

# The Cognitive Consequences of Concealing Feelings

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**ABSTRACT**—*When emotions arise, we are not powerless to overcome them: Adults actively regulate the extent to which their emotions are experienced and expressed in everyday life. Often, these efforts are aimed at looking and feeling better. However, theories of self-regulation and emotion suggest that some forms of emotion regulation may have unintended consequences for cognitive functioning. This article reviews studies that link expressive suppression, which involves concealing outward signs of emotion, with degraded memory, communication, and problem solving. Explanations for these consequences are considered, along with the possibility that not all forms of emotion regulation are cognitively costly. Recent research suggests that reappraisal, which entails changing how we think about an event to neutralize its emotional impact, leaves cognitive functioning intact. Thus, the cognitive consequences of keeping one's cool may vary according to how this is done.*

**KEYWORDS**—*cognition; emotion; memory; regulation; suppression*

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Are you an open book—always showing what you feel? Or do you take great pains to keep your inner emotional states from showing to the people around you? For example, you might try to look calm and composed during a job interview despite feeling so anxious you want to throw up. Or you might strive to appear unfazed by a friend's awful culinary experiment that you would much rather feed to a dog. And not your own dog, either.

If you occasionally (or frequently) try to decrease the extent to which your emotions show, you likely are hoping to produce beneficial affective consequences, such as looking or feeling good despite emotionally trying times. There is mounting evidence, however, that these emotion-regulatory efforts may have unintended cognitive consequences. My goal in this article is to consider whether keeping emotions one feels on the inside from showing on the outside has cognitive consequences, and if so, why this might be.

## EXPRESSIVE SUPPRESSION: A COMMON EMOTION-REGULATORY STRATEGY

Emotions can be regulated in many ways, but expressive suppression, or the conscious inhibition of emotion-expressive behavior, is a par-

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ticularly common staple in our emotion-regulatory repertoire. For example, undergraduates who kept diaries of their emotion-regulatory experiences over 14 days reported inhibiting outward signs of emotion one quarter of the time (Gross, Richards, & John, in press). Similarly, researchers have shown that more than one third of individuals' efforts to deceive others involve inhibiting feelings (DePaulo, Kashy, Kirkendol, Wyer, & Epstein, 1996).

Typically, people conceal feelings to foster the illusion that they are calm, cool, and collected. But impression management is not all that matters in emotional situations. Peak cognitive performance is also important. In view of increasing evidence that emotional and cognitive processes are tightly intertwined in everyday life (Damasio, 1994), researchers have begun to examine whether concealing feelings influences our ability to perform common cognitive tasks, such as forming memories and communicating with other people.

## COGNITIVE CONSEQUENCES OF EXPRESSIVE SUPPRESSION

How might expressive suppression influence cognitive functioning? One possibility, of course, is that suppression has no cognitive consequences whatsoever. After all, the motivation and skills necessary to control emotions emerge early in life and become commonplace by adulthood (Gross, 1998). These considerations might lead one to expect that expressive suppression is so overlearned and effortless that it has no discernible effect on cognitive performance in adults.

Other considerations, however, lead to a rather different conclusion. Cybernetic control models of self-regulation (e.g., Carver & Scheier, 1981; Larsen, 2000) suggest that efforts to maintain or change behavior evoke a negative-feedback loop whereby the existing condition of a system (e.g., the expression on one's face) is compared to a behavioral standard or goal (e.g., wanting to appear emotionally neutral). If a discrepancy between the two is detected (e.g., grimacing when one wishes to appear neutral), an operating process is evoked to lessen this discrepancy and achieve the desired state or behavior (e.g., appearing emotionally neutral). Although these self-monitoring and self-corrective processes may permit us to conceal feelings successfully, they could end up diverting finite attentional resources away from other things we may be doing at the same time, thereby disrupting how well we can do those other tasks. Does this mean that concealing feelings actually might have cognitive costs?

## Consequences for Memory

To test whether expressive suppression affects cognitive functioning, several interlocking studies have focused on memory—a cognitive

process that is particularly crucial in everyday life. In two initial studies (Richards & Gross, 1999), participants viewed several slides of injured men that produced transient increases in negative emotions. As slides were presented, information concerning each man (i.e., name, occupation, injury he sustained) was presented orally with his slide. Expressive suppression was manipulated by randomly assigning participants to one of two instructional conditions: Suppressors were asked to refrain from showing emotion while watching the slides; control participants were not given any regulatory instructions. Results showed that suppressors were successful at appearing unfazed by the upsetting slides. As predicted by the cybernetic model of self-regulation, suppressors also showed significantly worse performance on a memory test for the orally presented information.

