyday life, or the nature of the suppression that occurs.

Although studies have been limited largely to a focus on *conscious* and *intentional* suppression, they have begun to identify the effects of suppression in experiential, cognitive, physiological, and social realms (e.g., Butler et al., 2003; Butler, Gross, & Barnard, 2014; Chapman, Fiscella, Kawachi, Duberstein, & Muenning, 2013; Gross & John, 2003; Gross & Levenson, 1997). Research suggests that suppression, as studied, is a generally maladaptive regulatory strategy across this wide range of domains.

Emotion Suppression in Relationships

Emotions and their regulation are central to relationship success and experience (Carstensen, Gottman, & Levenson, 1995; Cohen, Schulz, Weiss, & Waldinger, 2012; Bloch, Haase, & Levenson, 2014). The ways in which partners handle emotions during challenging conversations can provide insight into the health and functioning of a relationship (Bradbury & Fincham, 1990; Christensen, 1988; Gottman, 1994), as specific emotional dynamics during conflict have been found to be predictive of long-term marital satisfaction, stability, and divorce (Gottman, Coan, Carrere, & Swanson, 1998; Gottman & Levenson, 2000; Waldinger, Schulz, Hauser, Allen, & Crowell, 2004). Discussions of negative emotional events therefore provide an excellent context for studying emotion suppression. Yet despite evidence that emotion regulation plays an important, and often beneficial, role in romantic relationships (Isen, 1999; Wile, 2002; Levenson, Cowan, & Cowan, 2010), little research has been done to examine directly the use and implications of emotion suppression in the context of couple conversations (Bloch, Haase, & Levenson, 2014). The few studies that have examined emotion suppression in this context have largely aligned with broader findings about the negative consequences of suppression.

Two such studies have employed an experimental approach to examine the effects of instructing one participant to suppress their emotional expression during a conversation with their partner. In these studies, suppression led to a reduction in how much the suppressor was able to remember, as well as an increase in the frequency of contempt expressions in both partners (Richards, Butler, & Gross, 2003; Ben-Naim, Hirschberger, Ein-Dor, & Mikulincer, 2013). Two studies used a self-report approach to examine associations between perceived suppression use in interactions and relationship health. In one study, reports of greater suppression were found to be associated concurrently with lower emotional well-being and relationship satisfaction, and to predict decreases in relationship satisfaction and increased consideration of breaking up 3 months later (Impett, Kogan, English, John, Oveis, Gordon, & Keltner, 2012). In the other, self-perceptions of habitual suppression use were associated with lower marital satisfaction (Velotti, Balzarotti, Tagliabue, English, Zavattini, & Gross, 2015).

Given these findings, a number of ideas have been offered about why suppression might have negative relational consequences (Butler et al., 2003; Richards et al., 2003). For example, not expressing emotions to a partner may cut off an individual from important sources of support in times of need; it may also be confusing for partners in situations when they are motivated to read and respond to emotional signals coming from the individual. It is important to note that

both of these ideas suggest that, in *particular* contexts or moments of interaction, suppression may be deleterious. Yet it is also possible to imagine situations in a couple interaction in which suppression might have adaptive benefits, particularly if not applied too rigidly. For example, it may be helpful, at times, to suppress one's own emotional expression to facilitate a partner's ability to express his or her own emotions.

Suppressive flexibility and rigidity

Despite the potential importance of context when considering the adaptiveness of suppression, typical measurement approaches have treated suppression as a sustained behavior that is unresponsive to one's environment (i.e., suppression as a trait-like entity). However, the frequency with which suppression is used in this rigid manner has not been studied. The rigidity or flexibility with which suppression is used, and the degree to which use of suppression is responsive to external and internal influences, could potentially have vastly different effects on both the users of suppression and their social partners.

Indeed, much theory and research has given support to the idea that the flexibility in the way emotion regulatory strategies are implemented might be important to consider when examining its effects. Following in the intellectual tradition of Lazarus (1983), who described context- and usage-dependent costs and benefits of coping strategies, Bonanno and Burton (2013) challenge the idea that any emotion regulatory strategy is broadly adaptive or maladaptive, referring to that type of categorizing as "the fallacy of uniform efficacy" (Bonanno & Burton, 2013, p. 592). They instead argue that each regulation strategy can be adaptive and maladaptive depending on how and when it is used, and posit that the flexibility of the user to select and alter their strategy based on their environment is an important determinant of adaptiveness. Providing support for this idea, Bonanno and colleagues have demonstrated that one's *ability* to both enhance and suppress emotional expression skillfully is predictive of lower levels of distress over time (Bonanno, Papa, Lalande, Westphal, & Coifman, 2004).

Another area of research, the study of emotion inertia, provides a model for examining the extent and importance of flexibility in suppression use. Emotion inertia is a perseverative pattern of emotion in which affective states remain consistent across time (Koval, Kuppens, Allen, & Sheeber, 2012 p. 1413). High emotion inertia indicates a feeling state that is resistant to change and is not reactive to external cues. Emotion inertia is commonly assessed (e.g., Koval et al., 2012; Koval, Pe, Meers, & Kuppens, 2013) by observing streams of emotion (typically, the

focus has been on negative emotions such as anger and dysphoria) and investigating the degree to which emotion levels at one point in time can be predicted by those levels at previous points in time. High levels of emotion inertia have been associated with self-reported symptoms of depression (Koval et al., 2012; Koval et al., 2013). Because this approach focuses on temporal changes in affective behavior across time, it is a promising strategy for attempting to distinguish flexibly applied suppression from rigid suppression.

The Current Study

While foundational work in the fields of emotion suppression has revealed much about the use and consequences of this regulatory behavior, there is a strong need for more context-sensitive and externally valid research on emotion suppression. Due to the use of instructed suppression in experimental research, and the limitations associated with self-report studies, little is known about how common suppression is and how it is naturally enacted, both in general and within couple interactions. Additionally, because of the lack of attention paid to regulatory flexibility and responsiveness in prior research, it is unclear if, when, and how suppression can be used beneficially. Thus, the current study attempts to examine and characterize the natural use of emotion suppression in close relationships and to clarify its linkages to relationship satisfaction.

