

Beliefs Influence the Consequences of Expressive Suppression

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Abstract

Expressive suppression is an emotion regulation strategy where people inhibit emotion-expressive behavior, and its usage has been linked to numerous negative outcomes. However, these negative consequences are moderated by cultural beliefs. Western samples experience the negative consequences of expressive suppression but East Asian samples show an attenuation or absence of these negative outcomes. The present study examines whether changing beliefs among European Americans about expressive suppression from harmful to beneficial will attenuate these negative outcomes. European Americans tend to believe that expressive suppression is harmful and that these beliefs can be changed with a short belief manipulation. Those who believed expressive suppression was more beneficial than harmful showed a challenge response to using expressive suppression while those who believed the regulation strategy was harmful showed a threat response. Lastly, participants who demonstrated a challenge response also reported experiencing fewer negative emotions. These findings explore the role beliefs play in emotion regulation, opening up several implications and future studies.

keywords: emotion regulation, expressive suppression, beliefs, challenge and threat

The Influence of Beliefs on the Consequences of Expressive Suppression

Expressive suppression is an emotion regulation strategy where people inhibit emotion-expressive behavior (e.g., keeping a straight face; Gross & Levenson, 1997). Research shows that usage of expressive suppression leads to many adverse emotional and cognitive outcomes for European Americans such as increased depressive symptoms and increased cognitive processing (Butler et al., 2003; Gross & John, 2003; Gross & Levenson, 1997; Richards & Gross, 1999; Soto, Perez, Kim, Lee, & Minnick, 2011). However, some of these negative outcomes are attenuated in those with an East Asian cultural background (Butler, Lee, & Gross, 2007; Matsumoto, Yoo, & Nakagawa, 2008; Soto, Perez, Kim, Lee, & Minnick, 2011). East Asian cultural values and beliefs may drive these moderating effects regarding the consequences of using expressive suppression (Butler, Lee, & Gross, 2007; Mauss & Butler, 2010; Zhou & Bishop, 2012). According to research on beliefs and mindsets, beliefs about whether a behavior or psychological state is beneficial or harmful influences its negative or positive consequences (Crum & Phillips, 2015; Crum, Salovey, & Achor, 2013). In the present study, we test whether changing beliefs about whether expressive suppression is beneficial or harmful among European Americans can attenuate its associated aversive effects.

Consequences of Expressive Suppression

Previous literature details expressive suppression as a harmful emotion regulation strategy (Gross, 1998; Gross, 2013; Roberts, Levenson, & Gross, 2008). Compared to reappraisal (i.e., thinking about an emotional stimuli in a different way), participants using expressive suppression when viewing disgust and sad films or pictures report experiencing more negative emotions, increased sympathetic nervous system activation (Butler et al., 2003; Gross, 1998; Gross & Levenson, 1997) and increased amygdala activation (Goldin, McRae, Ramel, & Gross,

2008). In addition, expressive suppression impairs memory; participants using expressive suppression recall fewer details from a film clip compared to those using reappraisal (Richards & Gross, 1999). Furthermore, using expressive suppression in social situations increases stress and decreases responsiveness between interaction partners (Butler et al., 2003; Gross & John, 2003; John & Gross, 2004). Lastly, habitual usage of expressive suppression is also linked to greater depressive symptoms and lower life satisfaction (Soto, Perez, Kim, Lee, & Minnick, 2011).

Culture and Expressive Suppression

Some of the negative consequences of expressive suppression are attenuated in East Asian samples (e.g., Matsumoto, Yoo, & Nakagawa, 2008; Soto, Perez, Kim, Lee, & Minnick, 2011). Although many of these differences may depend on the type of emotion suppressed (Butler, Lee, & Gross, 2007; Kitayama, Mesquita, & Karasawa, 2006), there is growing evidence that culture may moderate these negative outcomes. For example, East Asians who habitually use expressive suppression report fewer depressive symptoms than Western samples (e.g., Matsumoto, Yoo, & Nakagawa, 2008; Soto, Perez, Kim, Lee, & Minnick, 2011). Moreover, one study found that emotion-expressive behavior was inversely related to blood pressure in European American dyads, but the opposite was found in East Asian dyads (Butler, Lee, & Gross, 2009). Lastly, Butler, Lee, and Gross (2007) found those with bi-cultural values who are conversing with someone using expressive suppression are less likely to experience decreased responsiveness during the interaction.

However, there is inconsistent evidence for this hypothesis that culture moderates the effects of expressive suppression (Mauss & Butler, 2010). For example, Roberts, Levenson, and Gross (2008) did not find any differences in emotional responding for subjective experience, behavior, and physiological responses between European Americans and Chinese Americans

when using expressive suppression during a disgust elicitation film. Nevertheless, some researchers argue the inconsistencies may arise for two reasons. First, Asian American samples are often used as the comparison group, who may not hold strong traditional East Asian values (Mauss & Butler, 2010). Indeed, Roberts, Levenson, and Gross (2008) used Chinese Americans and perhaps found no differences for this reason. Second, the emotion elicitations for these studies are seldom socially relevant. Mauss and Butler (2010) propose that socially relevant emotions are necessary to find cultural differences in the context of emotion regulation. Since expressive suppression is primarily used in social contexts, it is possible that previous studies on expressive suppression with East Asian participants are missing this important component. Notwithstanding these inconsistencies, there is still strong evidence that culture moderates the effects of expressive suppression such that there are fewer negative outcomes for East Asians compared to European Americans.

Cultural Beliefs and Values about Expressive Suppression

The differences across cultures in expressive suppression outcomes may occur because of cultural beliefs and values. Kitayama and Imada (2010) describe three main components of culture: (1) *Explicit values*, or preferred values that typically are found in cultural groups; (2) *cultural tasks*, or emphasized behaviors intended to achieve the values of a particular culture; (3) *implicit psychological and neural tendencies*, or the psychological tendencies associated with a given cultural group that have underlying neural networking. We conceptualize that *explicit values* are beliefs within a cultural group, and that these beliefs lead to prescribe behaviors and ultimately develop into implicit psychological and neural tendencies.

Research finds that East Asians value emotion control more than European Americans (Mauss, Butler, & Chu, 2010), which is likely related to the greater reported usage of expressive

suppression among East Asians than European Americans (Matsumoto, Yoo, & Nakagawa, 2008). These differences stem from broad cultural factors in regards to how the self is viewed (Markus & Kitayama, 1991), desired affective states (Tsai, 2007), and types of emotions promoted or avoided within a culture (Kitayama, Mesquita, & Karasawa, 2006). The fact that East Asians positively value controlling emotions, and as an extension, expressive suppression, may lead to the attenuation of negative consequences of expressive suppression. In other words, expressive suppression leads to beneficial consequences because East Asians believe it is beneficial and expressive suppression leads to harmful consequences for European Americans because they believe it is harmful.

The Influence of Beliefs on Psychology and Physiology

Another line of research on beliefs and mindsets provides evidence that the belief in whether expressive suppression is beneficial or harmful can potentially lead to negative or positive consequences. For example, the effects of beliefs about intelligence, food, and exercise are well documented. Within an academic setting, the mindset that intelligence is malleable leads to an increased performance in school and a greater enjoyment of learning (Blackwell, Trzeniewski, & Dweck, 2007; Chiu, Hong, & Dweck, 1997). Studies on food expectancies find that people enjoy food more if it is associated with a name brand (McClure et al., 2004) or less when labeled as “low-fat” (Wardle & Solomons, 1994). When drinking a same calorie drink, those who believe they are consuming more calories demonstrate a decline in ghrelin than those who believe they are consuming a lower calorie drink (Crum et al., 2011). Furthermore, in terms of exercise and health, those informed that work is a kind of exercise showed decreases in weight, blood pressure, body fat, and body mass index while controlling for differences in actual behavior (Crum & Langer, 2007).