The generality of these initial findings has been demonstrated in several related studies. For example, Bonanno, Papa, O'Neill, Westphal, and Coifman (2004) showed that people who concealed emotional facial expressions in response to unpleasant and pleasant slides remembered the slides less well than control participants. Thus, the effects of expressive suppression on memory appear to generalize to emotionally positive experiences and visual details. The effects of suppression on memory have also been studied in socially relevant contexts. For example, people who have been asked to conceal facial expressions while watching others argue have been found to remember the argument less well than control participants (Richards & Gross, 2000, Study 1). Similarly, a study of conversations revealed that romantic partners who were instructed to conceal both facial and vocal cues of emotion while talking about important relationship conflicts with each other remembered less of what was said than did partners who received no suppression instructions (Richards, Butler, & Gross, 2003).

These laboratory-based investigations manipulated suppression, thereby permitting a causal interpretation of results. However, one might wonder whether spontaneously occurring suppression in everyday life has cognitive costs as well. After all, suppression may be quite automatic and unlikely to consume attentional resources among people who do it habitually. One study addressed this possibility by examining links between memory ability and individual differences in expressive-suppression tendencies (Richards & Gross, 2000, Study 3). Results showed that individuals who reported habitual efforts to inhibit outward signs of their emotions reported more memory problems than individuals who rarely suppressed their emotions. Suppressors also performed more poorly on an objective memory test of emotional experiences they had recorded in a daily diary 1 week earlier. Thus, even when suppression is presumably well practiced, it is still associated with cognitive costs.

Why does expressive suppression impair memory? Expressive suppression does not influence self-reported negative emotion, so subjective emotional experience cannot be the culprit. By contrast, successful expressive suppression does lead to increases in some markers of physiological stress (e.g., constriction of blood vessels and electrical conductivity of the skin). However, research shows that the physiological work of suppression is uncorrelated with memory and, therefore, unlikely to explain why suppression impairs memory (Richards & Gross, 1999, Study 2).

A more promising explanation may be the one suggested by the cybernetic control model of self-regulation discussed earlier. A recent study (Richards et al., 2003) demonstrated that self-reported self-monitoring efforts were heightened among suppressors relative to control participants. That is, suppressors were more likely to report

thinking about their behavior and the need to control it during a conversation. Further, increases in self-monitoring predicted decreases in memory for what was said. That is, people who reported thinking a lot about controlling their behavior had particularly impoverished memories. However, additional research is needed to confirm whether self-monitoring actually exerts a causal effect on memory.

### Consequences for Social Interaction

If expressive suppression consumes attentional resources—by way of either self-monitoring or some other process—its effects should extend beyond the realm of memory. Recent research has focused specifically on whether inhibiting emotions disrupts the flow of communication during face-to-face interactions. In one study (Butler et al., 2003), unacquainted pairs of women were asked to view an upsetting film and then talk about their reactions with each other. In one type of pairing, neither partner was given instructions about how to express herself during the conversation. In another type of pairing, one partner was instructed to suppress outward signs of emotion (unbeknownst to her partner); the other partner was given no instructions. Results showed that suppressors were less responsive than nonsuppressing participants, as evidenced by being less likely to acknowledge what their partner was saying during the conversation. Moreover, when suppressors did respond, they were slower to do so. Unfortunately, these speech disturbances appear to have adverse social consequences. Partners of suppressors reported reduced feelings of rapport during the conversation. Analyses confirmed that this effect was explained by suppressors' deficits in responsiveness.

These findings are broadly consistent with studies on interpersonal deception, which have linked efforts to suppress truthful thoughts and feelings with reduced responsiveness, reduced complexity of utterances, increased rates of grammatical errors, and decreased verbal fluency (DePaulo, Stone, & Lassiter, 1985). A recent statistical analysis combining the results of numerous studies showed that one particular type of speech disturbance, namely, repetitions of words and phrases, appears to be the most reliable verbal marker of deception (DePaulo et al., 2003). Although the cognitive disturbances associated with deception typically are attributed to people's efforts to control what they say during the lie, the research on expressive suppression suggests that "simply" controlling what we show on our faces is sufficient to degrade at least some aspects of communication.

### EXPRESSIVE SUPPRESSION AND ENERGY DEPLETION

The research reviewed so far is generally consistent with the theoretical proposition that suppressing emotional responses consumes attentional resources. This would explain why concealing feelings disrupts simultaneous performance of cognitive tasks. Taking this line of reasoning one step further, we might ask whether concealing feelings also compromises performance on subsequent cognitive tasks.

According to the ego-depletion view (Baumeister, Bratslavsky, Muraven, & Tice, 1998), self-regulatory efforts of many types consume some limited resource akin to "strength" or "energy." As a result, one act of self-regulation should reduce the self's capacity or willingness to engage in a subsequent act of self-regulation. To test this prediction, Baumeister et al. (1998) asked some participants to "conceal or suppress any emotional reaction" while viewing an upsetting film.

Results revealed that suppressors showed poorer performance on a subsequent anagram problem-solving task (i.e., unscrambling letters to form words) than control participants did. In fact, an ego-depletion effect has been found for multiple forms of self-regulation, ranging from suppressing particular kinds of thoughts to resisting temptation.