For this study, continuous data on emotional experience and expression were collected during couple discussions of a challenging topic. The degree of divergence between continuous streams of emotional experience and emotional expression data were indexed, with moments of greater experience than expression representing suppression. This approach yields a temporally-sensitive measure that captures both conscious and unconscious emotional suppression. This approach thereby provides a window into the emotional context of suppression and the frequency with which it occurs without depending on the artificiality of experimental instructions to suppress emotion or on an individual's capacity to accurately self-report regulatory behaviors.

Additionally, variation in how suppression is applied across a conversation was used to tap individual differences in the rigidity of suppression. Suppressive rigidity was operationalized as the autocorrelation of the suppression index, so that values near zero represent highly flexible suppression that is quite responsive to changing context, while values near one represent highly rigid suppression that is almost completely unresponsive to any changes in conversational context. With this measure, the current study sought to examine the manner in which suppression

is used in a couple context, and whether different styles of emotion suppression may be associated with different relational outcomes such as relationship satisfaction.

This study was designed to investigate the following hypotheses:

1. Instances of emotional suppression will occur more frequently than instances of emotional enhancement in the context of challenging couple conversations.
2. The degree to which suppression is applied rigidly will vary across individuals and show stability within individuals across interactions.
3. The link between relationship satisfaction and suppression is likely to be more negative when suppression is applied rigidly than when applied flexibly.

Method

Participants²

Participants for the current study were 105 community-based couples recruited from two metropolitan areas for a larger study of couples (see Waldinger & Schulz, 2006 for details). Recruitment of couples was designed to obtain a sample that varied in relationship satisfaction, relationship stability and styles of conflict resolution and emotion regulation. Specifically, at the first site – Bryn Mawr, PA – 54 couples were recruited to represent an older, stabler, and more middle-class population, and at the second site – Boston, MA – 102 couples were recruited to represent a younger, more urban, and more ethnically and socioeconomically diverse population. Additionally, couples with a history of domestic violence or childhood abuse were oversampled at the Boston site. At both sites, couples from the community were recruited by public advertisements (e.g., local newspapers, community newsletters).

Data from 105 of the 156 couples that participated in the larger study were analyzed for the current study. This subset was used because of audio and visual problems present in 51 videotapes that made coding continuous emotion expression difficult or impossible. Relative to the overall sample, couples from Bryn Mawr ($n = 43$) were somewhat over-represented in the subset compared to couples from Boston ($n = 62$). For correlational testing, the sample of 105 couples achieves power of 0.88 for medium effects ($r = 0.30$), power greater than 0.99 for large effects ($r = 0.50$), and power of 0.17 for small effects ($r = 0.10$). Though underpowered for small

² This study was approved by the Bryn Mawr College Institutional Review Board and was conducted in accordance with APA ethical conduct of research with human subjects.

effects, this sample is larger than those of previous studies that have successfully employed similarly extensive laboratory observation and emotional coding techniques (e.g., Gottman & Levenson, 1985; Gottman & Levenson, 2000).

The mean age of participants included in this study was 36.6 years old ($SD = 10.5$), with a mean relationship length of 8.5 years ($SD = 9.3$). Most (63%) couples were married with the remaining living in committed long-term relationships. More than half (51%) had children. The sample was 79% Caucasian, 12% African American, 6% Hispanic, and 3% Asian or Pacific Islander. Participants varied with respect to educational background, with 64% having completed bachelor's or more advanced degrees, 13% having some post-high school education, and 23% having a high school education or less. The median income per year was between \$45,000 and \$60,000, with 25% of participants indicating that their family earned less than \$30,000 and 30% indicating that they earned more than \$80,000. The couples had a wide range of relational functioning, with an average score of 107.7 ($SD = 27.7$) on the Locke-Wallace Marital Adjustment Test (Locke & Wallace, 1959). See Table 1 for details of the sample demographics.

Procedure

Each participant individually completed a battery of questionnaires, including a relationship satisfaction measure, and participated in a laboratory-based couple interaction task. In the laboratory task, participants were asked to identify a recent incident in which their partner had done something that frustrated, upset, or angered them. Each participant identified more than one incident, so that for each couple the resulting "his" and "hers" discussion topics were not duplicated. Common identified topics included disagreements about parenting and time with family. A brief structured interview was then conducted about the incident and questions were asked about their feelings and attributions regarding the challenging event. Following the interview, participants briefly described the incident on an audiotape to be used as a discussion prompt.

After incidents had been identified and described for each partner, couples were brought back together for the interaction task. In counterbalanced order, each participant was asked to discuss the chosen incident with his or her partner, with the goal of obtaining a better understanding of what had occurred. Discussions lasted 8-10 minutes. The discussions were filmed by two video cameras placed behind a one-way mirror, with one camera recording each participant throughout the interaction.

When the discussions were over, participants separately watched the video recordings and used a rating dial to continuously rate their level of positive or negative emotion at every point throughout the interactions. Videotapes of discussions were used by observers to code each participants' emotional expression throughout the conversations.

Measures

Continuous Reports of Emotional experience. Participants used a rating dial to indicate how positively or negatively they were feeling during the interaction. As they watched their videotape, participants moved a knob back and forth across an 11-point scale (from "very negative" to "very positive" with neutral ("0") in the center) to indicate their feelings. The rating dial data were converted linearly to a digital signal and a scale that ranged from -2 to +2. The continuous ratings were segmented into 5-second bins (by taking the mean across those 5 seconds) to increase the reliability of participants' reports. The reliability and validity of this cued video recall approach has been established by previous research using similar procedures to obtain affective experience ratings (Gottman & Levenson, 1985; Schulz & Waldinger, 2004).

Continuous Ratings of Emotional expression. Expression of emotion was continuously rated by blind coders using similar procedures as participants' ratings of emotional experience. An 11-point scale identical to the one used by participants was employed. Coders were instructed to rate how much positive or negative emotion participants were expressing at each moment of the interaction. It was made clear that coders should give ratings based on observable signs of *expression* of emotion and not what they believed participants were likely to be feeling internally (Zimmerman, 2003). No additional training was given beyond these brief instructions.

Multiple coders (typically three, drawn randomly from a pool of 15) recorded emotional expression for each participant. Each coder's ratings of expression were standardized (using within-person Z-scores) to account for the degree to which the coders differed in their use of the full range of the scale. The ratings were aggregated across coders to create one continuous emotional expression trajectory (across the entire interaction) for each participant. The strategy of pooling the ratings of untrained coders has been referred to as a naïve coding approach (Waldinger, Schulz, Hauser, Allen, & Crowell, 2004). This method relies on coders' intuitive ability to judge emotion, and pooling of the ratings of multiple coders minimizes the potential biases present in each individual's assessments. Previous research has demonstrated this method's ability to obtain reliable and valid measures of emotional expression (Waldinger et al.,

2004).

