



# The Impact of Student Emotion Granularity on Cognitive Reappraisal Towards Teachers

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**Abstract.** A useful technique for controlling emotions is cognitive reappraisal, which plays a significant role in education. The cognitive reappraisal of an individual is influenced by a variety of scenarios. This study examined the impact of emotion granularity on cognitive reappraisal from multiple perspectives in a learning environment. Study 1 looked at the effect of emotion granularity on reducing the negative motion in the educational setting by employing visual material and cognitive reappraisal. Study 2 looked at how emotion granularity affected the degree of pleasant feeling in a learning environment. According to the findings, emotion granularity may have an impact on students' cognitive reappraisal, which is shown by a decrease in negative feeling and an increase in favorable feelings for their teachers. From the teacher's perspective, teachers should actively utilize the conclusion to guide students to have positive emotions towards teachers. From the student's perspective, students should identify categories of emotions and find out what triggers them in order to manage their emotions in a rational way.

**Keywords:** Emotion Granularity, Cognitive Reappraisal Towards Teachers, EEG Index

## 1 INTRODUCTION

Cognitive Reappraisal has been recognized as an effective emotion regulation strategy, which is also an important role in the field of education. It has long been acknowledged academically that there are a number of factors affecting individual cognitive reappraisal. Previous studies paid less attention to the factor of emotion granularity which refers to the ability to successfully distinguish different emotion categories.

Only by distinguishing emotion in a reasonable and scientific way, students are able to regulate their emotions in a better manner. So therefore, studies aimed to investigate the influence of emotion granularity on cognitive reappraisal in educational situation.

Theoretically, conducting research on the students' emotion regulation towards their teachers provides a theoretical basis for teachers and educators to better utilize students' positive emotions in their classroom teaching and scientific research responsibility, in order to enhance teaching effectiveness, thus promote the enrichment of viewpoints in the field of educational psychology from another perspective.

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In addition, these studies have verified that emotional granularity develops the tendency to become an important and influential player in influencing cognitive reappraisal in educational situations, enriching and completing the conceptual-behavioral theory of emotion in terms of its application values in the field of education.

On the other hand, in educational practice, a number of students have difficulty in regulating their negative emotions towards teachers, and they skip or fail classes, as well as lose interest in a certain course, which lead to influence their future careers, and even when these negative emotions become more and more strong, persistent and difficult to control, they probably physically attack teachers and threaten their lives. By conducting research on students' regulation of their negative emotions toward teachers, it is able to provide a basis for strategies to build sound teacher-student relationships.

## 2 LITERATURE REVIEW

In previous studies, researchers have mostly used standardized emotion pictures as experimental materials (Langeslag and Van Strien, 2010)[1], such as the emotion materials in the International Affective Picture System (Lang, Bradley, and Cuthbert, 2008)[2], etc. Although they are widely used and able to effectively induce emotions, the ecological effects tend to be low and are more limiting in terms of inferences from findings.

Jiang, Vauras, Volet and Wang (2016) have conducted research on the teachers' emotion regulation and found that the usage of cognitive reappraisal strategies was more effective in regulating teachers' emotions than inhibitory expression strategies[3], but few studies have explored students' emotion regulation towards teachers.

Previously, researchers have usually utilized the LPP amplitude of the EEG as an indicator of cognitive reappraisal[4], while a few academics and scholars have also paid attention on EEG-related indicators of cognitive reappraisal[5]. Choi, Sekiya, Minote and Watanuki (2016) have made a conclusion that higher left frontal  $\alpha$  asymmetry occurs when cognitive reappraisal is performed compared to a neutral control condition[6].

In addition, Parvaz, Macnamara, Goldstein and Hajcak (2012) also identified a decrease in left-hand side  $\alpha$ -volatility during cognitive reappraisal than in the watching condition. Individuals with high cognitive reappraisal abilities will show higher left frontal  $\alpha$  asymmetry during cognitive reappraisal[7], especially in the ventral lateral prefrontal cortex as well as in the frontopolar region (Papousek et al., 2017)[8].

Emotional awareness refers to an individual's ability to recognize and describe their own and others' emotions. And emotional granularity pairs refer to an individual's ability to distinguish between different kinds of emotions of the same potency. First of all, both processes can be referred to as emotion awareness, whether in a specific, precise form (e.g., identifying and describing emotions as specific kinds, e.g., anxiety, sadness, etc.) or in a general, vague form (e.g., identifying and describing emotions only as pleasant or unpleasant). Emotional granularity, on the other hand, refers to the process of describing and recognizing the emotions demonstrates an ability to differentiate between different types of emotions. Second, the scope of the two is different: emotional

awareness includes the ability to recognize as well as describe the emotions of others, whereas emotional granularity only includes the ability to differentiate between one's own emotional experiences. Third, the two are measured differently, as emotional awareness is often measured by self-report, whereas emotional granularity is measured by the experience-sample technique.