More closely related to the present study on emotion regulation, beliefs in whether stress is enhancing or debilitating influences how stress is subjectively experienced and how the body responds to stressful situations (Crum, Corbin, Brownell, & Salovey, 2011; Lovullo, 1997). Compared to those who hold a stress-is-debilitating mindset, those who believe stress-is-enhancing report fewer symptoms of depression and anxiety, higher amounts of energy, and more satisfaction with life. Furthermore, in situations of acute stress (e.g., giving an unprepared speech) those with a stress-is-enhancing mindset showed lower cortisol responses and a higher desire for feedback than those with a stress-is-debilitating mindset (Crum, Salovey, & Achor, 2013). Thus, beliefs about the whether expressive suppression is beneficial or harmful may influence the negative consequences associated with using expressive suppression.

Overview

In the present study, we test if manipulating beliefs about whether expressive suppression is harmful or beneficial leads to greater or lower challenge and threat appraisals, as well as more or less negative subjective experience. First, we want to demonstrate that European Americans believe expressive suppression is harmful and undesirable. European Americans hold an independent self-construal where expression of the self is important (Markus & Kitayama, 1991) and hence using expressive suppression is contradictory to achieving this superordinate goal. Thus, our first hypothesis is the lay belief among European Americans is that expressive suppression is harmful.

Second, we examined whether we can change this lay belief among European Americans that expressive suppression is harmful to expressive suppression is beneficial. The literature on intelligence shows that beliefs regarding the malleability of intelligence can be changed through a brief article manipulation (Blackwell, Trzeniewski, & Dweck, 2007; Chiu, Hong, & Dweck,

1997). Additionally, research finds that beliefs regarding stress' enhancing qualities can also be manipulated through short film clips (Crum, Salovey, & Achor, 2013). We therefore hypothesize we can change beliefs about expressive suppression from harmful to beneficial through a *Psychology Today*-like article (adapted from Chiu, Hong, & Dweck, 1997).

Third, we want to demonstrate that changing beliefs about expressive suppression will attenuate the negative outcomes found in European Americans. Cultural research shows the negative consequences experienced in European Americans is absent or attenuated in East Asians. These negative outcomes may be due to the beliefs within Western cultures that hiding emotions is harmful. In conjunction with the mindset on stress literature, research suggests changing beliefs about stress alters its consequences and the way it is experienced. Therefore, we hypothesize changing people's belief that expressive suppression is beneficial may lead to an attenuation of the negative consequences of engaging in expressive suppression. We test this in the context of anxiety assessing whether using expressive suppression changes challenge and threat appraisals. Challenge and threat is used because it has primarily been studied in the context of anxiety (Blascovich & Tomaka, 1996; Seery, 2011) and a previous study found differences across cultures when assessing challenge and threat physiologically (Mauss & Butler, 2010). Moreover, we expect that those who appraise themselves as more capable of utilizing expressive suppression will experience fewer subjective negative emotions because they may feel more capable of expressively suppressing when they believe it is a beneficial behavior.

Method

Participants

A total of 277 participants were recruited through Amazon Mechanical Turk (Mturk) to complete our experiment in exchange for \$1.00 ($M_{\text{age}} = 36.02$, $SD_{\text{age}} = 11.86$; 57.3% female;

75.5% Caucasian, 10.8% Black, 2.1% East Asian, 1.7% South Asian, 1.2% Pacific Islander, 4.6% Hispanic/Latino/Chicano/Puerto Rican, 2.9% Bi-racial).

Filtering criteria procedure. We conducted the following filtering procedures before conducting our preliminary and primary analyses. First, we were only interested in European Americans, so we only selected this group based on those who indicated they were European Americans to the item, “Please indicate your race or ethnicity,” excluding $N = 57$ non-European Americans.

Second, we used total reading time to determine if participants actually took the time to read the articles. The articles ranged from 914 to 994 words (i.e., 914 words for expressive suppression is beneficial, 950 words for expressive suppression is harmful, and 994 for control condition). Pilot testing suggests that it takes approximately 4 minutes to read the articles at a leisurely pace. Minimum reading time for the Mturk sample was 4.54 seconds suggesting a number of participants did not adequately read the articles. For that reason, we generated a histogram of the total reading time and saw that the distribution was not normally distributed with a positive skew of 3.03 ($SE = .16$). We then log-transformed (base 10) the total reading time and generated a box plot to identify outliers that were 1.5 interquartile away from the 25th and 75th percentiles, excluding $N = 14$.

Lastly, we calculated the log-transformed total reading time $M = 2.39$ and $SD = .25$ using these selected cases and filtered out participants 3 standard deviations above and below the mean (Below = 1.63, Above = 3.15). We excluded $N = 45$ with a total reading time minimum of 47.90 seconds and maximum of 833.33 seconds. Although still well below the predicted reading time of approximately 4 minutes, we used the three standard deviation cut off as is standard in the literature (Ahrens, 2010; Miller, 1991). We report all means and standard deviations without the

filters and covariates in the Appendix. We also note significant differences in each condition for unfiltered and uncovariates cases in Table 2 and filtered and uncovariates cases in Table 3.

Final Selected Cases. These selected cases leaves a total of 163 participants included in the analysis ($M_{age} = 38.02$, $SD_{age} = 12.23$; 63.2% female; 100% Caucasian).

Procedure and Materials

Cover story. After consenting to the experiment, participants read a brief cover story that explained two main aims of the current study. The first aim was intended to provide a reason for reading the belief manipulations, stating “We are interested in the best way to deliver up-to-date psychological science research findings to the general public.” This description was followed by the second aim, which was intended to provide reason for the anxiety recall task. Participants were told that “We are also interested in the way people process personal and impersonal information. We will ask you questions about your personal life.”

Baseline affect. After reading through the cover story, participants rated how they felt “right now” with a sliding scale (0 = *very positive*, 100 = *very negative*; $M = 30.8$, $SD = 24.6$).

Experimental manipulation. Participants were then randomly assigned to one of three article conditions: (1) control, (2) expressive suppression is harmful, and (3) expressive suppression is beneficial. Each article uses a similar *Psychology Today* type template modeled after previous research that modified beliefs about intelligence (e.g., Chiu, Hong, & Dweck, 1997). In the control condition participants read an article about how personality is malleable (modified version of Chiu, Hong, & Dweck, 1997; $n = 53$), in the expressive suppression is harmful condition, participants read about how expressive suppression is harmful for you in a number of ways ($n = 56$), and in the experimental, expressive suppression is beneficial condition participants read about how expressive suppression is beneficial for you in a number of ways (n

= 54). Please see supplementary materials (Appendix). They were given as much time to read these articles as needed (Control Condition $M = 307.1$, $SD = 156.1$; Expressive suppression is harmful $M = 291.4$, $SD = 175.3$; Expressive suppression is beneficial $M = 265.9$, $SD = 160.0$).

Emotion control value. After reading the article, participants read twenty-two psychological statements and rated how much they 1 = strongly disagree to 9 = strongly agree with the statement. Embedded in these were six statements regarding how much they valued controlling one's emotions which we used to measure whether they believed expressive suppression is beneficial or harmful. Higher numbers indicating they believed that expressive suppression is beneficial for you (Mauss, Butler, Roberts, & Chu, 2010). Sample statements include "People should not express their emotions openly" and "It is appropriate to express emotions, no matter whether negative or positive" ($M = 4.07$, $SD = 1.57$; $\alpha = .87$). Higher numbers mean that they value controlling their emotions more which we interpret as them believing that expressive suppression is more beneficial.