Pearson correlations between raters of their continuous ratings for each individual were calculated to gauge reliability. The average inter-rater reliability between coders was $r = 0.49$. With an average of three coders per conversation, this is equivalent to an effective reliability of 0.75 using the Spearman-Brown Composite Reliability formula for multiple measures (Rosnow & Rosenthal, 1996; Waldinger et al., 2004).

Suppression Indices. Suppression of emotional expression was calculated using participants' continuous ratings of emotional experience and coders' pooled ratings of emotional expression. To maximize reliability and to provide a reasonable time period for comparing experience and expression, both rating streams were segmented into 5-second bins, with each 5-second interval represented by the average score over that time period. The score for each interval was then standardized (using within-person Z-scores) *within* the given discussion to account for differences in how expressive or emotional participants were relative to each other, as well as differences in the degree to which the participants used the full range of the rating scale. As a result, the standardized 5-second bin scores represent each participant's emotional experience and expression relative to their own average experience and expression over the course of each discussion.

A *Suppression Index* (SI) score for each 5 second bin was created from the difference between standardized emotional experience and standardized emotional expression for that segment. To help make the SI score more intuitively understandable, the SI was calculated so that positive scores always indicate suppression of a given emotion and negative scores always indicate enhancement. The following procedure was used. In moments when participants had reported positive feelings (*raw* self-reported emotional experience was greater than zero), SI was calculated by subtracting standardized expression from standardized experience. Thus, the SI score is positive for positive moments in which one's observed expression was less positive than his or her reported experience of emotion. Conversely, when raw self-reported emotional experience had a negative emotional valence, suppression was calculated by subtracting standardized experience from standardized expression. This reversal ensures that the SI is greater than zero for suppressive moments involving negative emotion in which one's expression was less negative than his or her experience of the emotion. Thus, high scores on SI always indicate moments of high suppression of either positive or negative emotion, since those are the moments

in which participants' subjective emotional experience was relatively more intense than their emotional expression.

With this scoring procedure, all suppression moments are greater than zero on SI (regardless of the valence of the participants' emotional experience), and therefore the average score for a conversation indexes the relative degree to which participants did not express emotion that was as intense as they reported experiencing. Importantly, a low average SI score or an average score of zero does not necessarily indicate an absence of suppression. Instead, it implies balanced presence of suppression and enhancement of emotional expression throughout the conversation. This is due to the fact that enhancement (i.e., moments in which expression of emotion was relatively more extreme than experience of emotion) is represented by negative scores on this measure. Figure 1 provides examples of moments of suppression and enhancement on the SI.

Because suppression of positive emotions and suppression of negative emotions may have different personal and conversational meanings and effects, we also created a separate *Positive Suppression Index* (PSI) and *Negative Suppression Index* (NSI). The PSI consists of moments in which *raw* reported emotional experience is greater than zero, while the NSI consists of moments in which *raw* emotional experience is less than zero. Average scores for the separate SI measures were calculated in addition to the overall SI average.

Suppressive Rigidity. To capture the rigidity with which participants suppress their emotion, a suppressive rigidity (S_{rig}) measure was created following methods used to calculate emotion inertia (Koval et al., 2012). S_{rig} was calculated using a multilevel model (estimated in HLM7) of the autocorrelation of the suppression index with a 5 second lagged suppression index across time in each conversation. Empirical Bayes estimates were extracted and used as each participant's S_{rig} score for each conversation. Broadly, S_{rig} score serves as an indicator of how suppression in any given 5-second interval predicts suppression in the following 5-second interval. Higher scores on S_{rig} are indicative of greater rigidity in suppression.

Relationship satisfaction. Relationship satisfaction was measured using the Locke-Wallace Marital Adjustment Test – Short Form (MAT) (Locke & Wallace, 1959). The MAT is a self-report measure consisting of 15 questions, with a possible range of 0 to 158. A score below 100 is typically thought to suggest relationship distress (Gottman, 1994). For this study, participants took a version of this instrument suitable for both married and unmarried people in

committed relationships. Additionally, a revised scoring system was used to remove gender bias in two items (Freeston & Plechaty, 1997). Example items on this measure include “[How often] do you confide in your mate” and “State the approximate extent of agreement or disagreement between you and your mate on... handling family finances.” The MAT has previously demonstrated strong reliability and validity (Freeston & Plechaty, 1997).

Results

The main objectives of this research were to examine how often suppression occurs in the context of challenging couple interactions, to gauge the extent to which suppression occurs flexibly or rigidly, and to determine whether suppression is related to relationship satisfaction. Because the sample was recruited in two locations, sensitivity analyses were carried out to determine whether effects differed by site of origin. Twenty such tests were performed and only one showed a significant site effect, demonstrating strong consistency across sites. Because sites differed at the expected false-positive rate of 0.05, results are presented for the full sample of couples from both sites.

Emotion experience, expression and suppression during couple interactions

Preliminary analyses focused on the two component parts of the suppression index. Similar overall levels of emotional experience in the couple interactions were reported by men ($M = 0.04$, $SD = 0.55$) and women ($M = 0.04$, $SD = 0.60$) using the rating dial. These data indicate that individuals reported a range of emotional experience with participants generally reporting a roughly equal mix of positive and negative emotions. Coder ratings of emotional expression were standardized, so negative scores indicate relatively negative expression compared to other individuals whose expression was coded. Because of the standardization procedure, the means for all participants were close to zero.

There was a medium to large positive link between emotional experience and emotional expression *across individuals* for both men and women, $r_{male} = 0.29$, $CI = [0.11, 0.46]$, $p = 0.003$; $r_{female} = 0.46$, $CI = [0.30, 0.60]$, $p < 0.001$, indicating that individuals reporting generally more negative emotions in the interactions were also observed by coders to be expressing more negative emotion. To examine the degree of coherence *within participants* across time between reports of emotional experience and ratings of emotion expression, correlations between the two measures were run for each individual. The average coherence across participants was relatively

low (mean $r_{male} = 0.16$, $SD\ r_{male} = 0.20$; mean $r_{female} = 0.18$, $SD\ r_{female} = 0.23$), but there was important individual variation. The limited covariation across time indicates that emotional experience and expression do not ebb and flow in synchrony, which suggests the presence of regulatory processes that may embellish or suppress emotional expression depending on the context.

