Understanding the Social Effects of Emotion Regulation: The Mediating Role of Authenticity for Individual Differences in Suppression

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Individuals differ in the strategies they use to regulate their emotions (e.g., suppression, reappraisal), and these regulatory strategies can differentially influence social outcomes. However, the mechanisms underlying these social effects remain to be specified. We examined one potential mediator that arises directly from emotion-regulatory effort (expression of positive emotion), and another mediator that does not involve emotion processes per se, but instead results from the link between regulation and self-processes (subjective inauthenticity). Across three studies, only inauthenticity mediated the link between habitual use of suppression and poor social functioning (lower relationship satisfaction, lower social support). These findings replicated across individuals socialized in Western and East Asian cultural contexts, younger and older adults, when predicting social functioning concurrently and a decade later, and even when broader adjustment was controlled. Thus, the social costs of suppression do not seem to be due to reduced positive emotion expression but rather the incongruence between inner-self and outer-behavior. Reappraisal was not consistently related to social functioning. Implications of these findings for emotion processes, self processes, and interpersonal relationships are discussed.

Keywords: emotion regulation, suppression, authenticity, emotion expression, close relationships

Over the past decade, the emerging field of emotion regulation research has changed our perspective on emotion (e.g., Gross, 2007). Instead of conceptualizing emotions as psychological states that are passively experienced (“endured”) and expressed, recent research has demonstrated that people are able to regulate their emotions and that they do so frequently, using a variety of different processes. Two processes have received particular attention: cognitive reappraisal, which involves modifying the meaning of an event in order to influence the experience of an emotion, and emotional suppression, which involves inhibition of the behavioral component of an emotion (e.g., facial, gestural, or verbal expression) after an emotional response has been elicited (Gross, 1998).

Considerable effort has gone into experimental research to delineate the immediate consequences of using one or the other of the emotion regulation processes in laboratory contexts (Butler et al., 2003; Gross, 1998; Gross & Levenson, 1997; Richards & Gross, 2006). In these studies, suppression tends to have negative consequences for affect, memory, and social interaction, whereas reappraisal is either neutral (does not have either negative or positive consequences) or beneficial. This experimental work is important because the control possible in the laboratory assures that differential use of emotion regulation is causally influencing the immediate behavior or experience of the individual. However, less is known about how differential use of these regulatory processes affects individuals in everyday life, especially over the long term, as individuals habitually use some regulatory process more, and others less, frequently.

The study of social consequences is particularly important because emotion regulation serves to link the inner (or intrapersonal) world of emotion experience with the outer (or interpersonal) world where emotions provide an important source of information and communication (English, John, & Gross, in press). As we review below, the available evidence suggests that using suppression to regulate one’s emotions has social costs (Butler et al., 2003; Gross & John, 2003; Srivastava, Tamir, McGonigal, John, & Gross, 2009). Less is known about the social effects of reappraisal, with one study showing no effects (Butler et al., 2003) and another suggesting beneficial effects (Gross & John, 2003).\(^1\)

The main goal of the present research was to extend this work and begin to specify the underlying mechanisms—why does the habitual use of a particular emotion regulation strategy have

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\(^1\) Srivastava et al. (2009) did not study the social effects of reappraisal.
negative or positive social consequences? We examine both suppression and reappraisal, with suppression as the primary focus and reappraisal as a comparison regulation strategy used to demonstrate the specificity of effects for suppression. We begin with a review of the emotion literature, which points to positive emotion expression as a potential mediator that can influence the individual’s social functioning. We then review the literature on self-processes and propose that in everyday life, the use of suppression can have important consequences for the experience of self as authentic, suggesting another theoretically relevant mediator.

The Process Model of Emotion Regulation

Emotion regulation can be thought of as the ways that we influence what emotions we have, when we have specific emotions, and how we experience and express emotions. There has been a long-standing interest in emotion regulation (e.g., Campos, Campos, & Barret, 1989; Izard, 1990; Thompson, 1990) and numerous regulation strategies have been delineated (for recent reviews see Aldo, Nolen-Hoeksema, & Schweizer, 2010; Niven, Totterdell, & Holman, 2009). Recently, one influential and useful framework for studying emotion regulation has been Gross’s (1998, 2002) process model, which is based on the assumption that emotions unfold over a brief period of time and include experience, expression, and physiological components. The model posits that emotion regulation strategies can be differentiated based on when they have their primary impact in the emotion process. Reappraisal is an antecedent-focused strategy that occurs before an emotion is fully activated, whereas suppression is a response-focused strategy that occurs after emotion response tendencies have already been triggered.

According to Gross’s process model, reappraisal and suppression should have different consequences because of their relative temporal order in the emotion-generative process. For instance, reappraisal should decrease both the experience and expression of the target emotion because it occurs early on and uses cognitive processes to change the emotion that is generated (which has downstream consequences for expression). In contrast, suppression should effectively decrease expressive behavior, but have no direct impact on the experience of emotion, because it occurs later in the emotion generative process and is focused on behavioral inhibition of emotion. Indeed, studies of experimentally induced reappraisal and suppression support these predictions. For example, although people are able to inhibit emotional expressions when asked to reappraise or suppress their negative emotions, only reappraisal dampens the experience of negative emotion (Gross, 1998; Gross & Levenson, 1997).

Individual Differences in Suppression and Reappraisal

This experimental work has documented the short-term effects of prompting people to use specific strategies. To complement this work and study emotion regulation and its effects in everyday life, research on individual differences in emotion regulation is needed. The Emotion Regulation Questionnaire (ERQ; Gross & John, 2003) was developed to assess habitual use of reappraisal and suppression, and make possible research on the cumulative impact of using these strategies in everyday life. Of note, the reappraisal and suppression factors are independent of each other and also distinct from measures of intelligence as well as the broad Big Five personality trait dimensions (John, Naumann, & Soto, 2008).

As hypothesized, the ERQ predicts individual differences in similar variables as those assessed in experimental research on reappraisal and suppression, such as emotion experience and expression (Gross & John, 2003), as well as objectively measured cognitive variables, such as memory (e.g., Richards & Gross, 2000). For example, individuals who frequently use reappraisal experience less negative and more positive emotion than those who use reappraisal infrequently; individuals who frequently use suppression (as compared with those who do not) express less negative and less positive emotion than they actually experience (Gross & John, 2003). In terms of positive emotion, then, it is important to note that reappraisal tends to increase expression of emotion, whereas suppression tends to reduce the expression of positive emotion. However, suppression is both conceptually and empirically distinct from expression of emotion. Suppression is focused on attempting to influence the expression of emotion (i.e., effortless control to manage emotions), whereas emotional expression reflects temperamental variation in the intensity of emotion experience and expression (e.g., Gross & John, 1998). In general, greater use of suppression predicts less healthy functioning and lower levels of overall adjustment (e.g., lower life satisfaction, higher depression), and greater use of reappraisal predicts healthier functioning and higher levels of overall adjustment (John & Gross, 2004, 2007).

Social Consequences of Emotion Regulation

Much of the early work on emotion regulation focused on its consequences for affect, which is, after all, the target of the individual’s regulatory efforts. However, making regulatory efforts can also have other unintended consequences. Because emotion regulation occurs primarily in interpersonal contexts (Gross, Richards, & John, 2006), the consequences of emotion regulation for social interaction are of particular interest.

Initial studies suggest that suppression may have adverse social consequences but the effects of reappraisal on social functioning have been studied less and remain unclear. Butler et al.’s (2003) pioneering research provided initial causal evidence for the social consequences of suppression by experimentally manipulating emotion regulation. Partners of individuals experimentally induced to suppress their emotions during a conversation were less satisfied with their interaction, and were less willing to form a friendship, than were partners of those who just acted naturally (i.e., were not asked to suppress). There was no apparent cost (or benefit) to using reappraisal; however, reappraisal was manipulated only in the first study, which used a relatively small sample and thus, the authors cautioned, “did not have the statistical power to detect even fairly large group differences” (Butler et al., 2003, p. 56).

