

# Examining the Impact of Cognitive Reappraisal and Expressive Suppression on Psychological and Social Functioning in a Chinese Sample

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**Abstract:** Prior studies have found that the two primary emotion regulation strategies, cognitive reappraisal and expressive suppression, relate differentially to psychological outcomes. Reappraisal was found to associate with positive psychological outcomes in general, and suppression was found to associate with negative psychological outcomes. However, these studies were conducted in Western countries and the generalizability of these findings in collectivistic population is questionable. The current study aimed to examine the effect of reappraisal and suppression in a Chinese sample to test the replicability of previous findings as well as to test whether the two strategies may influence interpersonal problems that individuals from the Chinese population encounter. Results from correlational analysis showed that even with a small sample, cognitive reappraisal associate strongly and significantly with social support, and expressive suppression associate significantly with individuals' affective states and life satisfaction. Future studies are encouraged to examine the effect of emotion regulation on the same set of outcome variables using a larger, well-powered sample that is more representative of the Chinese population.

## 1. Background of antecedent- and response-focused emotion regulation

Individuals' emotional experiences are often triggered by specific emotional cues from the environment. While these emotional responses to external stimuli often occur naturally, in real life situations, people may also have the need to modulate their emotion with the purpose of adjusting their emotional response to fit their personal desire. There are two primary strategies that people often use to regulate their emotions: cognitive reappraisal and expressive suppression (Gross & John, 2003). Cognitive reappraisal is an antecedent-focused approach, which works on the event or environmental cue that precedes people's emotional responses. People use cognitive reappraisal to modulate their emotional experiences by reevaluate the emotion-eliciting situation to trigger a different, often more desirable emotional response than the cue may evoke at the first place. In contrast, expressive suppression is a response-focused approach that works after individuals have already responded to a situation emotionally. People use expressive suppression to modulate their emotional experiences by holding down their emotional reactions and not showing them explicitly.

For example, when someone failed an exam, in general, the person is likely to feel extremely distressed. They may think that they would disappoint their parents or think that they are much worse than their peers. In worse situations, they may stay upset for several days and do not engage in social activities as usual. One way that the person can modulate these negative emotional reactions is to treat the failure as an opportunity and challenge them to do better next time (i.e. cognitive reappraisal). The person may even think that the current failure leaves larger room for them to make improvements. Another approach that the person may take is to not show their distress and act like the failure did not influence them (i.e. expressive suppression).

It is important for us to study emotional regulation because people's emotional experiences constitute major parts of their daily life and can influence their mental health status profoundly. Many types of psychopathology (e.g. depression, anxiety) root in maladaptive emotional regulation strategy. Thus, examining both beneficial and maladaptive approaches that people use to modulate

their emotion can help us better understand the mechanism of people's emotional experiences and factors that may intervene in affective processes.

## **2. Past literature on the effects of cognitive reappraisal and expressive suppression**

When studying individual differences in cognitive reappraisal and expressive suppression, Gross and John (2003) found that cognitive reappraisal is generally associated with positive psychological outcomes and expressive suppression is generally associated with negative psychological outcomes. Their study showed that cognitive reappraisal was negatively associated with depression and experiences of negative emotions, and at the same time positively associated with life satisfaction, self-esteem, optimism, and well-being. Expressive suppression showed the exact opposite pattern: those who tend to regulate their emotions by holding them down tend to experience more negative emotions, show higher level of depression, and at the same time be less satisfied with life, have lower self-esteem, be less optimistic, and have lower level of well-being in general.

Later studies have further unpacked the differential effect of cognitive reappraisal and expressive suppression: Goldin and colleague (2008) found that reappraisal and suppression not only differ in the emotional experiences that they lead to, but also differ in their neurological processes. Kalokerinos, Greenaway, and Denson (2015) found that cognitive reappraisal can downregulate both negative and positive emotional experiences, and expressive suppression does not downregulate either negative or positive emotional experiences. Such results implied that the effect of the two emotion regulation strategies can be situational: when experiencing positive emotions, expressive suppression may be more beneficial than cognitive reappraisal because it helps people keep their behaviors under control, and at the same time maintain their internal positive experiences. However, choosing a beneficial emotion regulation strategy may be more critical when people are experiencing negative emotions, in which case reappraisal would be more effective than suppression. Dryman and Heimberg (2018) conducted a systematic review that examined how emotion regulation is associated with two common mental disorders: social anxiety disorder and major depressive disorder. They found that individuals with social anxiety disorder tend to use cognitive reappraisal ineffectively, and individuals with major depressive disorder tend to underuse cognitive reappraisal to regulate their emotion. Such pattern implies the important role of cognitive reappraisal in maintaining healthy affective status. They also found that people with social anxiety tend to use expressive suppression when encountering negative emotional experience, which supports previous findings that expressive suppression can lead to negative psychological outcomes.