How common is suppression use in interactions?

The average suppression of emotion (SI) by women was consistent across the two conversations each couple had, $r_{female} = 0.59$, $CI = [0.45, 0.70]$, $p < 0.001$, but showed less consistency for men $r_{male} = 0.22$, $CI = [0.03, 0.39]$, $p = 0.025$. To get an estimate for each participant's overall tendency to suppress emotion, average suppression scores were calculated by taking the mean of each participant's SI across both conversations. As predicted, mean overall suppression use ($M_{male} = 0.48$, $SD_{male} = 0.25$; $M_{female} = 0.44$, $SD_{female} = 0.27$) was significantly greater than zero for both men, $CI = [0.44, 0.53]$, $t(104) = 20.0$, $p < 0.001$, and women, $CI = [0.39, 0.49]$, $t(104) = 16.5$, $p < 0.001$, indicating that, on average, suppression of emotion expression was more common in these couple interactions than transparent or enhanced emotional expression. Because the *Suppression Index* is operationalized as the difference between two standardized streams, mean scores on this variable can be thought of as equivalent to d effect sizes (Cohen, 1988). Therefore, the amount of suppression use across the two couple interactions was equivalent to a medium effect for both men and women. Of the 210 participants, only nine (4%) showed an average SI score below zero, indicating a tendency to enhance their emotional expression more than they suppressed it. The rest of the participants had average scores above zero, indicating a tendency to suppress emotional expression.

Suppression of negative emotion was stronger ($M_{male} = 0.81$, $SD_{male} = 0.50$; $M_{female} = 0.69$, $SD_{female} = 0.52$) than suppression of positive emotion ($M_{male} = 0.55$, $SD_{male} = 0.40$; $M_{female} = 0.61$, $SD_{female} = 0.55$), with the difference reaching statistical significance for men, $CI = [0.14, 0.39]$, $t(99) = 3.33$, $p = 0.001$, but not for women, $CI = [-0.07, 0.23]$, $t(97) = 0.60$, $p = 0.55$.

Suppression levels for positive and negative emotions were linked across partners, $r_{NSI} = 0.34$, $CI = [0.15, 0.50]$, $p < .001$; $r_{PSI} = 0.25$, $CI = [0.06, 0.43]$, $p = 0.001$. That is, men who tended to suppress either positive or negative emotions to a greater extent were partnered with women who also tended to be stronger suppressors. However, partners' levels of overall suppression were not significantly correlated, $r_{SI} = 0.13$, $CI = [-0.06, 0.32]$, $p = 0.17$.

How rigidly is emotion suppression applied?

Estimates of the rigidity (S_{rig}) of participants' suppression ranged from 0.17 to 0.86, with a mean autocorrelation of 0.59 ($SD = 0.13$). This range indicates that, at the high end, participants' suppression in any 5-second period is highly predictable by their suppression in the previous 5-second period. At the low end, knowing a person's prior level of suppression only explains about 2.8% of the variance in his or her current level of suppression.

S_{rig} scores were largely independent of the other emotion constructs assessed in this study. There were no associations between S_{rig} and suppression of positive emotions, $r = 0.12$, $CI = [-0.02, 0.25]$, $p = 0.09$, overall emotional experience, $r = -0.09$, $CI = [-0.22, 0.04]$, $p = 0.19$, or expression of emotion, $r = -0.13$, $CI = [-0.26, 0.01]$, $p = 0.07$. A small, negative relationship was found between rigidity and suppression of negative emotions, $r = -0.18$, $CI = [-0.31, -0.04]$, $p = 0.01$, indicating that individuals who suppressed their negative emotion to a greater degree tended to suppress emotion a bit less rigidly. S_{rig} was consistent across conversations for both men, $r = 0.48$, $CI = [0.32, 0.61]$, $p < 0.001$, and women, $r = 0.52$, $CI = [0.37, 0.65]$, $p < 0.001$, indicating that individuals display similar levels of suppression rigidity in conversations in which they are voicing concerns about their partner's behavior as in conversations in which their partners are raising concerns about them. Partners' overall suppression rigidity was not significantly correlated, $r = 0.16$, $CI = [-0.03, 0.34]$, $p = 0.11$, and men and women did not differ in their tendency to suppress emotion rigidly, $CI = [-0.01, 0.06]$, $t(104) = 1.34$, $p = 0.18$.

Are suppression and suppressive rigidity related to relationship satisfaction?

Building on previous work focusing on the relational consequences of negative emotion suppression, one goal of the present study was to examine associations between negative suppression variables and relationship satisfaction. Our primary hypothesis was that negative links between suppression of negative emotion and relationship satisfaction were more likely when the suppression was implemented in a more rigid rather than flexible manner. As a first step, zero-order correlations were estimated between relationship satisfaction and relevant suppression (and emotion) variables. Male, $r = 0.31$, $CI = [0.12, 0.47]$, $p = 0.001$, and female, $r = 0.32$, $CI = [0.14, 0.49]$, $p < 0.001$, average emotional experience were significantly associated with relationship satisfaction, as were male, $r = 0.51$, $CI = [0.35, 0.64]$, $p < 0.001$, and female, $r = 0.50$, $CI = [0.34, 0.63]$, $p < 0.001$, emotional expression. Yet PSI, NSI, and S_{rig} were not independently associated with relationship satisfaction for either male or female participants,

indicating a lack of direct links between suppression variables and relationship satisfaction.

To examine the hypothesized moderating role of suppressive rigidity on links between negative suppression and relationship satisfaction, moderated Actor-Partner Interdependence Modeling (APIM; Cook & Kenny, 2005) was utilized. This modeling technique allows for the simultaneous estimation of the association between (1) individuals' own suppression variables and their own relationship satisfaction – *actor effects* – and (2) their own suppression and their partner's relationship satisfaction – *partner effects*. Because these associations are estimated simultaneously, APIM derives the unique associations that may be due to intra-individual influences (i.e., actor effects) and to dyadic or relational processes (i.e., partner effects).