Using an individual differences approach, Gross and John (2003) showed that in college students, habitual use of suppression correlated negatively with both self-reported and peer-reported indicators of social functioning (e.g., relationship closeness). The social correlates of reappraisal were mixed, showing a few beneficial effects (e.g., greater peer-rated likability) and a few noneffects (e.g., self-reported social support), but no apparent social
costs. Srivastava et al. (2009) studied the social effects of suppression, but not reappraisal. In a 5-month study of a major life transition, they assessed suppression before and during the transition from high school to the first term in college; both stable suppression and dynamic suppression (unique to the new college environment) predicted lower social functioning at the end of the first quarter in college.

Overall, the interpersonal consequences of emotion regulation have been studied far less than the intrapersonal consequences. The evidence thus far suggests that suppression has negative effects on social functioning, and reappraisal has either positive or no effects. The next task in this line of research is to ask about mechanisms—what are the mediators of these effects?

**Mediators of the Social Consequences of Emotion Regulation**

There are many reasons to expect that emotion regulation would have social consequences. It is useful to differentiate between direct effects of emotion regulation that arise directly from the individual’s emotion-regulatory effort and are thus inherent or intrinsic to the emotion process (e.g., emotion regulation directly changes the experience or expression of emotion which then leads to social consequences) and indirect effects that do not involve emotion processes per se but other mechanisms, such as attention, memory, or self-processes. Below we outline two potential mediators, one that results directly from controlling emotion and another that is more indirect.

**Positive Emotion Expression as a Mediator**

One path from emotion regulation to social consequences follows directly from Gross’s (1998) process model and involves the individual’s emotion expression. Emotional expression plays an important role in maintaining and building social bonds (Frijda & Mesquita, 1994; Keltner & Kring, 1998; King, 1993; Manstead, 1991). Recent research has emphasized that relationship quality depends substantially on the partner’s expression of positive emotions, such as interest, genuine pleasure, and appreciation (Gable et al., 2004). Here, individuals habitually using suppression are likely to fall short: When using suppression to regulate their emotion, they reduce their expression of not only negative but also positive emotion (Butler et al., 2003; Gross, 1998; Gross & John, 2003). In contrast, use of reappraisal has been linked to greater expression of positive emotion (Gross & John, 2003). Expression of positive emotion promotes social bonding by signaling approachability and the desire to affiliate (Harker & Keltner, 2001; Keltner & Bonanno, 1997; Simpson, Gangestad, & Nations, 1996; Tickle–Degnan & Rosenthal, 1990). In contrast, lack of positive emotion expression signals to others a lack of social interest, indifference, or the desire to withdraw, all of which serve to inhibit or even derail the formation and maintenance of satisfying relationships that are mutually supportive (Berg & Derlega, 1987; Davis, 1982; King, 1993; Laurenceau, Barrett, & Pietromonaco, 1998; Reis & Shaver, 1988). Although experiments have shown that suppression is effective at reducing the expression of negative emotion in the laboratory, such reductions have not been linked to more negative relationship outcomes. If anything, individuals who tend to express less negative emotion have more positive interpersonal outcomes (e.g., Gross & John, 1998). Therefore, expression of negative emotion is not likely to explain the social costs of habitual use of suppression.

So far, positive emotion expression has only been examined as a mediator of the social consequences of suppression by Butler et al. (2003); they tested whether decreased expression of positive emotion mediated the negative impact of suppression on partners who had to interact with individuals instructed to suppress (i.e., how these partners evaluated the interaction and how physiologically stressed they were). Individuals in the suppression condition did express less positive emotion, as expected. However, positive-emotion expression did not mediate the interpersonal effects. It is possible that the social consequences of reduced positive-emotion expression were not apparent in this single interaction with a stranger because they are cumulative and emerge only over time. Thus, it is important to use an individual-differences paradigm to test whether positive emotion expression mediates these emotion-regulation effects.

**Subjective Inauthenticity as a Mediator**

Another potential mediator of the social effects of emotion regulation is suggested by the literature on self-processes. Theories of self-regulation (e.g., Carver & Scheier, 1998) emphasize that individuals are actively engaged in initiating self-regulatory efforts and tend to monitor themselves throughout the regulatory episode. Likewise, when individuals regulate their emotions (e.g., suppress behavioral manifestations of the emotions they are actually experiencing), they will observe and monitor their behavior and evaluate whether it is consistent with their values and more general self-views. We propose that using suppression can lead the individual to perceive the self as inauthentic and therefore interfere with relationship functioning. Rogers (1961) provided an early analysis of inauthenticity. He suggested that the perception of incongruence between one’s inner (or “true”) self and one’s outer behavior can arouse an acute sense of inauthenticity that is troubling to the individual. Over time, repeated experiences of incongruence can lead individuals to experience themselves as inauthentic (feeling “fake”; an inability to be “true to my real self”), which puts the individual at risk for adjustment problems, such as anxiety and depression (Goldman & Kernis, 2006; Sheldon, Ryan, Rawsthorne, & Ildari, 1997).

Rogers did not consider inauthenticity in the context of emotion regulation but, we suggest, the concept is particularly relevant here because regulatory efforts can change the inner experience of emotion, its behavioral expression, or both. Because suppression reduces the expression, but not the experience, of an emotion, it can create a similar kind of incongruence, here between the individual’s inner experience of emotion and outer expression. Accordingly, suppression, especially if used habitually, may lead the individual to feel inauthentic. In contrast, use of reappraisal should not create a sense of inauthenticity because reappraisal (which equally modifies emotion experience and expression) does not create an inner–outer incongruence.

If inauthenticity is to function as a mediator of the social effects of suppression, it must be related to social outcomes. Indeed, theory and research suggest subjective authenticity is vital to social functioning (e.g., Kernis & Goldman, 2005; Sheldon et al., 1997; Swann & Pelham, 2002). Authenticity signals trust, honesty, and
openness in interactions, all of which are crucial for the development of close relationships (Reis & Patrick, 1996). Connection and intimacy depend on feeling understood (Reis & Shaver, 1988). Research on self-verification (Swann, 1990) has shown that feeling known and understood by another person benefits the relationship because it offers predictability to partners, assuring them that others hold appropriate expectations of them and their interactions will thus proceed smoothly (Swann, Chang-Schieder, & Angulo, 2007). Inauthenticity, however, interferes with reciprocal self-disclosure and thus self-verification, and it invites misunderstandings or even conflict, leading to interpersonal distance, lower social satisfaction, and less social support (Kernis & Goldman, 2006; Sheldon et al., 1997; Swann, De La Ronde, & Hixon, 1994; Swann & Pelham, 2002).

In sum, we propose here that suppression may have adverse interpersonal consequences because the resulting incongruence between inner experience and outward behavior creates in the individual a pervasive sense of inauthenticity. Authenticity has not yet been tested as a mediator of the social effects of habitual use of suppression.

**Emotion Regulation, Psychological Adjustment, and Potential Self-Report Biases**

When examining the social consequences of emotion regulation, as well as potential mechanisms underlying these effects, it is important to take into account the links between these variables and overall psychological adjustment. It is especially important to do so when testing authenticity as a mediator because authenticity has long been considered crucial not only for interpersonal functioning but also for psychological adjustment more generally (Festinger, 1957; Rogers, 1961).