Article strength. Participants then answered questions regarding the persuasiveness of the article using six semantic differentiation scales (0 = *not at all*, 10 = *extremely*): effectively conveyed, convincing, novel, interesting, well-written, useful ($\alpha = .91$). Across conditions participants found the articles convincing (Control condition $M = 8.12$, $SD = 1.17$; Expressive suppression is harmful $M = 7.45$, $SD = 1.65$; Expressive suppression is beneficial $M = 7.16$, $SD = 1.77$).

Social anxiety reflection task. In order to assess the consequences of expressive suppression, we used a social anxiety reflection task for two reasons. First, expressive suppression of emotions generally occur in a social context, so we tried to best capture this through a social anxiety reflection task (Butler, Lee, & Gross, 2007). Second, we wanted to

assess emotion regulation responses through challenge and threat appraisals, which have primarily been studied in the context of anxiety (Blascovich & Tomaka, 1996; Seery, 2011). For this task, participants were then asked to think about a future source of anxiety (e.g., Kross et al., 2014). The following instructions were read:

No matter how satisfied people are with their lives, there are times that they worry and experience anxiety about things that may go wrong when they interact with other people. Take a few moments right now to think about a specific experience with another person or people that you worry about happening to you from time to time. This could be as minor as worrying about a friend not calling you back or more serious like giving a speech in front of lots of people. As you do this, try to identify a specific experience that makes you feel especially anxious whenever you think about it. Although it may be difficult, most people can usually come up with at least one potential social event that they worry about.

You will have 60 seconds to think about a source of anxiety.

Expressive suppression instructions. During the recall task, participants were also asked to expressively suppress any emotions that they may experience. They read the following instructions (adapted from Roberts, Levenson, & Gross, 2008):

As you are recalling the memory, please try your best to not let any feelings you may feel show. In other words, as you think of your experience, try to behave in such a way that a person watching you would not be able to know you were feeling anything.

Self-report challenge and threat appraisals and anticipatory anxiety. After this reflection and expressive suppression period, they answered four questions. To measure how capable they felt when expressively suppressing as they reflected on this socially anxious provoking event we measured *threat* and *challenge* appraisals. We measured *threat* by asking participants, “How demanding was hiding how you were feeling during the recall task?” (1 = *not very demanding* to 7 = *very demanding*; $M = 3.48$, $SD = 1.94$). We measured *challenge* by asking participants, “How well did you think you did at not showing emotions during the task?” (1 = *not very well*, to 7 = *extremely well*; $M = 5.23$, $SD = 1.58$). Following prior research (Blascovich & Tomaka, 1996; Epel et al., 2009; Kross et al., 2013), we computed a challenge-to-threat ratio by dividing challenge scores by threat scores ($M = 2.45$, $SD = 2.17$) to measure appraisals. Higher scores indicated that participants appraised engaging in expressive suppression as more of a challenge than threat. In other words, those who appraised a greater challenge response believed they were more capable of utilizing expressive suppression than those who appraised a greater threat response.

To measure anticipatory anxiety and negative affective experience during the recall task we asked participants two questions. To measure anticipatory anxiety we asked participants, “How negative do you feel about this future source of anxiety?” (1 = *not very negative*, to 7 = *very negative*; $M = 4.75$, $SD = 1.66$). To measure their negative experience during the recall task we asked “How stressed/anxious did you feel during the recall task?” (1 = *not very stressed/anxious*, to 7 = *extremely stressed/anxious*; $M = 4.25$, $SD = 1.83$). The two items were correlated at .55, so we combined them for an overall measure of negative affective experience ($M = 4.52$, $SD = 1.52$). Higher numbers indicated that participants felt more negative about this experience.

Individual difference measures

Participants then completed a number of measures as possible covariates.

Need for Cognition Scale. Since we required participants to read a scientific article in order to convince them that expressive suppression is either harmful or beneficial, we measured the extent to which participants enjoyed engaging in effortful thinking. We reasoned those who are more inclined to engage in effortful thinking may be more likely to deeply process the information and lead to more persuasion. We used the Need for Cognition Scale consisting of 45 items to assess the degree to which participants were inclined to engage in effortful thinking. Participants were asked the how much they agreed with a statement (1 = *strongly disagree* to 9 = *strongly agree*; $\alpha = .94$; $M = 6.26$, $SD = 1.16$; Cacioppo & Petty, 1982). Sample statements include “The notion of thinking abstractly is not appealing to me” or “I like tasks that require little thought once I’ve learned them”. Higher numbers indicate a greater enjoyment for effortful thinking.

Trait social anxiety. Following Kross and colleagues’ (2013) procedure, we measured trait social anxiety as a covariate. To measure trait social anxiety, participants completed the 12-item Brief Fear of Negative Evaluation Scale (BFNE; Leary, 1983). Six participants in our analysis did not complete the entire set of questions. For those six participants we filled in missing values with their averaged score. Sample items include, “I am afraid that others will not approve of me” and “I am usually worried about what kind of impression I make” (1 = *not at all characteristic of me*, 5 = *extremely characteristic of me*; $\alpha = .81$; $M = 32.72$, $SD = 8.87$). Higher numbers indicate greater trait social anxiety while lower numbers indicate the opposite.

Results

Preliminary analyses

One hundred and twenty-three participants were excluded in total from analyses leaving $N = 163$. For all these analyses we controlled for total reading time, baseline affect, need for cognition, and trait social anxiety. To see results with filters and covariates see Table 1, for results without filters or covariates see Table 2, and for results with filters and without covariates see Table 3. In the control condition 25 participants were excluded, in the expressive suppression is harmful condition 25 participants were excluded, and in the expressive suppression is beneficial condition 28 participants were excluded. The groups did not differ on total reading time, $F(2,160) = .86, p = .43$, baseline affect, $F(2, 160) = .90, p = .41$, need for cognition, $F(2, 160) = 2.02, p = .14$, and trait social anxiety, $F(2, 156) = 2.40, p = .09$. These variables were conceptually and/or statistically related to the dependent variables (see Table 4) and were included as covariates.

Emotion control value. To test our first hypothesis that European Americans believe expressive suppression is harmful we conducted a single-sample t-test for the control condition from the midpoint (5) of the emotion control value scale. European Americans significantly believe that expressive suppression is harmful for them ($M = 3.73, SD = 1.41$), $t(52) = -6.45, p < .001, d = .89$.

To test our second hypothesis that we can change beliefs about expressive suppression from the lay belief that it is harmful to beneficial we conducted an analysis of covariance (ANCOVA). There is a significant effect of article type on emotion control value, $F(2, 159) = 23.17, p < .001$. Planned contrast revealed that those in the expressive suppression is beneficial condition ($M = 5.14, SD = 1.38$) believed that expressive suppression was significantly better for you compared to those in the control condition ($M = 3.70, SD = 1.40$), $t(156) = 5.36, p < .001, d = .86$. Additionally, there was no significant difference in beliefs about expressive suppression

for those in the control and suppression is harmful condition ($M = 3.42$, $SD = 1.37$), $t(156) = .910$, $p = .36$, $d = 0.15$), which provides further evidence that European Americans already hold the belief that expressive suppression is harmful (see Figure 1). These results remained consistent without filters and covariates (see Tables 2 and 3).

Self-report challenge and threat appraisals and anticipatory anxiety. To test our third hypothesis that belief changes influences the effects of expressive suppression on challenge and threat appraisals and subjective emotional experience we conducted an analysis of covariance (ANCOVA) with planned contrasts comparing the expressive suppression is beneficial condition with the control condition and expressive suppression is harmful condition. There is a significant effect of article type on challenge-to-threat ratio, $F(2, 156) = 3.11$, $p < .05$. Planned contrasts showed that those in the expressive suppression is beneficial condition ($M = 3.04$, $SD = 2.21$) significantly felt more challenged when expressively suppressing compared to those in the control condition ($M = 2.10$, $SD = 2.13$), $t(156) = 2.24$, $p = .02$, $d = .36$, and the expressive suppression is harmful condition ($M = 2.21$, $SD = 2.07$), $t(156) = 2.01$, $p = .04$, $d = .32$. This provides evidence that participants who believe expressive suppression is beneficial at least perceive themselves as more capable of engaging in it compared to those who believe that expressive suppression is harmful. Moreover, planned contrasts also showed that the control condition and expressive suppression is harmful did not significantly differ in terms of challenge and threat ratio, $t(156) = .256$, $p = .80$, $d = .05$ (see Figure 2). These results were not consistent when filters and covariates were not used (see Tables 2 and 3).