Dysarthria is a condition in which individuals have difficulty recognizing as well as reporting their emotional states, which encompasses three dimensions: difficulty recognizing emotions, difficulty describing emotions, and externally directed thoughts. Difficulty recognizing and describing one's own emotional states has high similarity to emotional granularity, but some studies have found a low correlation between dysphoria and emotional granularity. Dysphoria focuses primarily on deficits in understanding, processing, and describing emotions, focusing more on external events than on internal ones. Emotional granularity refers to the ability to differentiate subjective emotional experiences into specific emotional categories and focuses primarily on the subjective experience of emotions.

Individuals with high emotional granularity tend to report their emotional experiences in a differentiated, specific style, e.g., using specific emotion words (e.g., angry, sad, etc.) to characterize particular emotions, and they show lower levels of co-occurrence between different kinds of negative emotional states or between different kinds of positive emotional states. Whereas individuals with low emotional granularity tend to characterize their emotional experience in a non-discriminatory way, only roughly report their emotional experiences in terms of pleasantness or unpleasantness, and they show low covariation between different kinds of positive or negative emotional states. They show a high degree of covariation between different kinds of positive or negative emotions. Measuring emotional granularity therefore requires obtaining correlations between multiple emotional.

The study also found a relationship between emotional granularity and mental health: patients with depression had a lower ability to differentiate negative emotions compared to a normal healthy control group. Individuals with borderline personality disorder also showed lower emotional granularity compared to healthy controls, and similarly, the results found that patients with autism showed poorer ability to discriminate negative emotions than healthy controls. The same results were also found in individuals with schizophrenia as well as in individuals with social anxiety disorder. Not only has the relationship between emotional granularity and mental health been found in adult studies, but it has also been found that emotional granularity can also affect adolescents' sense of well-being.

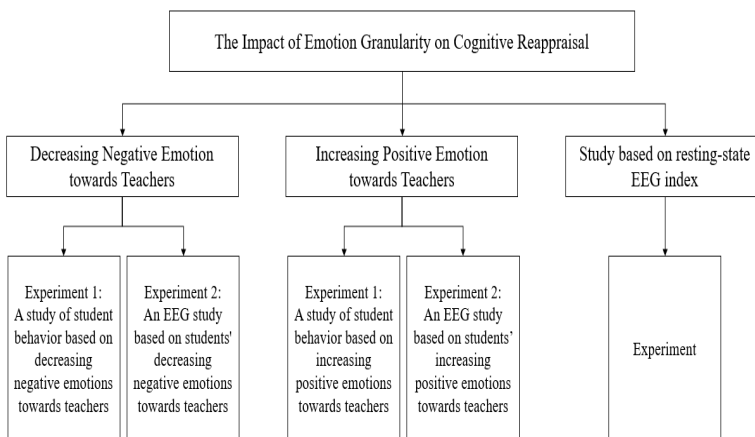
In the 1990s, psychology researchers started a wave of research on emotion regulation, which has been carried out in many fields such as clinical, health, social, and cognitive. In the research on emotion regulation, the concept of emotion regulation proposed by Gross has been widely adopted. He believes that emotion regulation refers to the process of changing the intensity, duration, experience, and expression of emotions through the activation of a goal, and he also distinguishes emotion regulation from the concepts of coping and mindfulness regulation. Compared to emotion regulation, coping focuses primarily on mitigating the stress response and has a longer time horizon (e.g., coping with the loss of a relative over the course of a month). The difference

between mindfulness and emotion regulation is that the former emphasizes changing the subjective experience of emotion, whereas emotion regulation involves not only changing the subjective experience of emotion, but also changing the individual's peripheral physiological responses. It also includes changes in peripheral physiological responses and behavioral responses that accompany emotions.

Individuals can change the intensity of emotions, the duration of emotions, and change the nature of emotional responses to implement emotion regulation. Emotion regulation is mainly in the form of augmentative and attenuative regulation. Attenuated regulation is when an individual makes an effort to reduce the intensity of an emotion. Generally, it is more often used in research to reduce negative emotions. Enhanced regulation refers to the individual's efforts to increase the intensity of the emotion as well as the duration of the emotion, generally referred to as enhancing positive emotions. In addition, there are two other specific forms of emotion regulation: attenuating positive emotions and enhancing negative emotions. For example, if you and your best friend take a test together, and you do very well, and he does poorly, you may have a problem. You have to suppress your joyful emotions in front of him, which is an example of weakening positive emotions. This is an example of dampening positive emotions. When your friend is in a bad situation, you need to make yourself as unhappy as he is. This is an example of weakening a negative emotion. However, in educational contexts, students need to weaken their negative emotions toward their teachers and enhance their positive emotions toward their teachers in order to promote harmonious teacher-student relationships and improve the effectiveness of teaching and learning.