As mentioned previously, suppression is ineffective in reducing the experience of negative emotion (Gross, 1998) and is associated with greater negative affect in everyday life (Gross & John, 2003). Over the long term, this lingering negative affect accumulates and can lead to affect-based adjustment problems. Consistent with this idea, individuals who habitually suppress their emotions have been found to experience less life satisfaction, lower self-esteem, and more depressive symptoms (Gross & John, 2003; John & Gross, 2004). In contrast, reappraisal is relatively effective at reducing the experience of negative emotion (Gross, 1998), and accordingly, has been linked to greater psychological adjustment (Gross & John, 2003).

Impaired social functioning is also often associated with broader psychological problems. For example, depressed individuals have difficulty maintaining satisfying social relationships (Lewinsohn, Mischel, Chaplin, & Barton, 1980; Segrin, 1998), and unhappy people are less likely to be satisfied with their relationships and to receive social support (Lyubomirsky et al., 2005; Myers, 2000). Conversely, greater life satisfaction is substantially associated with relationship satisfaction and closeness (Myers & Diener, 1995; Ryan & Deci, 2000); happy people are better liked by others and are more desirable as future interaction partners (e.g., Diener & Biswas-Diener, 2008). Thus, in order to isolate the social consequences of emotion regulation, it will be important to control for overall levels of adjustment.

**Do These Effects Hold in East Asians and in Older Adults?**

There is growing evidence that emotion regulation can have social consequences for young adults in the United States. However, it is unclear whether these effects generalize to other groups. Next, we briefly discuss some reasons one might expect similar or different social effects of suppression, as well as mediators of these effects, among East Asians and older adults.

**East Asian Culture**

The norms for emotion regulation vary across East Asian and Western cultures (Markus & Kitayama, 1991). Suppression is encouraged in East Asian culture where value is placed on adjustment of behavior to the interpersonal context in order to maintain interpersonal harmony. In contrast, suppression is discouraged in Western cultures that value affirming autonomy and expressing one’s true inner attributes. Consistent with this reasoning, suppression is used more frequently in East Asian than Western countries (Matsumoto et al., 2008) and by Asian Americans than European Americans in the United States (Eng, John, Akutsu, & Gross, 2010).

Although individuals of East Asian backgrounds are more practiced in using suppression, this cultural difference in the relative frequency of strategy use does not necessarily portend changes in consequences. East Asian cultures are thought to place less value on overt behavior aligning with internal states than do Western cultures (Peng & Nisbett, 1999), so they may be less likely to construe a discrepancy between their emotional experience and expression as a sign of inauthenticity, thus making suppression less toxic for their relationships than for Westerners. However, it is possible that East Asians tolerate specific instances of suppression for the sake of maintaining smooth interactions, but the repeated use of suppression over time still creates a sense of inauthenticity and becomes detrimental to relationship quality. Providing some initial insight into these issues, Butler, Lee, and Gross (2007) found that individuals instructed to suppress their emotions in an experimental situation were less likely to be perceived as hostile and withdrawn by their partners if they endorsed more Asian, as opposed to more European, values. However, Asian values did not completely mitigate the costs of suppression; there was a negative effect of suppression on affiliation and interest in developing a friendship regardless of cultural background. Thus, although suppression may facilitate smooth interactions for East Asians, it may also interfere with the formation and maintenance of close relationships.

To better understand the role of cultural influences on the consequences of emotion regulation, we examined whether the associations of suppression with social functioning and authenticity are weaker for Asian Americans than for European Americans. We also tested the proposed mediation model in Asian Americans, as well as individuals living in China.

**Later Adulthood**

Emotion regulation processes undergo considerable change during adulthood, resulting in improved emotion regulation later in life (Carstensen, Pasupathi, Mayr, & Nesselroade, 2000;...
Charles & Carstensen, 2007; Gross et al., 1997). Initial retrospective and cross-sectional evidence suggests a normative shift from early adulthood to late middle age toward a “healthier” pattern of emotion regulation—that is, a reduction in the use of suppression and an increase in the use of reappraisal (John & Gross, 2004).

However, it is not clear whether these age-related shifts in the relative frequency of strategy use also coincide with a shift in the consequences of regulation efforts. Despite the mean level decline in suppression use by late middle age, those who continue to use suppression at high levels may still suffer social costs to the extent that they feel inauthentic or are expressing less positive emotion. Alternatively, older adults may have learned to use suppression in more adaptive ways so that it is no longer detrimental to social functioning later in life. Therefore, we tested our hypotheses about the social effects of emotion regulation, and the mediation of these effects, in both younger adults and older adults.

The Present Research

To summarize, (a) previous work suggests that suppression has negative social consequences, but the reappraisal effects are less clear; and (b) the mechanisms underlying social effects of these emotion regulation strategies have yet to be identified. The present research aimed to address these gaps in the literature by examining whether these two common emotion-regulation strategies are linked to important social-outcome variables (i.e., relationship satisfaction, social support), and testing two theoretically and empirically plausible mediators (i.e., authenticity and expression of positive emotion) in a comparative mediator design.

The three studies reported here were designed to simultaneously compare the two mediators. Study 1 examined the link between emotion regulation (i.e., suppression and reappraisal) and relationship satisfaction in an undergraduate sample, and tested authenticity and expression of positive emotion as mediators. The last two studies tested the generalizability to individuals living in China (Study 2) and older adults (Study 3), as the associations of suppression and reappraisal with social functioning have not yet been studied in East Asian countries or in later adulthood. Of importance, whereas in the first two studies we examined concurrent effects, Study 3 employed a longitudinal mediation design where suppression and reappraisal were measured 10 years before the mediators and social outcome.

Study 1

The goals of Study 1 were to test whether expression of positive emotion and authenticity would mediate the link between two specific emotion regulation strategies and relationship satisfaction. We first tested whether suppression and reappraisal were indeed related to satisfaction with one’s relationships, then we tested the potential mediators in a single model to determine the unique mediating effects. Although we did not expect expression of negative emotion to mediate the link between suppression and social functioning, we included it in the model with expression of positive emotion and authenticity in order to address this possibility.

The inclusion of a broad indicator of self-reported adjustment allowed us to control for potential positivity effects in self-reports, ensuring that the effects on relationship satisfaction were not due to satisfaction in general but unique to functioning in the interpersonal domain. Because of its close link to relationship satisfaction (Myers & Diener, 1995), we used life satisfaction as the control measure of adjustment in Study 1—it provides a simple alternative explanation of any effects and thus serves as a well-matched control in analyses predicting relationship satisfaction.

We also examined the role of culture in shaping the implications of these emotion-regulatory processes. Specifically, we tested ethnicity as a moderator to determine whether the association between suppression and social functioning is weaker for Asian Americans than for European Americans, and whether the mediation effects hold among Asian Americans.

Method

Participants

The participants were 157 students (70% female; mean $M_{age} = 20$ years) enrolled in introductory psychology courses at a public university. They were diverse in terms of ethnicity (Asian American 58%, Caucasian 25%, Latino 9%, African American 3%, and Other 5%).

Measures

Emotion regulation. Habitual use of suppression and reappraisal were measured with the ERQ (Gross & John, 2003), a widely used research instrument that has been extensively validated (see also John & Gross, 2004). The ERQ items were carefully constructed to clearly describe the intended emotion regulation process and to avoid mentioning any confounding implications for affect, well-being, or social functioning; thus, the scales do not relate to measures of social desirability or intellectual functioning (Gross & John, 2003). An example items for the Reappraisal scale is “I control my emotions by changing the way I think about the situation I’m in” ; an example item for the Suppression scale is “I control my emotions by not expressing them.” Participants rated their agreement with each item on a scale ranging from 1 (strongly disagree) to 7 (strongly agree). Each of the ERQ scales includes both positive emotion and negative emotion items; factor analyses have shown these negative and positive emotion items to hang together and form a single reappraisal factor and a single suppression factor, and this held not only in many U.S. samples, but also in numerous other culture and language communities (John & Gross, 2004; Matsumoto et al., 2008). Coefficient alpha reliability was similar to previous research: .81 for suppression and .80 for reappraisal.