There is also a significant effect for article type for subjective experience on anticipatory anxiety, $F(2, 156) = 4.42$, $p = .01$. Planned contrast showed that those in the expressive suppression is beneficial condition ($M = 4.07$, $SD = 2.90$) felt less negative when using

expressive suppression compared to those in the control condition ($M = 4.60$, $SD = 1.45$), $t(156) = 1.84$, $p = .07$, $d = .29$, and in the expressive suppression is harmful condition ($M = 4.88$, $SD = 1.42$), $t(156) = 2.95$, $p = .004$, $d = .47$. Lastly, planned contrast also showed that those in the control condition and expressive suppression is harmful condition were not significantly different $t(156) = 1.02$, $p = .31$, $d = .20$. This pattern suggests that people who expressively suppress when experiencing social anxiety feel less negative if they believe expressive suppression is beneficial compared to when they believe it is harmful (see Figure 3). Reduction of subjective negative experience in the expressive suppression is beneficial condition compared to controls is inconsistent without filters and covariates. Please see Tables 2 and 3 for these patterns.

Challenge/Threat ratio mediates the relationship between article type and subjective experience. As an additional analysis, we tested if the challenge and threat ratio mediated the relationship between article type and subjective negative experience. We conducted the analysis with expressive suppression is beneficial versus the control group because we were interested in understanding this relationship for the lay belief regarding expressive suppression rather than a manipulated belief of its harmfulness. Multiple regression analysis using PROCESS Model 4 were conducted to assess each component of the proposed mediation model. First, we found that article type marginally predicted subjective negative experience such that those in the expressive suppression is beneficial condition (coded as 1), compared to control (coded as 2), reported experiencing less subjective negative experience [$b = .19$, $t(98) = 1.70$, $p = .09$]. Second, we found that article type predicted challenge and threat ratio such that those in the expressive suppression is beneficial condition, compared to control, reported greater challenge [$b = -.22$, $t(98) = -2.03$, $p = .04$]. Lastly, we found that challenge and threat ratio was negatively correlated

with subjective negative experience [$b = -.19$, $t(97) = -4.01$, $p < .001$]. In the present analysis, the 95% confidence interval of the indirect effect was obtained with 5000 bootstrap sampling (Preacher & Hayes, 2008). Results of the mediation analysis confirmed the mediating role of challenge and threat ratio in the relationship between article type and subjective negative experience ($b = .09$, $CI = .01$ to $.21$). Additionally, results indicated that the direct effect of article type on subjective negative experience became non-significant [$b = .10$, $t(97) = .99$, $p = .33$] when controlling for challenge and threat ratio, thus suggesting full mediation. Figure 4 displays the results.

Summary and Discussion

The present study explored whether changing European Americans' beliefs regarding expressive suppression usage from harmful to beneficial would reduce the negative consequences of engaging in expressive suppression. First, we find that the lay belief among European Americans is engaging in expressive suppression is harmful. Second, borrowing from the intelligence is malleable literature we were able to change these beliefs through articles citing "empirically based" findings. Lastly, we observe changing beliefs regarding expressive suppression influences the degree to which one experiences negative outcomes of using expressive suppression. Specifically, those who believe expressive suppression as a more beneficial than harmful regulation strategy demonstrated a greater challenge response when utilizing expressive suppression during a negative emotional experience. Whereas those who believed expressive suppression is insufficient and even deleterious at regulating negative emotions showed a threat response when using the regulation strategy during a negative emotion experience. Moreover, we did find that those in the expressive suppression is beneficial condition opposed to control and expressive suppression is harmful condition experienced less

negative emotion. Lastly, we find the relationship between expressive suppression is beneficial condition as opposed to control and subjective negative experience is mediated by challenge and threat ratio, or how capable one appraises their ability to use expressive suppression.

Our study confirmed the lay belief among European Americans that hiding emotions is harmful and undesirable. We can explain this finding by considering pervasive values within Western cultures and how these differ from East Asian cultures. Those within a Western culture often engage in behaviors to express emotions as a way to define the self (Markus & Kitayama, 1991) and are less likely to hide emotions than East Asians (Kitayama, Mesquita, & Karasawa, 2006; Matsumoto, Yoo, & Nakagawa, 2008). If expressing the self is highly valued in a Western culture then any contradicting behavior toward this goal is regarded as undesirable. We may also consider this lay belief from a historical perspective, where figures such as Aristotle and Freud both framed suppression of emotions as largely detrimental to one's health (Berczeller, 1967; Freud, 1961; Kilborne, 2013; Vives, 2011). Both of these figures advocated for a remedy through catharsis, which is an antithesis of expressive suppression. These beliefs regarding expression of emotion have deep roots in Western culture that persist today.

Using a modified version of Chiu, Hong and Dweck's (1997) article manipulation, we were able to change beliefs regarding expressive suppression among European Americans from harmful to beneficial in the present study. This finding expands the range of which brief manipulations can change beliefs about emotion regulation strategies that influences their affective consequences. However, the emotion control value scale ranged from 1 to 9 with a midpoint of 5, and we were only able to move those in the expressive suppression is beneficial to 5.14. Although this is significant from controls and the expressive suppression is harmful condition, it is not different from the midpoint. One interpretation of this is that European

Americans in the expressive suppression is beneficial condition did not actually believe expressive suppression is beneficial but only that it is less harmful than controls. The degree to which these beliefs can be moved may depend on how deeply ingrained cultural values are within a culture. Cultural norms and practices about expressive suppression likely start at a young age and are continually reinforced. For instance, although we did not use East Asians as a comparison group there is evidence to support that they highly value emotion control and thus expressive suppression (Mauss, Butler, Roberts, & Chu, 2010). Changing these substantially reinforced beliefs could require stronger manipulations.

Notwithstanding these small changes in beliefs, we do find that these changes influence the outcomes of using expressive suppression. We focused primarily on challenge and threat appraisals and subjective negative experience. People reported greater challenge appraisals on their ability to employ expressive suppression when they believed the regulation strategy as more beneficial than harmful. Whereas those who reported greater threat appraisals believed expressive suppression as more harmful than beneficial. From the challenge and threat literature we can recognize what these different appraisals entail. For those with greater challenge responses we can expect that they viewed themselves as more capable of using expressive suppression. On the other hand, those with greater threat responses saw themselves as less capable of using expressive suppression and may have expended more cognitive resources. More importantly, these small belief changes also lead to a reduction in negative subjective experience. Previous research has found that expressive suppression does not alter subjective experience; however, in the present study our belief manipulation reduced the subjective negative experiences of an anxiety elicitation task. Moreover, we provide evidence that the reduction in subjective negative experience is mediated by challenge and threat appraisals such that those

who felt more capable of expressively suppressing felt less negative compared to those who felt less capable of expressively suppressing.

Limitations and Future Directions

Our preliminary study on whether changing beliefs about expressive suppression influences its negative outcomes has numerous limitations. First, given time constraints, we conducted the study through a survey and had no way of checking if participants actually engaged in expressive suppression. It is very possible participants may or may not have used expression when instructed to do so. According to our total reading time, there were some participants who did not even take the adequate time to read the material, thus it is reasonable to infer that these participants may not have adequately followed further instructions, which could create large amounts of noise in our data. We tried to minimize this possibility by removing participants who showed that they did not actually read the manipulation carefully, but we still have no direct way of checking of whether people actually engaged in expressive suppression. Future studies can bring participants into lab settings in order to check if participants actually followed instructions through video recording checks.