## **3. Aims and hypotheses of the current study**

Prior studies have found that reappraisal and suppression relate differentially to psychological outcomes, but most of these studies were conducted in the Western cultural context. While it is believed that emotional experiences are largely shared among different cultural groups and there are fundamental elements of emotion that can be applied universally (Matsumoto & Ekman, 1989), there is not enough evidence showing that emotion regulation affect individuals from the different culture backgrounds the same way. Although some of the studies on emotion regulation did include ethnic minority population with cultural diversity in their sample (e.g. Gross & John, 2003), the sampled population was still studied within the Western context. Thus, it is risky to assume that prior findings on emotion regulation can be generalized to other cultural contexts. Cultural researchers have found that in collectivistic culture that emphasizes interdependence and cultural harmony, expressive suppression may be considered functional and prosocial because it promotes socially appropriate behaviors that benefit relationships (Uchida et al., 2009). One recent study conducted in a Taiwan found that the suppression and arousal tend to coexist in adolescent boys and interaction of the two strategies helped alleviating psychosomatic symptoms and social withdrawal (Yeh et al., 2017). The finding provided empirical support that emotional regulation may function differently in collectivistic culture when compared to individualistic culture.

Given the important role of emotion regulation in people's day-to-day life, and that persistent maladaptive use of emotion regulation can negatively impact individuals' mental health (e.g. increase the level of depression). It is important to investigate whether the two commonly used emotion regulation strategies, cognitive reappraisal and expressive suppression, function differently in non-Western cultural context, so that we can avoid misleading assumptions that can harm, for example, treatment progress. If a therapist in China assumes that general findings on the negative impact of suppression is universally applicable and encourage their clients to not use it while suppression is beneficial in the Chinese context, the treatment approach may impose harm. As a result, the first aim of this study was to examine whether findings from past literatures on the impact of cognitive reappraisal and suppression can be replicated in a Chinese sample. More specifically, we aimed to examine the impact of emotional regulation on affect, social support, life satisfaction, and pathological emotional experiences.

Given that social relationship is highly valued in Chinese context and that emotion regulation (e.g. expression) is theorized to have critical social consequences, we also aimed to extend the scope of influence that cognitive reappraisal and expressive suppression potentially have to social factors that haven't been examined by previous studies. More specifically, we aimed to explore whether cognitive reappraisal and expressive suppression would influence problems that individuals tend to encounter in social situations. Interpersonal problems were assessed using the Interpersonal Circumplex model (IPC; Leary, 1957), which is a model that is commonly used to describe interpersonal behaviors using two orthogonal dimensions: warmth (also called communion) and dominance (also called agency). By using a measure for interpersonal problems that was developed from such a parsimonious structure (see the method section for details), we were able to assess a variety of problems that people typically encounter in social interactions.

Drawing from broad literature on cognitive reappraisal and expressive suppression, we hypothesized that cognitive reappraisal would be associated with adaptive psychological outcomes and expressive suppression would be associated with maladaptive psychological outcome. That is, we hypothesized that individuals who score high on cognitive reappraisal would be more likely to experience more positive emotion, feel more socially supported, be more satisfied with their life, and at the same time experience less negative emotion and emotion-related symptoms (i.e. depression, anxiety, stress). Individuals with high scores on expressive suppression were hypothesized to experience more negative emotion, more emotion-related symptoms (i.e. depression, anxiety, stress), and at the same time experience less positive emotion, feel less socially supported, and be less satisfied with their life. For the effect of emotion regulation on interpersonal problems, since there are few existing studies that investigated this topic, we wanted to explore whether cognitive reappraisal and expressive suppression would influence the types and degrees of problems that individuals tend to encounter in social situations.