Social functioning. Relationship satisfaction was measured with items adapted from Gill and Swann (2004). The index included two items keyed true (e.g., “I feel satisfied with my relationships”) and two items keyed false (e.g., “My relationship partners have a way of annoying me from time to time”), rated on a scale from 1 (not at all) to 7 (very much); alpha was .66.

Mediator measures: Emotion expression and authenticity. Habitual expression of emotion was measured with the Berkeley
Expressivity Questionnaire (BEQ; Gross & John, 1997, 1998), which has been validated extensively. The BEQ includes a positive emotion expression subscale (e.g., “When I’m happy, my feelings show”) and a negative emotion expression subscale (e.g., “Whenever I feel negative emotions, people can easily see exactly what I am feeling”). These scales converge well with other measures of emotion expression (e.g., King & Emmons, 1990) and predict expression of the intended type of emotion (e.g., positive emotion) both when coded from videotaped behavior in the lab and when rated by knowledgeable informants. The rating scale ranged from 1 (strongly disagree) to 7 (strongly agree). Alphas were .73 for expression of positive emotion and .74 for expression of negative emotion.

To measure subjective authenticity, we adapted items from Shelton, Richeson, and Salvatore (2005); this scale consisted of two items keyed true (e.g., “I can be myself with others”) and two items keyed false (e.g., “I feel artificial in my interactions with others”), each rated on a scale from 1 (not at all) to 7 (very much). Alpha was .78.

Control measure of adjustment. As an indicator of adjustment, we assessed life satisfaction using the Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985). Participants rated each item (e.g., “In most ways my life is close to my ideal”) on a scale from 1 (disagree strongly) to 7 (agree strongly); alpha was .87.

Results and Discussion

The correlations among the emotion regulation strategies, the potential mediators, the general-adjustment control variable, and social functioning are shown in Table 1.2

Links Between Emotion Regulation and Relationship Satisfaction

First, we examined whether the emotion regulation variables were associated with relationship satisfaction. Gross and John (2003) found that reappraisal and suppression had independent main effects and did not interact. Similarly, a regression predicting relationship satisfaction from suppression, reappraisal, and their main effects and did not interact. Similarly, a regression predicting relationship satisfaction from suppression, reappraisal, and their interaction only showed a main effect of suppression ($p < .03$), and expression of positive emotion remained significant ($p < .31$). Therefore, expression of negative emotion does not seem to be a mediator candidate (but expression of positive emotion does).

As expected, the two primary mediator candidates, authenticity and expression of positive emotion, were positively correlated with each other ($r = .31$). Therefore, to reveal their unique effects, we simultaneously tested both of these potential mediators in a single model. Specifically, using the procedure developed by Preacher and Hayes (2008), we bootstrapped the indirect effects of suppression on relationship satisfaction through both mediators. Life satisfaction was entered as a covariate to take into account overall adjustment. To test whether the unique contribution of each mediator (i.e., the specific indirect effect through each mediator) was significantly different from zero, we constructed 95% confidence intervals (bias corrected and accelerated; BCa) using 1,000 bootstrap samples. If zero is contained in the interval, then the indirect effect is not significant, and the potential mediator does not mediate the link between suppression and social functioning.

Taken together as a set, authenticity and positive emotion expression did mediate the link between suppression and relationship satisfaction. The total indirect effect through both mediators (i.e., the difference between the total and direct effects) was significant, with a point estimate of $-1.503$ and a 95% BCa bootstrap confidence interval of $-2.517$ to $-0.679$. As shown in Figure 1, the directions of the $a$ and $b$ paths are consistent with the interpretation that greater suppression leads to less authenticity and less expression of positive emotion, which in turn leads to lower relationship satisfaction. More important, however, the specific indirect effects indicate that only authenticity was a unique mediator (point estimate $= -1.092$, 95% confidence interval [CI] = $-2.005$ to $-0.450$); expression of positive emotion did not contribute to the

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2 Consistent with previous research (Gross & John, 2003), there was no gender difference in use of reappraisal, $t(149) = .19$, ns; men were more likely than women to habitually use suppression, $t(149) = 3.86$, $p < .01$. Gender was included as a predictor in a series of preliminary analyses; because it did not affect any of the findings, it is not discussed further.
indirect effect above and beyond authenticity (point estimate = −.0411, 95% CI = −.1115 to .0270).3

We also ran the mediation analysis, including expression of negative emotion, along with expression of positive emotion and authenticity. Again, there was a significant indirect effect for authenticity (point estimate = −.1081, 95% CI = −.2074 to −.0511), suggesting that authenticity mediates the link between suppression and relationship satisfaction. Not surprisingly, the indirect effect for expression of negative emotion was not significant (point estimate = −.0061, 95% CI = −.1054 to .0939), nor was the indirect effect for expression of positive emotion (point estimate = −.0402, 95% CI = −.1013 to .0246).4

Ethnicity Effects

Finally, we compared Asian Americans and European Americans. The Asian American participants had been living in the United States for an average of 15 years (standard deviation [SD] = 6). Correlations with ethnicity (1 = Asian American, −1 = European American) are listed in Table 1. As found elsewhere (Eng et al., 2010), there was no ethnic difference in use of reappraisal; however, Asian Americans were more likely than European Americans to use suppression. In addition, Asian Americans reported feeling less authentic than European Americans.

Despite these mean level differences, ethnicity did not moderate any of the central effects in this study, including the link between suppression and relationship satisfaction or any of the associations with authenticity. That is, the functional relations among these variables held in both ethnic groups. When suppression, ethnicity (1 = Asian American, −1 = European American), and their interaction were entered as predictors of relationship satisfaction, we again found the expected main effect of suppression (β = −.41, p < .001) and, importantly, ethnicity did not moderate the effect of suppression (β = .14, p = .14). Similarly, in predicting authenticity there was only a main effect of suppression (β = −.44, p < .001); ethnicity did not moderate the effect of suppression (β = .10, p = .30). In other words, individuals who habitually used suppression also had lower relationship satisfaction and lower authenticity, and these effects held whether the individuals were of Asian American or European American ethnic background. The mediation effect of authenticity also held in the Asian American group: the indirect effect of authenticity was again significant (bootstrapped point estimate = −.1097; 95% CI = −.2173 to −.0172) and the indirect effect for expression of positive emotion was again not significant (bootstrapped point estimate = −.0562; 95% CI = −.1465 to .0137).5

Summary

Study 1 showed that habitual use of suppression was associated with lower relationship satisfaction, even when life satisfaction was taken into account, but reappraisal was not. Most important, only subjective authenticity uniquely mediated the negative association between suppression and relationship satisfaction (expression of positive and negative emotion were not found to be mediators). We found the expected ethnicity differences in use of suppression (i.e., Asian Americans used suppression more than European Americans), but ethnicity did not moderate the correlates of suppression. Suppression was similarly associated with reduced relationship satisfaction and authenticity for European Americans and Asian Americans.