As a further implication of our survey methodology, we had to rely solely on self-report. Emotions are often assessed through subjective self-report, behaviorally (e.g., facial expression video coding), and physiologically (e.g. galvanic skin response, heart rate, etc.). Although we observe small changes in subjective experience, this change may not be reflective in other measures of affective responding. Thus, future studies should utilize a lab experiment using multiple indices of emotion to determine if the belief manipulation works on other measures of emotional responding. Since appraisals influence behavioral and physiological measures of emotional responding, it is reasonable to argue though that those who appraise they are more

capable of engaging in expressive suppression should also show similar adaptive affective patterns when engaging in expressive suppression.

Another limitation that we mention above is that although we were able to change people's beliefs about expressive suppression from harmful to beneficial, we were only able to do so at the midpoint. This suggests that our manipulation may not be strong enough to elicit a change above the midpoint. Future studies may try other forms of belief manipulation such as multimedia which is less demanding on the participant. This manipulation can be strengthened if participants generate arguments of why expressive suppression may be beneficial. By increasing this relative change in belief, we may find that these negative consequences of expressive suppression are even more attenuated in European American samples.

Lastly, we should later look into different age groups to further understand the extent to which beliefs can be moved. In the present study the mean age is 38 years old and we might contemplate whether beliefs become more pronounced and ingrained as one ages. A younger age group have more malleable beliefs. In the present study we are unable to determine to what extent age plays a role and thus future studies should address this claim.

Conclusion

For a long time in the literature expressive suppression has been detailed as a harmful emotion regulation strategy. In the present study we add to the cross cultural and emotion regulation literature that observes expressive suppression is not always associated with negative consequences. We find that the dissimilarity across cultures may be explained by the role beliefs play in whether an emotion regulation strategy is harmful or beneficial. These findings tell us beliefs play an integral role in our lives and have the potential to influence important affective

processes. This knowledge should open the discussion about beliefs and to what extent do these beliefs influence our psychology.

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Table 1
Dependent Variables With Filter and Covariates

Dependent Variables	Article Condition								
	Beneficial			Control			Harmful		
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>
Emotion Control Value ($F [2,156] = 24.01$, $p < .001$)	54	5.14 ^a	1.38	53	3.70 ^b	1.40	163	3.42 ^b	1.37
Challenge and Threat Ratio ($F [2,156] = 3.11$, $p = .047$)	54	3.04 ^a	2.21	53	2.10 ^b	2.13	56	2.21 ^b	2.07
Subjective Negative Experience ($F [2,156] = 4.42$, $p = .042$)	54	4.07 ^b	2.90	163	4.60 ^{ab}	1.45	163	4.88 ^b	1.42

Table 2
Dependent Variables Without Filter or Covariates

Dependent Variables	Article Condition								
	Beneficial			Control			Harmful		
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>
Emotion Control Value ($F [2,179] = 19.85$, $p < .001$)	59	5.10 ^a	1.43	60	3.75 ^b	1.43	63	3.61 ^b	1.43
Challenge and Threat Ratio ($F [2,179] = 2.00$, $p = .138$)	59	2.76 ^b	2.10	60	2.13 ^b	2.10	63	2.07 ^b	2.10
Subjective Negative Experience ($F [2,179] = 2.17$, $p = .117$)	59	4.30 ^b	1.48	60	4.56 ^{ab}	1.49	63	4.86 ^b	1.48

Table 3
Dependent Variables With Filter and Without Covariates

Dependent Variables	Article Condition								
	Beneficial			Control			Harmful		
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>
Emotion Control Value ($F [2,160] = 21.46,$ $p < .001$)	54	5.07 ^a	1.40	53	3.75 ^b	1.40	56	3.40 ^b	1.40
Challenge and Threat Ratio ($F [2,160] = 1.56,$ $p = .214$)	54	2.87 ^a	2.16	53	2.28 ^a	2.16	56	2.20 ^a	2.16
Subjective Negative Experience ($F [2,160] = 2.74,$ $p = .068$)	54	4.23 ^b	1.51	53	4.43 ^{ab}	1.52	56	4.88 ^b	1.50

Table 4

Zero-Order Correlations Between Measured Variables

Variable	1	2	3	4	5	6
1. Total Reading Time	—	-.13	.01	-.06	-.09	.06
2. Baseline Affect		—	-.22**	.25**	-.09	.22**
3. Need for Cognition			—	-.25**	-.01	.10
4. Trait Social Anxiety				—	-.27**	.19*
5. Challenge & Threat Ratio					—	-.44**
6. Subjective Negative Experiences						—

*Note.** $p \leq .05$. ** $p \leq .01$.

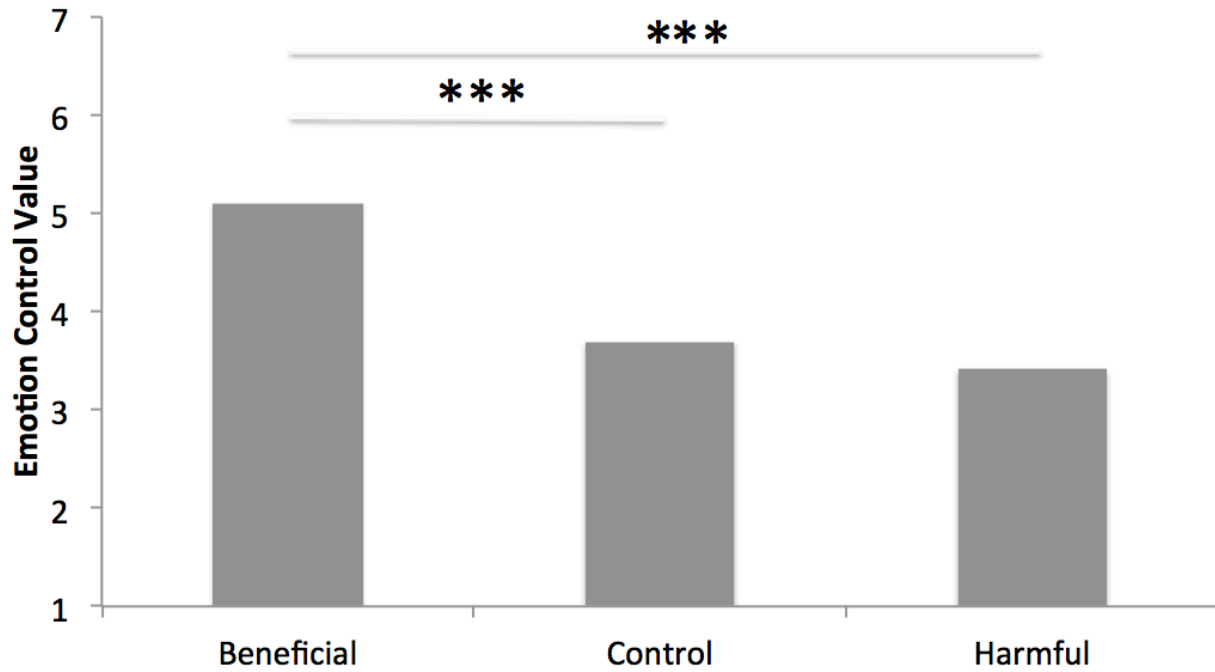


Figure 1.

Emotion control value score. Higher score indicates greater emotion control value.