As shown in Figure 2, four pathways in the APIM were of particular interest. These pathways examined whether the following associations were moderated by one's own suppressive rigidity: (1) women's negative suppression and their own relationship satisfaction, (2) women's negative suppression and their partner's relationship satisfaction, (3) men's negative suppression and their own relationship satisfaction, (2) men's negative suppression and their partner's relationship satisfaction. Following guidelines developed by Garcia and colleagues (Garcia, Kenny, & Ledermann, 2015), an APIM model for distinguishable dyads and a mixed moderator (i.e., a moderating variable with distinct values for each member of the dyad) was implemented. The model also included controls for the actor and partner effects of average emotional experience, average emotional expression, and the main effects of NSI and S_{rig} , so that the potential moderating effect of suppressive rigidity was examined after accounting for the potential direct influences of suppression, suppressive rigidity, emotional experience, and emotional expression.

Among the four moderated pathways of interest, the APIM (Fig. 2) showed one significant association – the link between women's NSI and their own relationship satisfaction was moderated by their S_{rig} , $B = -81.84$, $CI = [-154.32, -9.36]$, $\beta = -0.85$, $p = 0.03$. This interaction indicates that higher rigidity of suppression amplifies a negative association between suppression of negative emotion and relationship satisfaction in women (Fig. 3). In men, the interaction between NSI and S_{rig} was not associated with either their own or their partners' relationship satisfaction.

Discussion

The current study sought to capture naturally-occurring emotion suppression as it unfolds in the context of challenging couple interactions, and to study its potential connection to relationship satisfaction. Rigorous and proven methods for assessing emotional experience and expression in naturalistic interactions were employed and a new strategy for indexing suppression was applied. The study found that suppression of both negative and positive emotion expression occurs regularly in challenging couple interactions. The study also found that people vary in the degree to which their suppression is rigidly or flexibly enacted. While individuals vary in their suppressive rigidity (S_{rig}), they show stability in their rigidity across conversational contexts. Additionally, the study provided evidence (for women) that links between a tendency to suppress negative emotions and relationship satisfaction depend on whether that suppression is enacted in rigid or flexible ways.

How common is suppression during challenging discussions?

Participants suppressed frequently during their couple discussions; the overall difference between what they reported feeling and what they were observed expressing is equivalent to a medium effect size. The overall SI indicates that they typically expressed relatively less positive and negative emotion than they were experiencing. The magnitude of the difference between experience and expression suggests that suppression is not only common but it is a relatively significant shaper of the emotions expressed in challenging couple interactions. Almost all participants (96%) showed evidence of suppressing their emotion to a greater degree than they freely expressed or enhanced their emotion across the two conversations.

Some gender-related patterns in suppression use were revealed, with women showing seemingly greater consistency in their suppression use across conversations than men. Additionally, men suppressed negative emotions more than positive emotions, while this difference was not apparent for women. The lack of direct statistical comparison and the absence of previous studies examining naturalistic suppression in a relational context make future replication of these patterns critical, but the patterns are intriguing. More consistency for women in the use of suppression across contexts could potentially reflect different role expectations or constraints in couple interactions that reduce behavioral flexibility. Men's tendency to suppress more when experiencing negative emotions (as compared to positive emotions) may reflect a particular discomfort with signaling to a partner that one is upset or anxious (Simon & Nath, 2004).

Overall, the amount of suppression found in these challenging interactions underscores the importance of continued efforts to capture and understand suppression as it naturally occurs, in contrast to the more frequent focus on instructed suppression in experimental studies or the reliance on methods that depend on recall of suppression efforts by participants.

Are there differences in how flexibly or rigidly people regulate expression?

The adaptive consequences of suppression may depend not only on how often suppression is used but how rigidly it is applied. Rigidity suggests a lack of responsiveness to changes in context over the course of an interaction, and recent theory and research (Bonanno & Burton, 2013) suggests that a lack of regulatory flexibility is a critical dimension to capture when considering adaptive consequences. The current study captured rigidity in the use of suppression with a autocorrelational index that builds on previous research (Koval et al., 2012; Koval et al., 2013). S_{rig} indexes the degree to which suppression at time $t-5$ seconds predicts suppression at time t . Thus, S_{rig} in this study is effectively a measure of regulatory inflexibility on a moment-to-moment basis. This technique demonstrates that simple statistical techniques applied to longitudinal data can be effective for studying how flexibly or rigidly a given regulatory strategy is enacted, and provides an important alternative to viewing emotion regulation as simply occurring or not occurring.

S_{rig} varied across individuals and showed consistency within individuals across the two conversations. This pattern suggests that there are stable individual differences in the degree of rigidity or flexibility with which people suppress in challenging couple interactions. Partners' scores on S_{rig} were not related, suggesting that S_{rig} does not reflect primarily couple-level influences. Thus, while connections between spouses' overall suppression of positive and negative emotions indicates that suppressive tendencies may partially be shaped by relationship dynamics, it appears that suppressive rigidity may be shaped more by individual influences. This notion is consistent with past research and theory in which regulatory flexibility has generally been characterized as being shaped by a collection of enduring personal traits, such as one's ability to read social cues (Bonanno & Burton, 2013). Additional support for this view is derived from the finding in this study that suppressive rigidity was not associated with contextual factors such as the overall positivity of self-reported emotional experience or observer-rated emotional expression; that is, the degree of flexibility with which individuals suppress emotion is independent of the overall emotional context of their interactions.

Is suppression linked with relationship satisfaction?

The current study also sought to examine potential relational correlates of suppression. The literature on suppression has found that both experimentally-manipulated suppression and high levels of self-reported suppression are associated with negative relationship consequences (Ben-Naim et al., 2013; Richards et al., 2003; Impett et al., 2012; Velotti et al., 2015). However, no studies to date have looked at naturally-occurring suppression in a couple context and its association with relationship satisfaction. Suppression may have fewer negative consequences and even adaptive benefits, such as facilitating a partner's expression, if applied flexibly in couple interactions. The present study hypothesized that links between the suppression of negative emotions and relationship satisfaction would depend on the degree of rigidity with which the suppression was enacted across an interaction. Some support was found for a linkage between suppression of negative emotion and relationship satisfaction, but only for women and, most importantly, only when higher levels of suppression of negative emotion were present along with lower flexibility in the pattern of suppression.