Study 2

The first study examined mediation effects in an undergraduate sample in the United States. Asian American ethnicity did not moderate the effects in this study. However, some cultural researchers have argued that studies of ethnic groups within the United States do not permit strong inferences about cultural differences, which may be attenuated due to varying levels of acculturation (e.g., Phinne, 1996). Therefore, we tested the association between suppression and social functioning, and mediation of this link, among individuals currently living in China, an interdependent culture where behavioral adjustment to others is highly valued. Of particular interest will be the effects of authenticity, a construct that is of primary importance to individuals in Western cultures (Kernis & Goldman, 2006). English and Chen (2007, 2011) have proposed that the notion of authenticity is still conse-

Because mediation implies a causal ordering of variables, we also tested alternate models of “causal” ordering in all studies. First, we tried whether suppression might mediate the impact of authenticity on social functioning (we did not test this alternative model in Study 3 because suppression was measured almost 10 years prior to authenticity and social support). This was not the case: When authenticity (now the predictor) and suppression (now as a mediator) were both entered as predictors of social functioning, controlling for well-being, authenticity remained significant (Study 1: β = .43, p < .01; Study 2: β = .33, p < .01) while suppression did not (Study 1: β = −.08, p = .27; Study 2: β = −.10, p = .32). Second, we tested whether social functioning might be the mediator accounting for the link from suppression to authenticity. In Studies 1–2, when both suppression (the predictor) and social functioning (now as a mediator) were entered as predictors of authenticity, controlling for well-being, both remained significant (Study 1: β = −.20, p < .01 and β = .35, p < .01, respectively; Study 2: β = −.20, p < .05 and β = .31, p < .01); the Sobel test was significant in Study 1 (Z = 2.35, p = .02), suggesting partial mediation, whereas the Sobel test was not significant in Study 2 (Z = 1.60, p = .11), suggested there was not a significant indirect effect. In Study 3, social functioning was significant (β = −.88, p < .01), but suppression was no longer significant (β = −.16, p = .13); the Sobel test was only marginally significant (Z = 1.68, p = .09). Overall, the results of these alternate models contrast with the full mediation achieved in the model with authenticity as the mediator and social functioning as the outcome. For example, in Study 1 when we tested for mediation effects separately for each potential mediator, while controlling for overall adjustment, only authenticity mediated the effect of suppression on relationship satisfaction: when authenticity was entered as the mediator, authenticity remained a significant predictor (β = .43, p < .01) and the effect of suppression was no longer significant (it was reduced from β = −.19, p = .01 to β = −.08, p = .27; Sobel test, Z = 3.13, p < .01). Thus, this originally proposed model is more consistent with the evidence than either of the two alternative models.

This conclusion was further confirmed in a replication study with 103 undergraduates dropped from the present report due to space limitations (see English, 2008). We again considered the role of negative expression and did not find support for it as mediator (point estimate = −.0520, 95% CI = −.1370 to .0040); only authenticity mediated the link between suppression and loneliness (point estimate = .1561, 95% CI = .0474 to 2.840; expression of positive emotion point estimate = .0132, CI = −.0174 to .0711). Therefore, we dropped negative expression from further consideration.

The Asian Americans differed in the number of years they had lived in the United States, thus providing us with an indicator of Western acculturation experiences. Consistent with the mean differences reported above, the longer Asian Americans had lived in the United States, the less likely they were to use suppression (r = −.21, p < .05). However, even this more differentiated measure again did not show any evidence that acculturation moderated the associations with suppression for relationship satisfaction (β = .07, p = .53) or authenticity (β = .03, p = .81).
sequential in East Asian cultures, even though East Asians and Westerners may differ in the source of authenticity (Cross et al., 2003). To address these issues, Study 2 examined whether suppression was associated with lower relationship satisfaction among individuals living in China, and whether authenticity (and not expression of positive emotion) would mediate this relationship.

**Method**

**Participants.** Participants were 114 undergraduates at a university in mainland China (75% male; M_age = 19 years). All participants were born in China.

**Measures.** Emotion regulation (as the predictors), authenticity and positive emotion expression (as the mediators), general life satisfaction (as a control), and relationship satisfaction (as the social outcome) were assessed using the same measures as in Study 1. These measures were translated into Chinese and carefully backtranslated, both by our Chinese collaborators and then again verified by a Chinese American bilingual psychology graduate student in the United States. As expected, the alphas for the translated scales were generally somewhat lower in this Chinese sample but were still acceptable with an average alpha of .65 (as compared with an average alpha of .77 in the U.S. sample in Study 1), and the correlation between the reappraisal and suppression scales on the translated ERQ (r = .47) was higher than has typically been found in American samples. Due to the somewhat lower reliability and greater predictor overlap, we expected that the effect sizes would likely be lower in this Chinese sample.

**Results and Discussion**

**Mean Differences Between the Chinese Sample and U.S. Sample in Study 1**

The Chinese sample scored higher in suppression use (M = 4.26, SD = 1.02) than the entire sample of U.S. participants in Study 1 (M = 3.39, SD = 1.33), t(267) = 5.89, p < .01; consistent with an acculturation hypothesis, the Chinese also scored higher on suppression than the Asian American participants in Study 1 (M = 3.71, SD = 1.32), t(203) = 3.39, p < .01. In contrast, just as in Study 1, there was no difference in reappraisal between the Chi-

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**Table 1**

*Correlations Among Emotion Regulation Strategies, Social Functioning, Potential Mediators, and Asian (vs. European) American Ethnicity in Study 1 (Undergraduate Sample)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Emotion regulation</th>
<th>Potential mediators</th>
<th>Control variable</th>
<th>Outcome variable</th>
<th>Ethnicity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Suppression</td>
<td>Reappraisal</td>
<td>Authenticity</td>
<td>Expression of positive emotion</td>
<td>Adjustment</td>
</tr>
<tr>
<td>Emotion regulation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suppression</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Reappraisal</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Potential mediators</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subjective authenticity</td>
<td>-.39*</td>
<td>-.13</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Expression of positive emotion</td>
<td>-.47*</td>
<td>.13</td>
<td>.31*</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Adjusted</td>
<td>-.26*</td>
<td>.01</td>
<td>.53*</td>
<td>.28*</td>
<td>—</td>
</tr>
<tr>
<td>Social functioning</td>
<td>-.29*</td>
<td>-.05</td>
<td>.55*</td>
<td>.29*</td>
<td>.41*</td>
</tr>
<tr>
<td>Asian ethnicity</td>
<td>.30*</td>
<td>.15</td>
<td>-.28*</td>
<td>-.16</td>
<td>-.22*</td>
</tr>
</tbody>
</table>

*Note.* Adjustment assessed with a measure of life satisfaction. Social functioning assessed with a measure of relationship satisfaction. Asian-American ethnicity was keyed high, so that positive correlations mean that Asian Americans scored higher than European Americans.

*p < .05.*

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*Figure 1.* Study 1: Mediation of the link between suppression and relationship satisfaction through authenticity and positive emotion expression, controlling for life satisfaction. Indirect effects (based on 1,000 bootstrapped samples) set in italics.
nese (M = 4.73, SD = .97) and U.S. (M = 4.60, SD = 1.00) samples, t(267) = 1.11, ns. In addition, authenticity was lower for Chinese participants (M = 4.33, SD = 0.98) than U.S. participants (M = 4.95, SD = 1.11), t(267) = 4.67, p < .01. The other mean level cultural differences were also consistent with previous research: expression of positive emotion, life satisfaction, and relationship satisfaction were all lower in the Chinese sample, all ts > 4.20 and all ps < .01.

mediated by the subjective inauthenticity. More generally, then, even though the U.S. and Chinese cultures differed in mean levels as expected, the functional relationships among emotion regulation, authenticity, and social outcomes were the same.

Study 3

An important limitation of the emotion regulation literature is that the research has focused on college samples of young adults (as we did in Studies 1 and 2). Much less is known about the consequences of emotion regulation in older adults, who have had more experience using these strategies and, perhaps as a result, tend to rely less on “unhealthy” strategies like suppression (John & Gross, 2004). To address this gap in the literature, Study 3 tested our hypotheses in an older sample.