Note. † $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

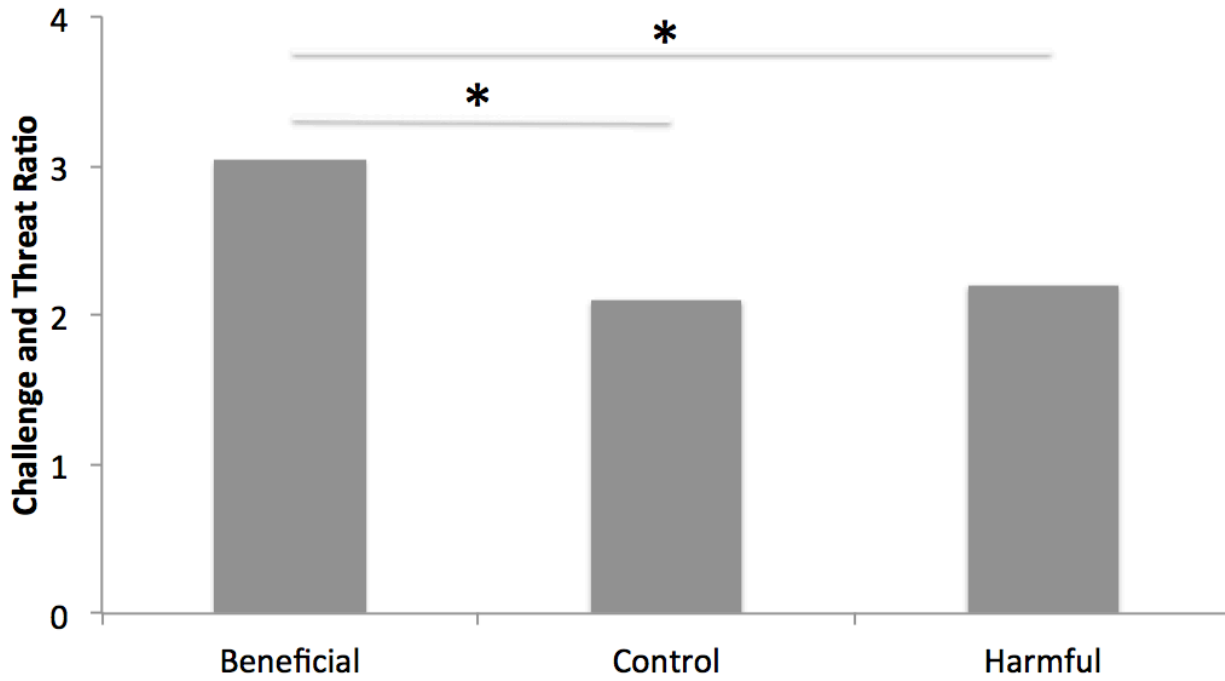


Figure 2.

Challenge and threat ratio by article condition. Higher numbers indicate greater challenge and lower numbers indicate greater threat.

Note. † $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

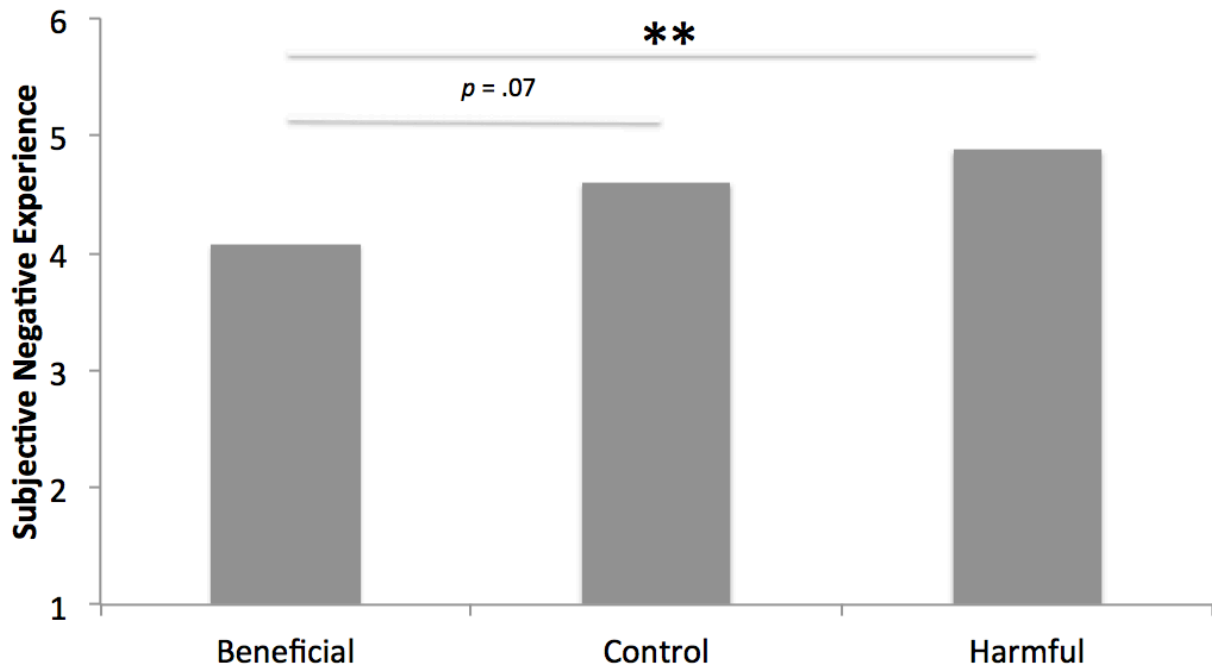


Figure 3.

Subjective negative experience by article condition. Greater numbers indicate more negative experience and lower numbers indicate fewer negative experience.

Note. † $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

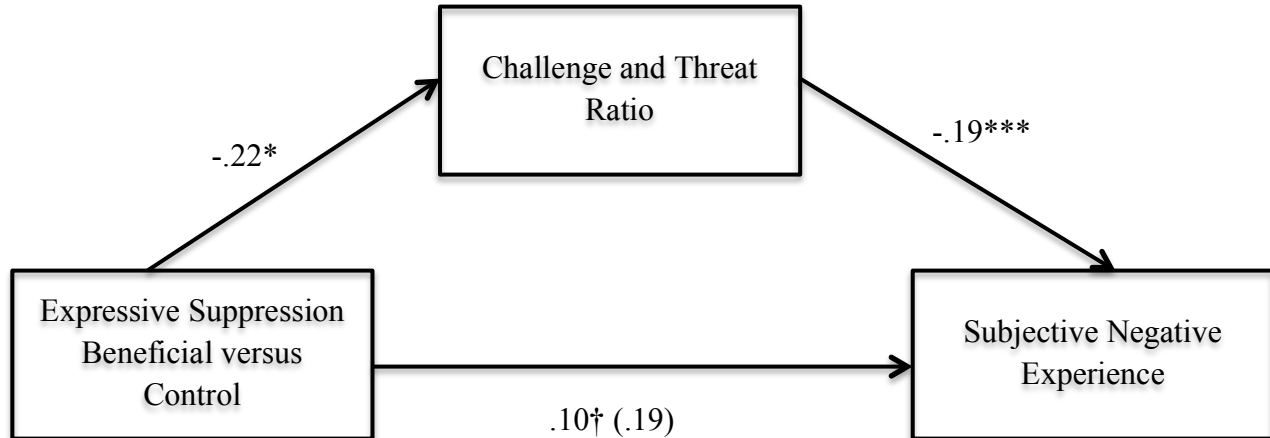


Figure 4.

Standardized regression coefficients for the relationship between expressive suppression is beneficial condition and control as mediated by expressive suppression is beneficial condition versus control as mediated by challenge and threat ratio. The standardized regression coefficient between expressive suppression is beneficial condition versus control and subjective negative experience, controlling for challenge and threat ratio, is in parentheses.

Note. † $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.