Specifically, women's relationship satisfaction was associated with the interaction of their own suppression of negative emotion and their suppressive rigidity. Greater levels of negative emotion suppression was associated with lower relationship satisfaction in women who exhibited higher levels of suppressive rigidity, but not in women with lower levels of rigidity. Interestingly, this interaction was only associated with women's own relationship satisfaction, and showed no association with their partners' satisfaction. The significant association is in line with experimental and self-report studies on the relational consequences of suppression, which have found that suppression behavior tends to be negatively associated with the user's own relational health (Richards et al., 2003; Ben-Naim et al., 2013; Impett et al., 2012; Velotti et al., 2015). Additionally, no links were found for men between suppression variables and relationship satisfaction. Because of the lack of literature on naturally occurring suppression in a couple context, it is unclear why this association is only seen in women. Recent research has, however, shown that marital satisfaction for men and women is related to wives' emotion regulation and not husbands' (Bloch, Haase, & Levenson, 2014), which provides some support for the gender difference observed in this study.

The findings for women indicate that the amount of suppression by itself may not have consistent relational consequences; potential negative relational consequences only seem to

appear for women who manifest suppressive rigidity along with higher levels of negative emotion suppression. This highlights the importance of considering not only whether suppression is occurring but also the degree of flexibility with which it is employed. High suppression rigidity, by definition, captures suppression that does not meaningfully vary in response to changing relational demands or contexts over the course of a conversation. The findings of this study raise the question of whether previous experimental findings that connected suppression with negative relational consequences (e.g. Gross, 2002; Gross & John, 2003; Butler et al., 2003) were driven by the “inflexible” demands on participants to enact suppression continuously. Suppression may, in fact, serve adaptive purposes if enacted flexibly and with sensitivity to the ongoing demands of a couple interaction. Suppressing one’s emotional expression momentarily (for example, when listening to a partner) in the service of allowing one’s partner to identify and express his or her emotions may be a highly adaptive response. Further research is needed to identify what drives suppressive flexibility within conversations with intimate partners.

Two additional emotion constructs in the current study were associated with relationship satisfaction for both men and women. These were participants’ reports of the positivity of emotional experience and observers’ ratings of the positivity of emotion expressed by participants. Correlational analyses showed that greater positivity of emotional experience and greater positivity of emotional expression were associated with higher relationship satisfaction. These findings are consistent with findings reported in a number of past studies (e.g. Gottman & Levenson, 1999; Gottman, Levenson, & Woodin, 2001), as well as with previous studies using different subsamples from this study or utilizing different methods (Schulz & Waldinger, 2004; Waldinger & Schulz, 2006). Of note is the finding in the present study that the link between emotional expression and relationship satisfaction exists even after accounting for emotional experience. This implies that more positive emotional expression independent of experience may be beneficial in relationships. More positive emotional expression when one is feeling negative emotion requires suppression of negativity. This set of findings, therefore, provides another reason to be cautious in arguing that suppression is likely to have “uniform” negative effects.

The overall findings have important implications for understanding the adaptive significance of emotion regulation strategies in couple conflict. Specifically, they suggest that while it may be beneficial for men and women to regulate their emotions in ways that yield more positive emotional expression during challenging interactions, it is potentially harmful,

particularly for women, to do so with rigid regulatory styles. These results highlight the moderating role of flexibility in emotion suppression and regulation, as well as the importance of incorporating measures of the flow or flexibility of suppression into research on the effects of suppression. Additional research on the determinants and consequences of suppression and suppressive rigidity with the tools identified in this study could yield information that might help clinicians and couples facilitate the use of adaptive emotion regulatory strategies during challenging conversations.

Strengths and Limitations of the Present Study

As most previous research on suppression in a couple context has relied on instructed suppression behavior or self-reporting of suppressive behavior (Ben-Naim et al., 2013; Richards et al., 2003; Impett et al., 2012; Velotti et al., 2015), the naturalistic and temporally sensitive nature of this study's methodology addresses a key methodological limitation. The interaction task used creates a situation in which suppression "voluntarily" occurs or does not occur, removing the potential confounding caused by being tasked with suppressing emotion with a partner present. In contrast to self-report studies of how individuals generally suppress or regulate their emotions (e.g., Impett et al., 2012), measuring suppression using self-reported experience and observer-rated expression allows for assessment of suppression that is both within and outside the individual's awareness. The dynamic and continuous nature of the data produced by the cued recall and observer rating procedures in this study allow for the examination of the temporal patterning of suppression, as opposed to simply comparing suppressors and non-suppressors. The results of this study offer important support for using this approach as a valid way to measure suppression behavior in a naturalistic setting.

In addition to these strengths, there are several limitations to the current study. One potential limitation is the reliance on self-reports of emotional experience. Part of the rationale for developing the suppression index in this study was to lessen dependence on self-reports and conscious awareness when studying suppression. However, the suppression index still depends on awareness and accurate memory of emotional experiences. Using an established and effective video recall method to cue memory and minimize temptations to distort reports helps improve the quality of self-reports but it does not eliminate concerns completely.

Secondly, in addition to capturing the ebb and flow of suppression across interactions, it would be useful in future research to capture the goals that individuals have for regulating their

emotions throughout the interaction (Schulz & Waldinger, 2010). Suppression might be enacted for very different reasons (to help calm a partner or to hide a moment of vulnerability from a partner), and these reasons may have adaptational significance. An enhanced video recall task might be used to begin to capture from participants some of these regulatory motives (Schulz & Waldinger, 2010).

In this study, relationship satisfaction was measured close in time to the couple interactions in the lab. In future work, researchers could examine these associations in a more clearly longitudinal framework to understand better the direction of the mechanisms underlying the relationships found in this study. Additionally, the sample used in this study was underpowered for small effects, and therefore it is possible some subtle relationships were not detectable.

Finally, although challenging couple interactions have been shown to be a highly relevant context for understanding relationships (Bradbury & Fincham, 1990; Christensen, 1988; Gottman, 1994), the findings of this study cannot be generalized beyond these situations. Future research that extends these methods to other relational contexts (e.g., discussions of pleasurable activities) would provide valuable insight into how suppression use varies depending on the specific situation.

Conclusion

Existing techniques for studying emotion suppression leave much unknown about usage and consequences of suppression as it naturally occurs, particularly in the context of couple interactions. In attempting to tackle this issue, this work makes several important methodological and conceptual contributions to the study of emotion regulation in romantic relationships. It (a) introduces and utilizes new approaches for capturing suppression use and suppressive rigidity; (b) demonstrates the prevalence of suppression use in challenging naturalistic couple interactions, finding it to be more common than transparent expression or enhancement of emotion; (c) shows that a novel measure of suppressive rigidity varies across people and likely represents an individual trait; and (d) provides evidence that suppression of negative emotion is negatively linked to relationship satisfaction in women, but only when suppression is rigidly applied. These findings set the stage for a new wave of research in this area, and a greater understanding of the nature and consequences of suppressive behavior in relationships.