### COGNITIVE COSTS FOR EXPRESSIVE SUPPRESSION BUT NOT COGNITIVE REAPPRAISAL?

Research on both the immediate and the delayed cognitive consequences of expressive suppression paints a consistently grim picture of its effects on memory and social interactions. Are such consequences common to all forms of self-regulation, as predicted by the ego-depletion view of Baumeister and his colleagues? Or is there something especially costly about suppression, as compared with other forms of emotion regulation? It would be poor design indeed if all emotion-regulatory strategies we use in everyday life degraded ongoing and vital cognitive processes.

On the basis of an analysis of when different emotion-regulation strategies intervene in the generation of emotion, my colleagues and I have predicted that some forms of emotion regulation should not be cognitively costly. This prediction follows from a theoretical model of emotion that distinguishes between cognitively focused reappraisal and behaviorally focused expressive suppression (Richards & Gross, 2000). According to this model, reappraisal is evoked at the front end, or very early on during a potentially emotional event. Specifically, reappraisal involves reinterpreting a potentially emotional situation up front in a way that neutralizes its emotional impact. Suppression, by contrast, occurs at the back end, or after emotions have been triggered. Thus, suppression can be thought of as mopping up one's emotions; reappraisal keeps them from spilling in the first place. For example, suppression during a job interview would entail chronic efforts to conceal feelings that press constantly for expression. By contrast, successfully reappraising the interview beforehand as nothing to worry about should keep full-blown emotions from arising in the first place, thereby obviating the need for chronic regulatory effort during the interview. Thus, suppression should consume attentional resources as an event unfolds, but reappraisal should not. If this reasoning is correct, we might expect that suppression—but not reappraisal—has cognitive costs.

Results of several experiments that manipulated reappraisal support this hypothesis. For example, participants who adopted the neutral perspective of a medical doctor while watching slides of injured people (i.e., reappraisers) felt less emotional than control participants who received no regulation instructions but remembered the slides just as well (Richards & Gross, 2000, Study 2). Similarly, romantic partners who reappraised potentially upsetting conversations about relationship problems by thinking about the positive aspects of their relationship beforehand showed better memory for the conversations than partners who were asked to suppress their emotions while the conversations took place (Richards et al., 2003). Moreover, another study showed that reappraisal in the context of an upsetting conversation did not compromise verbal engagement or responsiveness (Butler et al., 2003). Finally, research taking an individual differences approach has shown that people who habitually regulate their emotions by altering how they think about life events (e.g., looking on

the bright side) have no better or worse memory than people who do not habitually reappraise (Richards & Gross, 2000, Study 3).

### DIRECTIONS FOR FUTURE RESEARCH

Research on the cognitive consequences of emotion regulation is of relatively recent vintage. On balance, the available evidence suggests that expressive suppression can interfere with memory, aspects of discourse, and problem solving. However, not all forms of emotion regulation are cognitively costly. Reappraisal appears to be a strategy that allows people to look and feel better emotionally without impairing the areas of cognitive functioning studied thus far.

Despite recent empirical progress in understanding how emotion regulation influences cognitive functioning, a number of important questions remain unanswered. The first group of questions pertains to the scope of the cognitive consequences of expressive suppression. For example, is the cognitive load of concealing feelings sufficient to undermine a job applicant's performance during a stressful interview? Might jurors' efforts to appear stoic during a trial compromise their ability to make evidence-based decisions? Do students' efforts to appear calm and collected during an exam degrade their performance? Additional research is necessary to uncover the generality and limits of the cognitive consequences of suppression.

A second group of questions concerns the relative effects of different forms of emotion regulation. After all, reappraisal and suppression are not the only strategies people use to decrease unwanted emotions. Future research should examine the cognitive consequences of other emotion-regulatory strategies, such as thought suppression, rumination, and masking (i.e., showing an emotion other than the one that is actually felt). Only by studying multiple strategies can we begin to learn which strategies may be most preferable to use when peak cognitive performance is important to us.

A third group of questions concerns methodology. How should the cognitive consequences of emotion regulation be studied? The research reviewed here relied almost exclusively on explicit instructions to manipulate the regulatory processes of interest. This approach permits a high degree of control. However, future research should also use less explicit manipulations. For example, one might introduce or remove critical situational factors (e.g., the presence of other people, social norms, goals) to prompt spontaneous efforts to alter emotional responding. This approach is crucial not only for documenting the cognitive consequences of emotion regulation, but also for clarifying the types of situations that inspire people to regulate their emotions in the first place.

Several other important questions await attention. It is still not known precisely how people go about regulating their emotions in everyday life or when these strategies are particularly likely to degrade cognitive functioning. Moreover, it is not known whether people can overcome any deleterious consequences of emotion regulation. If people are aware that suppression can impair cognition, can they preserve cognitive functioning by trying harder to remember something or to be an articulate conversationalist?

Answers to these and other questions about the intersection of emotion regulation and cognition subserve not only the practical goal of knowing when and how emotion regulation may promote or degrade optimal functioning in everyday life, but also the broader theoretical goal of clarifying what it means to be "emotionally intelligent."

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**Recommended Reading**

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