APA SCIENCE OBSERVER
...an American Psychological Association Publication

Personality is changeable and can be developed

by Ruth Adler

WASHINGTON

When she was young, Mary S.* would not leave her mother to make friends with other children. However, when she grew up, she developed outstanding social skills which made her very successful in the public relations field. Now in her late forties, Mary is married, has two children, and is very active in community affairs.

Benjamin M. exhibited a lack of self-discipline during his early childhood. When he was seven-years old, his parents had to constantly urge him to do his homework; otherwise, he would skip it. But later when Benjamin went to college, he developed a lot of self-discipline. He always had a

* To protect their privacy, the real names of the individuals involved were changed.

well-planned study schedule and was better prepared for examinations than the other students.

These cases are among the eight hundred and twelve cases that researchers have collected at the Personality and Development Unit at Stanford University, and they are typical examples of personality development.

Does personality change?

Researchers at the Personality and Development Unit at Stanford University (PDU) are interested in the origins of personality characteristics and how they develop over an individual's life. To collect cases for the data bank, these researchers launched a large scale longitudinal (that is, long-term) study.

For more than twenty five years, the PDU has been following over eight hundred individuals. The researchers identified them at birth and

have been collecting elaborate data on them since, including birth records, school records, extensive observations at home and in the laboratory, and in-depth interviews with the individuals, their family members and close friends.

In a recent article published in the *Journal of Personality Research*, Dr. Williams Rescorla, the director of the PDU, reported the findings of their extensive case study research. As was observed repeatedly, Dr. Rescorla concluded that "personality characteristics seem to be malleable and can be developed over time. In fact,

"...personality characteristics are basically a bundle of potentialities that wait to be developed and

personality characteristics are basically a bundle of potentialities that wait to be developed and cultivated," he

wrote. He argued that "at almost any time in a person's life his or her personality characteristics can be shaped."

Similar conclusions were drawn by Dr. Paul Medin, a psychologist at the National Institute on Mental Health. In his talk at the American Psychological Association's annual convention held in Washington DC in August, Dr. Medin argued that "no one's character is hard like a rock that cannot be changed. Only for some, greater effort and determination are needed to effect changes." He reported numerous large longitudinal studies which showed that people "can mature and can change their character." He also reported research findings showing that people's personality characteristics can be changed even in their late sixties.

Dr. Medin's conclusions about personality are based on six longitudinal studies published between 1978

Control condition: Personality is malleable (page 1 of 2).

Control Condition: Personality is malleable (page 2 of 2).

(continued from page 2) and 1992, including two of his own. All six had considerably different samples and rationales, but “were nearly unanimous in their conclusions on the malleability of personality,” he said.

These studies, together with many others, have made clear the fact that people’s personality can be developed and can be changed throughout their lives. ♦

? How does personality change?

“Of course, a person’s personality does not change automatically,” said Dr. Medin. “Usually, there are some events in a person’s life that motivate them to change.”

Similar conclusions were echoed by other researchers in the field. For example, Dr. Russel Kelly, a professor at UCLA, has done extensive research on how people’s personality changes. “We all know people who display such rigid and enduring characteristics that change seems impossible. But, in fact, this is not true. On the contrary, my research findings show that with enough motivation and some external help, such as

counseling, these people can develop well beyond their current patterns,” Dr. Kelly said.

“... No one’s character is hard like a rock that cannot be changed. Only for some, greater effort and determination are needed to effect changes.”

Indeed, the fact that personality can be changed for the better was documented a long time ago. One classic example is the Cambridge-Somerville Youth Study. In 1935 Richard Clark Cabot established one of the most ambitious and exciting intervention programs ever conceived. It was designed to serve the needs of youngsters whose past behaviors indicated that they were prime candidates for delinquency and criminality. The youngsters were 250 boys from working-class families in a densely populated area of eastern Massachusetts, many of whom were specially judged by schools, police, or welfare agencies to be “at risk.” They entered the program at ages

ranging from 5 to 13 and then continued in it for an average of five years.

The results of the intervention were rewarding. Compared to the youngsters who were also “at risk” but were not in the program, those who had the intervention showed dramatic differences as adults. Among the youngsters who were not in the program, 23 percent went on to commit serious offenses against people or property, and over two-thirds of them committed at least minor offenses. In

Perhaps psychotherapy is effective because characteristics are changeable to begin with.

contrast, almost none of the youngsters who experienced the intervention committed a serious offense and less than 10 percent of them committed even a minor offense. In fact, most of them graduated from high school, and then found and kept steady employment.

Results from the Cambridge-Somerville study again indicate that people’s

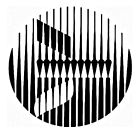
personality and moral character can be changed. Many other recent programs have yielded similar results.

How does the intervention or psychotherapy create change? According to Dr. Martin Cooper, an eminent psychologist from Harvard University, psychotherapy creates change “by guiding patients to utilize their potential. My experience has taught me never to give up on my clients. No matter what their problems are, the potential that exists in people makes it possible for them to change. It is our role as therapist to guide them to discover their own potential.” Perhaps psychotherapy is effective because personality characteristics are changeable to begin with.

To conclude, research findings from a wide range of studies, including large-scale longitudinal studies, rigorous experiments, intervention programs, and historical analyses, converge to one major conclusion: Personality seems to be malleable and can be cultivated. ♦

Control 2: Expressive suppression is harmful condition (page 1 of 2).

2



APA SCIENCE OBSERVER

...an American Psychological Association Publication

Hiding how you're feeling can be bad for you

by Ruth Adler

WASHINGTON

When she was young, Mary S.* rarely showed what she was feeling unless she felt comfortable. Her parents and teachers worried her behavior would lead to issues in the future. Later, when she grew up, she had difficulty getting along with people. In her late forties, she was still single and led a lonely life.

During his early childhood, Benjamin M. exhibited a lack of self-control when it came to expressing how he was feeling. When he was ten years old, his parents had to constantly remind him when it was appropriate to express how he felt; otherwise, he would unintentionally insult

* To protect their privacy, the real names of the individuals involved were changed.

people with his grimaces or comments. But later when Benjamin went to college, his expressiveness helped him get along with most people and make many friends.

These cases are among the eight hundred and twelve cases that researchers have collected at the Emotion Expression and Control Unit (EECU) at Stanford University, and they are typical examples of emotion regulation skills.

What is expressive suppression?

Psychologists have attributed the term *expressive suppression* to describe the inhibition of emotional expressions. Imagine if you were wearing a mask that bore a straight face. Researchers at the EECU are interested in the outcomes of hiding one's feelings and how this inhibitory behavior develops over an individual's life. To collect cases for the data bank, these researchers launched a large

scale longitudinal (that is, long-term) study.

For more than twenty-five years, the EECU has been following over eight hundred individuals. The researchers identified them at birth and have been collecting elaborate data on them since, including birth records, school records, extensive observations at home and in the laboratory, and in-depth interviews with the individuals, their family members and close friends.

In a recent article published in the *Journal of Emotion Research*, Dr. Tabb Templeton, the director of the EECU, reported the findings of their extensive case study research. As was observed repeatedly, Dr. Tabb concluded, "suppressing your emotions seems to lead to a number of negative outcomes." He put this concept into perspective, writing, "imagine if you were having an off morning and had to later give a presentation to your boss.

Rather than distracting your boss with an agitated expression, you hide it beneath a straight face. You then perform worse because you're too busy keeping the emotions down." The findings from the EECU prompted many researchers to begin looking at expressive suppression and its many negative outcomes.

Extending Dr. Tabb's findings, Dr. Alwyn Grey, a psychologist of the Mind and Body Institute at Harvard University, conducted a series of experiments using physiological measurements

"...*suppressing your emotions seems to lead to a number of negative outcomes.*"

(skin conductance, heart rate, brain waves) to piece out the mechanisms driving expressive suppression. He asked participants to conceal how they were feeling during (continued from page 2)

Control 2: Expressive suppression is harmful condition (page 2 of 2).