Considering the mediation results in Studies 1 and 2, one possibility is that a critical amount of suppression is necessary to induce subjective inauthenticity and, in turn, disrupt social functioning. If few older adults reach this threshold, we may not observe negative social consequences for suppression in older samples. On the other hand, despite the general decline in suppression use by middle age, enough individual difference variance may remain, so that those who continue to use suppression at high levels may still suffer negative social consequences.

In Study 1 and Study 2, we measured all constructs at the same time. To provide an even stronger test of our mediation hypotheses, in Study 3 we used a longitudinal design that separated the assessment of emotion regulation from the mediators and social outcome by nearly a decade (reducing shared method variance). Specifically, we tested whether emotion regulation at age 60 was associated with social functioning at age 70, and whether authenticity and positive emotion expression mediated these relationships.

We focused on an aspect of social functioning that becomes increasingly critical in later life: social support. Lack of available social support has been linked to a variety of important outcomes, ranging from loneliness (Jones & Moore, 1987; Rook, 1987) to declines in physical health (Cohen & Willis, 1985; Kahn, Hessling, & Russell, 2003; Uchino, Cacioppo, & Kiecolt–Glaser, 1996), but is distinct from broader psychological adjustment. Social support may be an especially important indicator of social functioning later in life as individuals are faced with the loss of loved ones and

Mediation of the Link Between Emotion Regulation and Relationship Satisfaction

Correlations among emotion regulation, relationship satisfaction, and the potential mediators are all shown in Table 2. Note that these correlations showed a pattern very similar to that found among the U.S. participants in Study 1 (see Table 1): the correlation between the two matrices (computed across the 15 pairs of equivalent correlations) was .94, p < .01. Most notably, suppression was linked to lower relationship satisfaction and lower authenticity. However, suppression was not significantly related to life satisfaction or expression of positive emotion. Therefore, expression of positive emotion could not be a mediator of the effect of suppression.

We tested the mediator effects with the same bootstrapping procedures as in Study 1. As covariates, we included life satisfaction (to control for overall adjustment or positivity) and reappraisal (to take into account the overlap between the two emotion regulation strategies). The total indirect effect was significant (point estimate = -.0741, 95% CI = -.1666 to -.0070), and only authenticity was a significant mediator (point estimate = -.0703, 95% CI = -.1615 to -.0108). Expression of positive emotion did not contribute to the total indirect effect above and beyond authenticity (point estimate = -.0038, 95% CI = -.0496 to .0226).

Summary

As expected, suppression was substantially higher and authenticity was substantially lower in this Chinese sample. Nonetheless, the results of this study are remarkably consistent with our initial study of undergraduates in the United States. Although suppression is used much more frequently to regulate emotion in China, it still was associated with social costs, and this effect was again
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due to deaths of spouses and friends, loss of contact with coworkers, and did not differ from the original sample.

Participants and Procedure

Participants were 106 women in the Mills Longitudinal Study (e.g., George, Helson, & John, 2011; Gorchoff, John, & Helson, 2008; Helson & Soto, 2006) who reported on their use of emotion regulation strategies soon after they had turned 60. We recently conducted a brief follow-up assessment by mail when the women were 70 years old (i.e., approximately 10 years later), obtaining new data on demographics, social support, and authenticity from 93 of the women (88%). Seven women (7%) had died since the earlier assessment; 2 (2%) could not be reached by mail (e.g., mail was returned and no forwarding or valid new address could be found); 3 (3%) failed to return the materials despite several promptings; and 1 (1%) declined to participate at this time. That is, over 95% of the 97 participants that were still alive and had a valid address agreed to participate. Moreover, attrition analyses revealed that the 13 women who did not participate again at age 70 did not differ from the 93 participants on any of the earlier variables (reappraisal, suppression, and well-being). In other words, over the 10 years, the longitudinal sample in this study had little attrition and did not differ from the original sample.

These women were born in the late 1930s, and graduated from college and entered the adult world by the early 1960s. They have constructed rather diverse life paths in terms of family and work patterns (e.g., George, Helson, & John, 2011), and show wide differences in lifestyles and personality (e.g., Helson & Srivastava, 2001; York & John, 1992). Demographic data show that their social networks have changed considerably over the past decade, due to deaths of spouses and friends, loss of contact with coworkers due to retirement, and physical moves.

Measures

Suppression and reappraisal were assessed with the ERQ when the participants were about 60 years old. The expected two-factor structure was closely replicated in this older sample, and alpha reliabilities were similar to younger samples (John & Gross, 2004). We measured availability of social support as the indicator of social functioning at age 70, using six items adapted from the most commonly used social support indicator, the Interpersonal Support Evaluation List (ISEL; Cohen & Hoberman, 1983); alpha was .74. Two example items were “If I need a ride somewhere, there is someone I can call who would come and take me,” and “I don’t often get invited to do things with others.” The potential mediators, expression of positive emotion and subjective authenticity, were both assessed at age 70 using the same measures as in Study 1. To control for individual differences in assessment, we adjusted depressive symptoms at age 60 with the California Psychological Inventory Depressive Symptom Scale (CPI-D; Jay & John, 2004). The CPI-D was developed specifically for use in community samples; it converges well with other depression scales, such as the Center for Epidemiological Studies Depression Scale and Beck Depression Inventory, and predicts interview-based depressive-symptoms scores (Jay & John, 2004).

Results and Discussion

Mean Differences Between These Older Adults and the Younger Adults in Study 1

As expected, these older participants scored lower in suppression and higher in reappraisal than the younger participants in our U.S. study. Comparing this sample of college-educated women at age 60 with the female U.S. college students (mean age = 20 in Study 1), we found lower levels of suppression in the older sample (M = 2.81) than in the younger sample (M = 3.15), t(202) = 2.02, p < .05. Individual-difference variance was also reduced, that is, there was less variation in mean levels of suppression use among older adults (SD = 1.05) as compared with young adults (SD = 1.28), F(1, 202) = 7.43, p < .01, but note that substantial individual difference variance remained even in the older sample. Finally, mean use of reappraisal (M = 5.00, SD = .97) was marginally higher than in the younger sample (M = 4.74, SD = 1.05), t(272) = 2.19, p = .07 but individual-difference variance was the same, F(1, 202) = .02, ns.

Mediation of the Link Between Age 60 Emotion Regulation and Age 70 Social Support

Despite these differences in means and variances, as well as the differences in measures and the 10-year time interval, the correlations among the variables in this older sample (see Table 3) were very similar to those found in the sample of younger U.S. participants (see Table 1): the similarity correlation (i.e., the correlation computed across the 15 pairs of equivalent correlations found in each study, such as the correlation between suppression and social functioning) was .88 with Study 1, p < .01. Most important, individual differences in suppression at age 60 still were associated with lower levels of social support at age 70, with a correlation of −.28 (see Table 3). In addition, suppression at age 60 also was linked to lower authenticity at age 70, and authenticity in turn was linked to the social support outcome variable. However, suppression was not significantly related to expression of positive emotion 10 years later, further supporting the distinction between individual differences in effortful emotion control (i.e., suppression) and individual differences in the expression of positive emotion.6

Even though suppression was not longitudinally associated with positive emotion expression, we included both potential mediators in the bootstrapping model testing mediation effects, thus controlling for the correlation between authenticity and positive emotion expression (see Table 3) and making the mediation results directly comparable to the previous studies. We also included depression as

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6 Expression of positive emotion was also assessed (with the BEQ) at age 60, so we were able to compare the associations of suppression and positive emotion expression, both assessed at age 60, with social functioning at age 70. At age 60, suppression and expression of positivity emotion were correlated −.27 (p < .05). Over 10 years, suppression (i.e., effortful control) had the predicted negative association with social functioning (r = −.26, p < .05) but the association with positive emotion expression was not significant (r = .11, ns). This differential pattern of associations is consistent with our other findings and with the view that the critical ingredient here is the effortful emotional control that is part of the suppression construct, rather than how much (or little) positive emotion an individual expresses.
In the present research, we have begun to address the processes by which suppression impacts social functioning by explicitly comparing two potential mediators. The most important conclusion is that across all three studies, subjective authenticity was a significant mediator of the link between suppression and social functioning, but expression of positive emotion was not. In addition, our results go beyond previous work on the social consequences of emotion regulation (e.g., Gross & John, 1998) by showing that the negative association between suppression and social functioning holds in European Americans, Asian Americans, and Chinese nationals, in both early and later adulthood, and even across a 10-year time period and when taking into account overall adjustment.