References

- Ben-Naim, S., Hirschberger, G., Ein-Dor, T., & Mikulincer, M. (2013). An experimental study of emotion regulation during relationship conflict interactions: the moderating role of attachment orientations. *Emotion, 13*(3), 506-519.
- Bloch, L., Haase, C. M., & Levenson, R. W. (2014). Emotion regulation predicts marital satisfaction: More than a wives' tale. *Emotion, 14*(1), 130-144.
- Bonanno, G. A., & Burton, C. L. (2013). Regulatory flexibility: An individual differences perspective on coping and emotion regulation. *Perspectives on Psychological Science, 8*(6), 591-612.
- Bonanno, G. A., Papa, A., Lalande, K., Westphal, M., & Coifman, K. (2004). The importance of being flexible: The ability to both enhance and suppress emotional expression predicts long-term adjustment. *Psychological Science, 15*, 482-487.
- Bradbury, T. N. & Fincham, F. D. (1990). Attributions in marriage: Review and critique. *Psychological Bulletin, 107*, 3-33.
- Bulteel, K., Ceulemans, E., Thompson, R. J., Waugh, C. E., Gotlib, I. H., Tuerlinckx, F., & Kuppens, P. (2014). DeCon: A tool to detect emotional concordance in multivariate time series data of emotional responding. *Biological Psychology, 98*, 29-42.
- Butler, E. A., Egloff, B., Wilhelm, F. H., Smith, N. C., Erickson, E. A., & Gross, J. J. (2003). The social consequences of expressive suppression. *Emotion, 3*, 48-67.
- Butler, E. A., Gross, J. J., & Barnard, K. (2014). Testing the effects of suppression and reappraisal on emotional concordance using a multivariate multilevel model. *Biological Psychology, 98*, 6-18.
- Carstensen, L. L., Gottman, J. M., & Levenson, R. W. (1995). Emotional behavior in long-term marriage. *Psychology and Aging, 10*, 140-149.
- Chapman, B. P., Fiscella, K., Kawachi, I., Duberstein, P., & Muenning, P. (2013). Emotion suppression and mortality risk over a 12-year follow-up. *Journal of Psychosomatic Research, 75*, 381-385.
- Christensen, A. (1988). Dysfunctional interaction patterns in couples. In P. Noller & M. A. Fitzpatrick (Eds.), *Perspectives on marital interaction* (pp. 31-52). Clevedon, England: Multilingual Matters, Ltd.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ:

Lawrence Earlbaum Associates.

- Cohen, S., Schulz, M. S., Weiss, E., & Waldinger, R. J. (2012). Eye of the beholder: The individual and dyadic contributions of empathic accuracy and perceived empathic effort to relationship satisfaction. *Journal of Family Psychology*, 26(2), 236-245.
- Cook, W. L., & Kenny, D. A. (2005). The Actor-Partner Interdependence Model: A model of bidirectional effects in developmental studies. *International Journal of Behavioral Development*, 29(2), 101-109.
- Freeston, M. H., & Plechaty, M. (1997). Reconsideration of the Locke-Wallace Marital Adjustment Test: Is it still relevant for the 1990s? *Psychological Reports*, 81, 419-434.
- Garcia, R. L., Kenny, D. A., & Ledermann, T. (2015). Moderation in the actor-partner interdependence model. *Personal Relationships*, 22, 8-29.
- Gottman, J. M. (1994). *What predicts divorce?: The relationship between marital processes and marital outcomes*. Hillsdale, NJ: Erlbaum, Inc.
- Gottman, J. M., Coan, J., Carrere, S., & Swanson, C. (1998). Predicting marital happiness and stability from newlywed interactions. *Journal of Marriage and Family*, 60(1), 5-22.
- Gottman, J. M. & Levenson, R. W. (1985). A valid procedure for obtaining self-report of affect in marital interaction. *Journal of Consulting and Clinical Psychology*, 53, 151-160.
- Gottman, J. M. & Levenson, R. W. (1999). What predicts change in marital interaction over time? A study of alternative models. *Family Process*, 38, 143-158.
- Gottman, J. M. & Levenson, R. W. (2000). The timing of divorce: Predicting when a couple will divorce over a 14-year period. *Journal of Marriage and Family*, 62(3), 737-745.
- Gottman, J. M., Levenson, R. W., & Woodin, E. (2001). Facial expressions during marital conflict. *The Journal of Family Communication*, 1(1), 37-57.
- Gross, J. J. (1998). The emerging field of emotion regulation: An integrative review. *Review of General Psychology*, 2(3), 271-299.
- Gross, J. J. (1999). Emotion and emotion regulation. In L. A. Pervin & O. P. Johns (Eds.), *Handbook of personality: Theory and research* (pp. 525-552). New York: Guilford.
- Gross, J. J. (2002). Emotion regulation: Affective, cognitive, and social consequences. *Psychophysiology*, 39, 281-291.
- Gross, J. J. & Jazaieri, H. (2014). Emotion, emotion regulation, and psychopathology: An affective science perspective. *Clinical Psychological Science*, 2, 387-401.

- Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology*, 85(2), 348-362.
- 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., & Levenson, R. W. (1997). Hiding feelings: The acute effects of inhibiting negative and positive emotion. *Journal of Abnormal Psychology*, 106(1), 95-103.
- Impett, E. A., Kogan, A., English, T., John, O., Oveis, C., Gordon, A. M., & Keltner, D. (2012). Suppression sours sacrifice: Emotional and relational costs of suppressing emotions in romantic relationships. *Personality and Social Psychology Bulletin*, 38(6), 707-720.
- Isen, A. M. (1999). On the relationship between affect and creative problem solving. In S. R. Russ (Ed.), *Affect, creative experience, and psychological adjustment* (pp. 3-13). Philadelphia, PA: Taylor & Francis.
- Koval, P., Kuppens, P., Allen, N. P., & Sheeber, L. (2012). Getting stuck in depression: The roles of rumination and emotional inertia. *Cognition and Emotion*, 26(8), 1412-1427.
- Koval, P., Pe, M. L., Meers, K., & Kuppens, P. (2013). Affect dynamics in relation to depressive symptoms: Variable, unstable, or inert? *Emotion*, 13(6), 1132-1141.
- Lazarus, R. S. (1983). The costs and benefits of denial. In S. Breznitz (Ed.), *The denial of stress* (pp. 1-30). New York: International Universities Press
- Levenson, R. W., Cowan, C. P., & Cowan, P. A. (2010). A specialty clinic model for clinical science training: Translating couples research into practice in the Berkeley Couples Clinic. In Schulz, M. S., Pruetz, M. K., Kerig, P. K., Parke, R. D. (Eds.), *Strengthening couple relationships for optimal child development: Lessons from research and intervention* (pp. 197-209). Washington, DC: American Psychological Association.
- Locke H. J., & Wallace K. M. (1959). Short marital-adjustment and prediction tests: Their reliability and validity. *Marriage and Family Living*, 21(3), 251-255.
- Richards, J. M., Butler, E. A. & Gross, J. J. (2003). Emotion regulation in romantic relationships: The cognitive consequences of concealing feelings. *Journal of Social and Personal Relationships*, 20(5), 599-620.
- Rosenberg, E. L. & Ekman, P. (1994). Coherence between expressive and experiential systems in emotion. *Cognition and Emotion*, 8, 201-229.

- Rosnow, R. L., & Rosenthal, R. (1996). *Beginning behavioral research: A conceptual primer*. Englewood Cliffs, NJ: Prentice-Hall, Inc.
- Schulz, M. S. & Lazarus, R. S. (2012). Regulating emotion in adolescence: A cognitive-mediational conceptualization. In P. K. Kerig, M. S. Schulz, & S. T. Hauser (Eds.), *Adolescence and beyond: Family processes and development* (pp. 19-42). Oxford University Press.
- Schulz, M. S., & Waldinger, R. J. (2004). Looking in the mirror: Participants as observers of their own and their partners' emotions in marital interactions. In P. Kerig & D. Baucom (Eds.), *Couple observational coding systems* (pp. 259–272). Hillsdale, NJ: Lawrence Erlbaum.
- Schulz, M.S. & Waldinger, R. J. (2010). Capturing the Elusive: Studying Emotion Processes in Couple Relationships. In M.S. Schulz, M.S., M.K. Pruett, P.K. Kerig, & R.D. Parke (eds.). *Strengthening Couple Relationships for Optimal Child Development: Lessons from Research and Intervention*. Washington, DC: American Psychological Association.
- Simon, R.W. & Nath, L.E. (2004). Gender and emotion in the United States: Do men and women differ in self-reports of feelings and expressive behavior? *American Journal of Sociology*, 109(5), 1137-1176.
- Sze, J. A., Gyurak, A., Yuan, J. W., & Levenson, R. W. (2010). Coherence between emotional experience and physiology: Does body awareness training have an impact? *Emotion*, 10(6), 803-814.
- Velotti, P., Balzarotti, S., Tagliabue, S., English, T., Zavattini, G. C., & Gross, J. J. (2015). Emotional suppression in early marriage: Actor, partner, and similarity effects on marital quality. *Journal of Social and Personal Relationships*.
- Waldinger, R. J., Schulz, M. S., Hauser, S. T., Allen, J. P., & Crowell, J. A. (2004). Reading others' emotions: The role of intuitive judgments in predicting marital satisfaction, quality, and stability. *Journal of Family Psychology*, 18(1), 58-71.
- Waldinger, R. J., & Schulz, M. S. (2006). Linking hearts and minds in couple interactions: Intentions, attributions, and overriding sentiments. *Journal of Family Psychology*, 20(3), 494-504.
- Wile, D. B. (1981). *Couples therapy: A non-traditional approach*. New York: Wiley.
- Zimmerman, V. D. (2003). Emotional suppression and physiological reactivity in couple interactions (Unpublished master's thesis). Bryn Mawr College, Bryn Mawr, PA

		Gender			
		Male		Female	
		Mean	S.D.	Mean	S.D.
Age		37.7	10.8	35.5	10.1
Relationship length (years)		7.6	8.9	-	-
Relationship satisfaction		108.5	25.9	107.0	29.6
		N	%	N	%
Income	\$15,000 or below	9	8.6	6	5.7
	\$15,001 - \$30,000	17	16.2	17	16.2
	\$30,001 - \$45,000	10	9.5	14	13.3
	\$45,001 - \$60,000	17	16.2	13	12.4
	\$60,001 - \$80,000	19	18.1	19	18.1
	More than \$80,000	29	27.6	30	28.6
	Prefer not to answer	4	3.8	6	5.7
Race/Ethnicity	Caucasian	82	78.1	80	76.2
	African-American	16	15.2	10	9.5
	Hispanic	5	4.8	8	7.6
	Asian/Pacific Islander	2	1.9	3	2.9
Education level	Bachelor's degree or higher	62	59.0	68	64.8
	Some post-high school	15	14.3	13	12.4
	High school education or less	26	24.8	20	19.0

Table 1. Demographic characteristics of the study sample.

Figure 1. Examples of moments of emotion suppression or enhancement of positive and negative emotion from one individual during an interaction. In the top row, moments of emotional suppression (experience is stronger than expression) are depicted. In the bottom row, moments of emotional enhancement are depicted. For moments of positive self-reported emotion, the Suppression Index (SI) was calculated as experience minus expression, and in moments of negative self-reported emotion, SI was calculated as expression minus experience.

Figure 2. The Actor-Partner Interdependence Model (APIM) studying the relationships between emotion suppression variables and relationship satisfaction in couples. Gray lines represent main effect and covariance estimates. Black lines represent four effects of interest, examining the moderating effect of suppressive rigidity on the association between negative suppression and relationship satisfaction. For visual clarity, this figure does not include male/female emotional experience and male/female emotional expression. The actor and partner effects of these variables were controlled for in the estimated model.

Note: * = $p < 0.05$

Figure 3. The moderating effect of suppressive rigidity (S_{rig}) on the link between negative suppression (NSI) and relationship satisfaction in women. The gray and black lines represent the relationship between NSI and relationship satisfaction at the 25th percentile for S_{rig} ($B = -7.70$) and the 75th percentile for S_{rig} ($B = -23.98$) respectively.