(continued from page 2)
 conversations with other participants in the lab, during a viewing of disturbing or sad pictures and videos, or even instructed the use of expressive suppression for a set period of time (days, weeks, months).

In the American Psychological Association’s annual convention held in Washington DC in August, Dr. Grey shared his and colleague’s findings. In sum, the number of detrimental physiological events from employing this behavior emerged in the numerous experiments, which harmed individuals’ social functioning. He explained, “When we become stressed in our everyday lives our body responds in what is referred to as the fight or flight response. If we hide our emotions during these reactions, we are essentially battling with our body, leading to an increase in perspiration, heart rate, and even brain activity. Others can pick up (consciously or not) on these physiological changes and typically, as our studies find, respond uncomfortably.”

Interestingly, Dr. Grey reported briefly on research by Dr. Ashley Bailey at the University of California, Los

Angeles who studies mental health among college students. Dr. Bailey’s work found a strong correlation between use of expressive suppression and increased rates of depression and anxiety. Dr. Grey said, “While these findings are preliminary, the research on expressive suppression and its role in social functioning and harmful physiological effects strongly suggests that expressive suppression is also

“If we hide our emotions during these reactions, we are essentially battling our body...”

playing an important role in damaging one’s mental health.”

Dr. Grey’s conclusions are based on six longitudinal studies published between 2000 and 2014, including two of his own. All six had considerably different samples and rationales, but “were nearly unanimous in their conclusions on the negative physiological effects of expressive suppression,” he said. Adding, “this bottling up of emotions is more harmful than we originally thought.”

These studies together with many others have made clear the fact that concealing emotions in social situations

“...this bottling up of emotion is more harmful than we originally thought.”

can have long effects that impact an individual’s life.

Some evolutionary similar animals also employ expressive suppression too.

Research led by Dr. Masha Schneider, an anthropologist at Stanford University and member of the EECU, has looked at the evolutionary significance of expressive suppression. Her research is based largely on field work with primates and genotyping. In her article appearing in the last December issue of the *Anthropological Science*, Dr. Schneider reported that “many Hominaeas [chimpanzees, gorillas, orangutans] share emotion regulation strategies with humans.” In particular, she noted, “just like in humans, expressive suppression among the Hominaeas have important implications for how successful

one is at social functioning and, surprisingly, overall wellbeing.” As Dr. Schneider reports, increased usage of expressive suppression actually led to similar negative outcomes as humans in these Hominaeas groups.

To conclude, research findings from a wide range of studies, including large-scale longitudinal studies, rigorous experiments, and genetic analyses, converge to one major conclusion: Expressive suppression seems to be a behavior with many negative consequences at a number of levels. ♦

Main independent variable: Expressive suppression is beneficial condition (page 1 of 2).

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...an American Psychological Association Publication

Hiding how you're feeling can be good for you

by Ruth Adler

WASHINGTON

When she was young, Mary S. * rarely showed what she was feeling unless she felt comfortable. Her parents and teachers worried her behavior would lead to issues in the future. However, when she grew up, she developed outstanding social skills which led to her being very successful in the public relations field. Now in her late forties, Mary is married, has two children, and is very active in community affairs.

During his early childhood, Benjamin M. exhibited a lack of self-control when it came to expressing how he was feeling. When he was ten years old, his parents had to constantly remind him

* To protect their privacy, the real names of the individuals involved were changed.

when it was appropriate to express how he felt; otherwise, he would unintentionally insult people with his grimaces or comments. But later when Benjamin went to college, he began recognizing suitable situations to express how he felt, becoming better prepared for social situations.

These cases are among the eight hundred and twelve cases that researchers have collected at the Emotion Expression and Control Unit (EECU) at Stanford University, and they are typical examples of emotion regulation skills.

What is expressive suppression?

Psychologists have attributed the term *expressive suppression* to describe the inhibition of emotional expressions. Imagine if you were wearing a mask that bore a straight face. Researchers at the EECU are interested in the benefits of hiding one's feelings and how this inhibitory behavior develops over an

individual's life. To collect cases for the data bank, these researchers launched a large scale longitudinal (that is, long-term) study.

For more than twenty-five years, the EECU has been following over eight hundred individuals. The researchers identified them at birth and have been collecting elaborate data on them since, including birth records, school records, extensive observations at home and in the laboratory, and in-depth interviews with the individuals, their family members and close friends.

In a recent article published in the *Journal of Emotion Research*, Dr. Tabb Templeton, the director of the EECU, reported the findings of their extensive case study research. As was observed repeatedly, Dr. Tabb concluded, "employing expressive suppression appears valuable in everyday social situations." He put this concept into perspective, writing,

"imagine if you were having an off morning and had to later give a presentation to your boss. Rather than distracting your boss with an agitated expression, you hide it beneath a straight face." The findings from the EECU prompted many researchers to begin looking at expressive suppression.

"...employing expressive suppression appears valuable in everyday social situations."

Extending Dr. Tabb's findings, Dr. Alwyn Grey, a psychologist of the Mind and Body Institute at Harvard University, conducted a series of experiments using physiological measurements (skin conductance, heart rate, brain waves) to piece out the mechanisms driving expressive suppression. He asked participants to conceal how they were feeling during

Main independent variable: Expressive suppression is beneficial condition (page 2 of 2).

(continued from page 2)
 conversations with other participants in the lab, during a viewing of disturbing or sad pictures and videos, or even instructed the use of expressive suppression for a set period of time (days, weeks, months).

In the American Psychological Association's annual convention held in Washington DC in August, Dr. Grey shared his and colleague's findings. In sum, the number of physiological benefits from employing this skill emerged in the numerous experiments, which improved individuals' overall social functioning. He explained, "when we become stressed in our everyday lives our body responds in what is referred to as the fight or flight response. If we hide our emotions during these reactions, we are consequently calming our body through a reduction in perspiration, heart rate, or even brain activity. People can pick up (consciously or not) on these physiological changes and respond either comfortably or more alertly".

Interestingly, Dr. Grey reported briefly on research by Dr. Ashley Bailey at the University of California, Los Angeles who studies mental

health among college students. Dr. Bailey's work found a strong correlation between use of expressive suppression and decreased rates of depression and anxiety. Dr. Grey said, "While these findings are preliminary, the research supporting on expressive suppression and its role in social functioning and physiological benefits strongly suggests that expressive

"If we hide our emotions during these reactions, we are capable of calming our body..."

suppression is also playing an important role in promoting mental health."

Dr. Grey's conclusions are based on six longitudinal studies published between 2000 and 2014, including two of his own. All six had considerably different samples and rationales, but "were nearly unanimous in their conclusions on the physiological benefits of expressive suppression," he said. Adding, "these changes in one's facial expressions actually help change how one feels."

These studies together with many others have made clear the fact that concealing

"...strongly suggests that expressive suppression is also playing an integral role in promoting mental health."

emotions in social situations can have long lasting rewards.

Some evolutionary similar animals possess capable expressive suppression skills too.

Research led by Dr. Masha Schneider, an anthropologist at Stanford University and member of the EECU, has looked at the evolutionary significance of expressive suppression. Her research is based largely on field work with primates and genotyping. In her article appearing in the last December issue of the *Anthropological Science*, Dr. Schneider reported that "many Hominidae [chimpanzees, gorillas, orangutans] share emotion regulation strategies with humans." In particular, she noted, "just like in humans, expressive suppression among

the Hominidae have important implications for successful social functioning and, surprisingly, overall wellbeing."

To conclude, research findings from a wide range of studies, including large-scale longitudinal studies, rigorous experiments, and genetic analyses, converge to one major conclusion: Expressive suppression seems to be an important skill that can be advantageous in social situations. ♦