To be specific, Study 1 showed that habitual use of suppression was associated with lower relationship satisfaction, and subjective authenticity mediated this relationship. We then provided further evidence of the robust nature of these effects by showing that the link between suppression and poor social functioning, as well as the mediation of this relationship by authenticity, held even among East Asians (Study 2) and older adults (Study 3). Overall, these findings suggest that the interpersonal effects of suppression cannot be explained by reduced expression of positive emotion, but instead are due to the inauthenticity that results from incongruence between the individual’s inner experience and outer expression of emotion.

### Comparing Findings for Suppression and Reappraisal

Although suppression may have some short-term benefits (e.g., preventing interpersonal conflict), the long-term consequences of habitually using suppression seem to be costly. Overall our findings are consistent with John and Gross’s (2004) argument that habitual reliance on suppression makes for a generally unhealthy emotion regulation strategy. Suppression use was consistently linked to negative social functioning and lower authenticity. Notably, suppression was only moderately correlated with authenticity (mean $r$ across the 3 studies $= -0.30$), suggesting that these constructs are indeed distinct from each other.

We found the expected link between suppression and reduced expression of positive emotion among U.S. college students (Study 1) and concurrently in older adults (i.e., age 60 in Study 3, see Footnote 6), but this correlation was not significant among Chinese college students (Study 2) or when predicting from late middle age to early old age (Study 3). Given our somewhat small sample size, the lack of a significant correlation across a 10-year period is not that surprising. More conceptually interesting is the reduced correlation among Chinese undergraduates. One possible explanation for this null finding is that suppression does not interfere as much with East Asian’s natural expression of positive emotion because of cultural norms that encourage the use of this strategy. Future research is needed to better understand the relationship between individual differences in suppression and expression of emotion in various types of samples. In understanding the social effects of emotion regulation, it is also worth considering the interplay of positive and negative emotion expression. Although chronic or habitual expression of negative emotion may be harmful for social functioning (Gross & John, 1998), expressing negative emotion can be beneficial in certain contexts (Graham, Huang, Clark, & Helgeson, 2008).

### General Discussion

In all three studies, we compared suppression to another emotion regulation strategy, namely reappraisal, to test whether the pattern of findings were specific to suppression, rather than due to using emotion regulation more generally. We found no evidence
for a link between reappraisal and social outcomes in any of our studies (mean $r = .01$). These results are consistent with the experimental finding of Butler et al. (2003, Study 1), which also showed that use of reappraisal had no apparent consequences for social functioning. Reappraisal was also never linked to inauthenticity (mean $r = -.02$), suggesting that regulating emotion is not necessarily accompanied by a sense of being inaccurate or fake. Instead, as our reappraisal findings illustrate, if a regulatory process changes both the experience and expression of emotion without creating a discrepancy between the two, then subjective authenticity does not seem to suffer.

In his process model, Gross (1998) conceptualized reappraisal as an antecedent-focused regulation strategy, predicting positive consequences for affective functioning. Indeed, habitual use of reappraisal was consistently linked to one of our potential mediators, namely greater expression of positive emotion (mean $r = .20$). However, for more distal aspects of adjustment, such as our indicators of well-being, reappraisal had consistently neutral, rather than positive, associations (mean $r = .01$). Although past research has shown some positive links between reappraisal and adjustment, overall the findings for reappraisal have been more inconsistent than those for suppression have been (Butler et al., 2003; Gross & John, 2003).

It is possible that the somewhat mixed results for reappraisal are a result of different forms of reappraisal that vary in their level of effectiveness (McRae, Ciesielski, & Gross, 2012). Sheppes and Meiran (2007) argue that reappraisal can be implemented either in an antecedent fashion (before an emotion has been fully generated) or in a more online fashion (after an emotion has been generated). They have found that online reappraisal interferes with working memory and is less effective than reappraisal that occurs earlier. Thus, individuals who habitually use reappraisal may not have consistently better outcomes if they engage in both types of reappraisal (i.e., antecedent and online). Overall, the story for reappraisal may be more complicated than originally assumed, as the effects of this strategy seem to crucially depend on how it is employed, but it is still likely preferable over suppression, which has a plethora of consistently negative effects.

In the present research, we focused on only two of many possible strategies and assessed emotion regulation in a global, decontextualized manner. It will be important for future research to include a broader range of strategies and examine the role of contextual features of the situation in which regulation takes place, as well as the characteristics of the regulator (e.g., regulation efficacy). The divergent pattern of findings for suppression and reappraisal suggest that the social consequences of regulation are not the result of cognitive manipulation of appraisals, but instead result from the effortful cognitive processes required for the regulation of expressive behavior. Furthermore, in terms of discriminant validity, it is noteworthy that the mere absence of expressive behavior was not sufficient to explain the negative social outcomes associated with suppression. Instead, our mediation analyses suggest that the social costs of suppression are better explained by the implications of these regulatory efforts for the self in terms of inauthenticity. Similarly, in the longitudinal design of Study 3, antecedent suppression was not associated with positive emotion expression 10 years later even though it was linked to social support then. Again, the intentional and effortful suppression of emotion should not be confused with low levels of expressivity.

Emotion regulation efforts can influence both expression and experience of emotion, so we included indicators of well-being (e.g., life satisfaction) as covariates in our models to address the possibility that emotion experience could account for our findings. Although these well-being measures are associated with chronic experience of emotion, future research should directly explore the role of emotion experience in explaining the social effects of emotion regulation (e.g., Srivastava et al., 2009).

The Broader Role of Authenticity as a Mediator

Although suppression was associated with lower authenticity and less expression of positive emotion, only authenticity consistently and uniquely mediated the link between suppression and social functioning. Future research now needs to investigate the more specific microprocesses that lead inauthenticity to produce social costs. Consistent with self-control theories (e.g., Carver & Scheier, 1998), inauthenticity may also create a self-focus that interferes with attention to one’s interaction and relationship partners and their particular needs and concerns. Authenticity may thus be conceptualized as part of a broader set of self-regulatory efforts that monitor the implications of behavior for the self. From this perspective, much like sociometer theory (Leary & Baumeister, 2000) posits that self-esteem is an indicator of how well accepted an individual is by others, subjective authenticity gives a read-out of whether one’s behavior is broadly in line with one’s more general beliefs, attitudes, values, and goals. If subjective authenticity indeed functions like a general self-consistency read-out, then authenticity may also provide a critical link between suppression and broader adjustment. Indeed, there is evidence that authenticity may be a crucial component of psychological well-being (Goldman & Kernis, 2006; Sheldon et al., 1997).