In this study, we focused on the effects of emotional granularity on weakening negative emotions and enhancing positive emotions.

### 3 METHODOLOGY



**Fig. 1.** The Impact of Emotion Granularity on Cognitive Reappraisal

The research structure as well as the experiment development of this study can be seen from the Fig. 1 as above. This paper will explore the impact of emotion granularity on cognitive reappraisal from different perspective in the field of education situation.

Study 1 will explore the influence of emotion granularity on the decreasing the negative motion in the educational situation by cognitive reappraisal, with the picture material in the educational situation. First of all, from the perspective of behavior indicators, the influence of the emotion granularity on the quantity as well as the kind of the individual's cognitive reappraisal strategies are going to be investigated and reviewed, in order to check and identify whether the students with high emotion granularity can report more quantity and more kinds of cognitive reappraisal strategies.

Secondly, the experiment 2 of study 1 is going to conduct the corresponding research on the influence of emotion granularity on the EEG indicators in the middle of decreasing the negative emotion by cognitive reappraisal in the field of educational situation.

Study 2 will explore the influence of emotion granularity on increasing the positive emotion in the educational situation. First of all, from the behavior indicators, the influence of the emotion granularity on the quantity and kind of the students' cognitive reappraisal strategies will be investigated, to see whether there is any difference of the quantity as well as the kinds of cognitive reappraisal strategies between the high emotion granularity individuals and low emotion granularity individuals.

Secondly, the Experiment 2 of study 2 is going to conduct the corresponding research on the influence regarding emotion granularity on the EEG indicators in the middle of increasing the positive emotion by cognitive reappraisal in the field of educational situation.

## 4 CONCLUSIONS

In conclusion, the findings may as well indicate that emotion granularity is able to influence students' cognitive reappraisal, which is reflected in a decrease in negative feeling and an increase in positive sentiment towards their teachers. This study is able to provide the theoretical direction for cognitive reappraisal intervention in educational practice.

From the teacher's perspective, in terms of classroom teaching, moral development and student cultivation, teachers are ought to actively utilize the conclusion to guide students to possess and carry positive emotions towards their teachers and schools, so that students are able to be accessed with their schoolwork in a better and more reasonable manner and teachers can achieve better classroom quality and student cultivation results.

From the student's perspective, students should check and then identify the categories of their normal emotions as well as find out what triggers those emotions in the filed of education, in order to manage and regulate their emotions in a scientific and reasonable way.

In terms of the limitations and shortcomings, this article focuses solely on the distinguishes between positive emotions and negative emotions in stead of being specific

to a particular emotion. Therefore, considering the issue that there are a number of neutral emotions in the real world, such as awe and reverence, future research should taken this into account and be more specific to the division of emotions.

## REFERENCE

1. Langeslag, S.J., & Van Strien, J.W.(2010). Comparable modulation of the late positive potential by emotion regulation in younger and older adults. *Journal of Psychophysiology*, 24(3), 186-197.
2. Lang, P.J., Bradley, M.M., & Cuthbert, B.N.(2008). International affective picture system(IAPS): Affective ratings of pictures and instruction manual. Technical Report A-8. University of Florida, Gainesville, F L.
3. Jiang, J., Vauras, M., Volet, S., & Wang, Y.(2016). Teachers' emotions and emotion regulation strategies: Self and students' perceptions. *Teaching and Teacher Education*, 54, 22-31.
4. Pan, D., Hoid, D., Wang, Z., Wang, Y., & Li, X.(2020). Using questionnaires and task-related EEG signals to reveal hindered reappraisal and biased suppression in individuals with high schizotypal traits. *Scientific Reports*, 10, 5529.
5. Wei, L., W., Li, Y., & Yao, X.(2021). The Different EEG Activity During Cognitive Reappraisal Task for Fearful and Sad Stimuli. *Chinese Journal of Biomedical Engineering*, 40(1), 44-52.
6. Choi, D., Sekiya, T., Minote, N., & Watanuki, S.(2016). Relative left frontal activity in reappraisal and suppression of negative emotion: Evidence from frontal alpha asymmetry. *International Journal of Psychophysiology*, 109, 37-44.
7. Parvaz, M.a., Macnamara, A., Goldstein, R.Z., & Hajcak, G.(2012). Event-related induced frontal alpha as a marker of lateral prefrontal cortex activation during cognitive reappraisal. *Cognitive Affective and Behavioral Neuroscience*, 12(4), 730-740.
8. Papousek, I., Weiss, E.M., Perchtold, C.M., Weber, H., de Assuncao, V.L., & Schuler, G., et al.(2017). The capacity for generating cognitive reappraisals is reflected in asymmetric activation of frontal brain regions. *Brain Imaging and Behavior*, 11(2), 577-590.

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