## **4. Method**

### **4.1 Participants**

Sixty-six participants were recruited to complete an online survey. We excluded responses that missed more than two out of nine attention checks in the survey. Our final sample consisted of 47 participants, among which 30 identified as female. 37 of our participants were students when they completed the survey, among which 34 were high school students. The age of our participants ranged from 14 to 50 ( $M = 20.77$ ;  $SD = 7.52$ ). 15 participants reported an annual family income of two hundred thousand yuan (i.e. Chinese currency) or below, 20 participants reported an annual family income between two hundred thousand and a million yuan, and 12 participants reported an annual family income of a million yuan or above.

### **4.2 Measures**

Emotion regulation. We measured emotional regulation using the Emotion Regulation Questionnaire (ERQ; Gross & John, 2003), which is a 10-item measure that assesses individuals'

regular use of the two emotional regulation strategies (cognitive reappraisal and expressive suppression) using a Likert scale that ranges from 1 (not at all) to 7 (extremely). Sample item from the scale include “When I want to feel more positive emotion (such as joy or amusement), I change what I’m thinking about [assessing cognitive reappraisal]”. We administered the Mandarin version of the scale translated and validated by Zhao and colleagues (2015). Cronbach’s alpha was .83 for cognitive reappraisal and .72 for expressive suppression.

Interpersonal problems. We measured interpersonal problems using the Inventory of Interpersonal Problems – Short Circumplex (IIP-SC; Soldz et al., 1995), which is a 32-item measure that assesses problems that individuals typically encounter in interpersonal situations using a Likert scale that ranges from 1 (not at all) to 5 (extremely). The items measure the eight octants of the interpersonal problems circumplex, with 4 items included per octant. Sample item from the scale include “I try to please other people too much [assessing warm problem].” We administered the Mandarin version of the scale translated and validated by Wu and colleagues (2015). Cronbach’s alpha for the octants ranged from .51 to .76 ( $M = .64$ )

Negative and positive affect. We measured valence of affect using the Chinese version of the Positive Affect and Negative Affect Schedule (PANAS; Qiu, Zheng & Wang, 2008; Watson, Clark & Tellegen, 1988), which is a 18-item measure that assesses individuals’ feelings of positive and negative emotions using a scale that ranges from 1 (very slightly or not at all) to 7 (extremely). Sample item from the scale include “Happy [assessing positive emotion]”. We administered the Mandarin version of the scale translated and validated by Qiu, Zheng, and Wang (2008). Cronbach’s alpha was .95 for positive affect and .92 for negative affect.

Emotional dysregulation symptoms. We used the short form of the Depression Anxiety Stress Scales DASS-21; Lovibond & Lovibond, 1995) to assess individuals’ symptoms related to depression, anxiety and stress. This measure includes 21 items that are rated on a scale ranging from 0 (Did not apply to me at all) to 3 (Applied to me very much or most of the time). Sample item from the scale include “I found it hard to wind down [assessing stress]”. We administered the Mandarin version of the scale translated the validated by Chan and colleagues (2012). Cronbach’s alpha was .88 for depression, .88 for stress, and .91 for anxiety.

Life satisfaction. We measured individuals’ life satisfaction using The Satisfaction With Life Scale (SWLS; Diener et al., 1985), which is a short 5-item measure that assesses individuals’ level of life satisfaction using a scale that ranges from 1 (Strongly disagree) to 7 (Strongly agree). Sample item from the scale include “In most ways my life is close to my ideal”. We administered the Mandarin version of the scale translated by Mantak Yuen at Hong Kong Univeristy. Cronbach’s alpha for this scale was .87.

Social support. We measured social support using The Social Support Rating Scale (Xiao, 1994), which is a 10-item measure that assesses social support in the context of Chinese culture. We selected eight out of 10 items that were applicable to our sample (e.g. most of our participants do not have colleagues, which was asked in the full scale) and summed them up to generate the total support score. All the items that we selected were rated on a scale from 1 to 4, with 4 representing the highest level of support and 1 representing the lowest level of support. Cronbach’s alpha for this scale was .64.

### **4.3 Procedure**

Participants in this study were recruited using the snowballing method, and all participants accessed the online survey through a QR code. The survey included a set of measures that assessed their use of emotion regulation strategy, psychological functioning, emotional experiences, and interpersonal problems. We obtained informed consent from all participants at the beginning of the survey.

### **4.4 Analysis**

We used bivariate correlations to analyze the associations between the two types of emotion regulation strategy (i.e. cognitive reappraisal and expressive suppression) and the set of outcome

variables, including negative and positive affect, emotion-related psychological symptoms (i.e. depression, anxiety, and stress), social support, life satisfaction, and interpersonal problems.