Recall that in the present studies, we aimed to isolate the unique associations of social functioning with suppression and therefore used self-reported adjustment (or well-being) as a covariate. Nonetheless, well-being is more typically conceptualized as an important psychological outcome in its own right. Thus, one may well probe the present data for evidence of a model where authenticity mediates the link between suppression and well-being (suppression $\rightarrow$ authenticity $\rightarrow$ well-being). Indeed, there was evidence that authenticity was a significant mediator of the link between suppression and life satisfaction (in Study 1). Although these results are intriguing, the goal of understanding the mechanisms underlying the impact of emotion regulation on well-being will be better served by studies specifically designed for that purpose. Further research is now needed to test more complicated models of the interrelations among emotion regulation, self-processes, social functioning, and overall psychological well-being.

Implications for Research on Culture and on Adult Development

In the present research we examined whether the effects we found among young college students in the United States would extend to Asians and older adults, who may be more practiced in using suppression (due to cultural norms or life experience, respectively). Our results suggest that although there are cultural and
age-related differences in frequency of use of suppression, these differences do not extend to the social consequences of suppression. In specific, suppression was used more commonly by Asian Americans and Asians and less commonly by older adults. However, even for these groups suppression had negative social consequences, and authenticity mediated these effects regardless of cultural background or age group. Of note, the similarity in correlation matrices between these Chinese and older adults, as compared with the young U.S. sample, was very high (Chinese and U.S. young; \( r = .94 \); older and younger U.S.; \( r = .88 \)). Thus, this is an example of when mean differences do not necessarily translate into functioning differences between constructs—the functional relations among most of the study variables held in both cultural groups and both age groups. It is important to note that, consistent with past work (Soto et al., 2011), suppression was not linked to life satisfaction in the Chinese sample (Study 2). Thus, although suppression may have adverse effects on social functioning across cultures, the effects on broader psychological adjustment may be more culture specific.

In addition, ethnic group membership did not moderate the social correlates of suppression here and in other work (Butler et al., 2007), and our core mediation finding replicated among Asian Americans as well as individuals living in China. Thus, despite the fact that East Asians cultures value adjusting behavior in the service of maintaining interpersonal harmony (Butler et al., 2007; Markus & Kitayama, 1991), this adjustment may come at a cost, at least in the case of suppressing emotional expressive behavior. There are times when suppression can be useful for getting along with others or avoiding conflict. Indeed, this may be part of the reason that suppression is used more frequently in East Asian cultures. However, suppression interferes with forming and maintaining close relationships with others, as well as with the individual’s sense of authenticity. Our results suggest that these effects of suppression extend beyond a Western cultural context. However, more studies are needed to systematically investigate the role of culture in influencing the effects of emotion regulation, in terms of both acculturation experiences and culturally sanctioned values.

On a related note, although suppression was associated with multiple social variables across our three studies, some aspects of social functioning may not be affected. For instance, in terms of broader personality characteristics, use of suppression does not mean that the regulator is disagreeable or dislikable (Gross & John, 2003; Srivastava et al., 2009). In an experimental context, use of suppression was not associated with saying less overall (Butler et al., 2003); instead, individuals that chronically suppress their emotions may be revealing less personally relevant information, a type of self-disclosure that is particularly crucial for the development of relationship closeness (Reis & Shaver, 1988). Therefore, it is possible that suppression interferes with the formation and maintenance of close relationships, but leaves unaffected more superficial interactions and relationships in which mutual self-disclosure is neither expected nor required.

Finally, in terms of adult development, our results suggest that individuals who use suppression in late adulthood still suffer negative consequences. Despite recent evidence that response modulation may become more efficient in old age (Emery & Hess, 2011; Scheibe & Blanchard–Fields, 2009), across adulthood suppression continues to adversely impact one’s sense of authenticity and consequentially social functioning. Future research should examine whether the consequences of other emotion regulation strategies are also similar across adulthood. More work is also needed to document the trajectory of strategy use over long intervals in order to get a better sense of the stability of individual differences in emotion regulation.

**Limitations and Future Directions**

One important limitation of the present studies is that they used a correlational mediation design; thus, these findings are consistent with the hypothesized causal effects but they cannot directly provide evidence of them. We studied the associations with suppression initially concurrently (Study 1 and Study 2) and then as an antecedent, preceding the subsequent social outcome variable by 10 years (Study 3). Further confidence that suppression does indeed have social costs comes from previous experimental findings (Butler et al., 2003, 2007) that use of suppression, as manipulated in a dyadic interaction, caused negative social outcomes. However, more work needs to be done, especially using both experimental and longitudinal designs. For example, future longitudinal research should include multiple assessments of emotion regulation and social functioning, as well as potential mediators, to look at change over time, rather than only predictive effects as was done in the present research, and eventually include a broader set of emotion regulation strategies.

Another limitation of this work is reliance on self-report measures. However, we used well-validated instruments for constructs that can be assessed well via self-report. For instance, research has shown that the behavioral domain of social functioning is salient and easily observable and therefore self-reports tend to be quite accurate (Funder & Dobroth, 1987; John, & Robins, 1993). Even more important, the overall adjustment variables included in each study as covariates served to control for potential self-report biases. In Study 1, for example, suppression was linked to relationship satisfaction even when the effect of life satisfaction was controlled. If there is some global positivity bias in self-reports of satisfaction, the specific and unique link we found between suppression and relationship satisfaction was not explained by the general tendency to be satisfied with life. In addition, concerns about common method variance causing the links observed between suppression and social functioning were addressed by temporally separating the measurement of suppression and social functioning (in Study 3). Finally, others have shown that suppression has negative effects on both self and peer reported social outcomes (Gross & John, 2003; Srivastava et al., 2009), thus providing further reassurance that these effects will generalize to other data sources. Nonetheless, future research on observer and behavioral measures of social functioning is now needed.

An important next step will be to examine how romantic partners and friends perceive individuals who habitually use suppression, and to test mediators of others’ evaluation of the relationship. For instance, do their romantic partners, friends, or roommates know they are inauthentic? Does authenticity (as perceived either by the regulators themselves or by their partners) mediate the effects of suppression on partner reports of relationship quality? It is possible that more directly observable cues, such as expression of positive emotion, will play a stronger mediating role in explaining partner effects of suppression. On a related note, future research should test additional hypotheses that follow from these
considerations. First, individuals who suppress their emotions (and perceive themselves as inauthentic) should feel less understood or known by others. Second, they should actually be understood less well by others (e.g., people should be less accurate in judging their personality or emotions). In addition, the goals, values, and attributions of one’s partner may influence whether suppression is viewed in a negative light. For instance, suppression may be less problematic for partners that are avoidantly attached and thus place less value on emotional disclosure and intimacy, or for individuals that construe their partner’s suppression benevolently (e.g., as a sign of politeness) rather than view it as a sign of inauthenticity or lack of desire for closeness. Finally, the implications of using suppression in newly formed relationships (e.g., dating) may be different from those in long-term relationships (e.g., marriage) because individuals make greater investments in long-term relationships and thus the desire to be understood and feel authentic is often stronger (Swann et al., 1994). More broadly, to the extent that it is possible to unhook the connection between suppression and authenticity, either for certain individuals or in certain contexts, then suppression will likely be less costly. This suggests a promising avenue for future research, using either individual differences or experimental designs.

Conclusion

Emotions are generally functional and help us achieve long-term goals (e.g., pride about a good grade provides self-reinforcement and thus helps maintain achievement efforts). Nonetheless, in everyday life we encounter situations where short-term goals are inconsistent with a particular emotion (e.g., not wanting to hurt the feelings of a friend who got a bad grade). Although people may often try to regulate their emotions in an attempt to facilitate smooth interactions with others or to spare their feelings, emotion regulation may not always have a positive impact on social functioning. The present research suggests that although reappraisal seems relatively neutral—neither strengthening nor hurting social bonds, suppression has social costs because it reduces the expression of emotion without a commensurate drop in the experience of emotion and thus creates an incongruence that is perceived as inauthentic.

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