## 5. Results

Correlations between emotion regulation and psychological functioning factors were presented in Table 1. Cognitive reappraisal ( $M = 25.87$ ,  $SD = 7.29$ ) showed a significant, moderate positive correlation with social support ( $r = .40$ ,  $p < .01$ ), indicating that people who tend to regulate their emotion by reevaluating the situation preceding their emotional responses tend to get more support from others. Reappraisal did not show any significant effect on the other variables. Expressive suppression ( $M = 14.57$ ,  $SD = 5.31$ ) was moderately and negative correlated with positive affect ( $r = -.30$ ,  $p < .05$ ), moderately and positively correlated with negative affect ( $r = .29$ ,  $p < .05$ ), and moderately and negative correlated with life satisfaction ( $r = -.37$ ,  $p < .05$ ), indicating people who tend to regulation their emotion by not expressing their emotional reactions to certain events are less likely to experience positive emotions and more likely to experience negative emotions. Furthermore, they tend to be less satisfied with their life.

Correlations between emotional regulation and interpersonal problems were presented in Table 2. Neither cognitive reappraisal nor expression suppression showed statistically significant effect on any of the eight types of interpersonal problems. However, it is important to note that given our small sample size, the standard deviations of the interpersonal problems were large, and on some of the octants the standard deviation was close to the mean (e.g. cold, cold-submissive). These factors likely contributed to high probability that the results were produced by chance. However, across all the octants we were able to find a consistent pattern that distinguished cognitive reappraisal and expression suppression: the correlations between cognitive reappraisal and the interpersonal problems were close to zero, but the expressive suppression and the interpersonal problems were generally much larger.

Table.1. Correlations between emotional regulation and psychological functioning (N=47)

	Cognitive Reappraisal	Expressive Suppression	M	SD
Positive affect	.23	-.30*	28.26	7.13
Negative affect	.12	.29*	22.62	6.88
Depression	-.11	.28	5.36	4.66
Anxiety	-.12	.18	5.77	5.06
Stress	-.04	.23	7.17	4.77
Life Satisfaction	.10	-.37*	20.23	6.71
Social Support	.40**	-.12	21.17	3.53

Note: \* $p < .05$ , \*\* $p < .01$ .

Table.2. Correlations between emotional regulation and interpersonal problems (N=47)

	Cognitive Reappraisal	Expressive Suppression	M	SD
Dominant	-.07	.17	3.28	2.37
Cold-dominant	-.06	.20	3.40	2.44
Cold	.02	.28	3.30	2.37
Cold-submissive	-.01	.12	3.98	3.25
Submissive	-.01	.07	5.13	2.89
Warm-submissive	-.09	.27	5.06	3.02
Warm	.03	.18	5.21	3.20
Warm-dominant	-.04	-.13	5.74	2.90

Note: \* $p < .05$

## 6. Discussion

Findings from the current study showed that in the small Chinese sample that we collected data from, cognitive reappraisal was positively associated with social support and expressive suppression

was associated with low level of positive affect, high level of negative affect, and low level of life satisfaction. Although the two emotion regulation strategies did not show significant effect on depression, anxiety, and stress, across all three emotion-related psychological symptoms, we found consistent negative correlations for reappraisal and positive correlations for suppression. It is likely that our small sample size limited the power we have to detect some of the existing effects, but among the effects that we found to be significant, it is clear that our results were on the same direction as the influence of cognitive reappraisal and expressive suppression that were found previously in Western samples, implying the generalizability on the mechanism of cognitive reappraisal and expressive suppression across cultural context.

We also tested the impact of cognitive reappraisal and expressive suppression on interpersonal problems in our study as an extension from previously interested outcome variables of other researchers. Although our results were not statistically significant, the highly consistent pattern that we found across the eight octants (i.e. correlations between expressive suppressions and interpersonal problems were much larger than correlations between cognitive reappraisal and interpersonal problems) implied the potential effect of emotional regulation on interpersonal problems in Chinese population. One major limitation of our study is the small sample size and the high heterogeneity within our sample (e.g. large age range). Given the highly consistent patterns of effect that we detected, our preliminary results can serve as a base for future researchers to explore whether the patterns we detected are true in more sufficiently powered studies. Future studies are encouraged to examine the effect of cognitive reappraisal and expressive suppression on the same set of outcome variables as the current study using a larger sample that is more representative of the population of interest.

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