

# Improving the Emotions Experienced: Regulation Strategies Used by Remote Learners during COVID-19

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**Abstract**—Emotion regulation represents behavioural and cognitive responses to a variety of emotions, some of which are beneficial to learning and affective outcomes, while others are detrimental. In the present study, the process model of emotion regulation was used as a guiding framework to reveal which emotion regulation strategies learners used in remote learning during COVID-19. Data were collected through semi-structured interviews with 23 remote learners. Findings revealed that learners used three phases of emotion regulation strategies in remote learning—situation-focused, task-focused, and self-focused. These findings not only contribute to educational research during emergencies by documenting the diverse and dynamic nature of emotion regulation, but also provide a glimpse into how educational policy makers and educators should modify course syllabi and policies based on learners' emotions and regulation strategies.

**Keywords**—emotion regulation strategies, emotions, COVID-19 emergency remote learning, cognitive reappraisal, expressive suppression

## I. INTRODUCTION

On March 11, 2020, the World Health Organization (WHO) declared COVID-19 (coronavirus disease) as a pandemic. This abrupt epidemic for educational institutions worldwide led to an abrupt shift to remote learning, compelling students to adapt to an entirely new mode of education. The replacement of traditional instruction by fully online instruction placed a severe psychological burden on learners [1, 2], in addition to the negative emotions (anxiety, worry, loneliness) directly or indirectly caused by the pandemic. As a result, the emotional experiences of remote learners became a critical focal point, as the isolation, uncertainty, and technological demands of virtual learning introduced a unique set of stressors and emotional challenges.

The literature indicates the importance of understanding emotion regulation and “the use of strategies to regulate emotions, which are closely related

to a person's emotional, cognitive, and social lives” [3]. “Accordingly, neither motivation or cognitive models alone can fully describe the various aspects of student academic learning, yet the two types of models are complementary due to the respective strengths and weaknesses of motivational and cognitive models.” ... “Regulation strategies are closely tied to monitoring strategies”, yet “students' management of their time and the actual place they choose to study are not cognitive or metacognitive strategies that may have a direct influence on eventual learning, but they are general strategies that can help or hinder students' efforts at completing the academic task” [4]. The issue of emotion regulation was found to “be particularly important in the context of COVID-19 remote learning” [5]. Thus, this study aims to use Gross' (1998) process model as a guiding theoretical framework to: (a) assess how remote learners used emotion regulation, and (b) document what strategies learners applied to their learning experiences to regulate emotions. Based on these results, it is hoped to provide implications for educational policies that highlight the need to promote the use of adaptive emotion regulation for learners in the context of a global health crisis.

As we navigate the ongoing challenges of the COVID-19 era, understanding and addressing the emotional needs of students engaged in remote learning is crucial for building resilience and ensuring a positive and effective educational experience. By examining the various regulation strategies employed by remote learners, this essay aims to contribute valuable insights that can inform educators, policymakers, and MOOC-designers in creating a more empathetic and supportive educational landscape in the post-pandemic world so as to improve college students' efficacy and well-beings in remote learning. Moreover, the findings can also provide pedagogical implications for the design of blended learning and for emotion intervention in foreign language learning.

## II. LITERATURE REVIEW

A variety of strategies can be used to regulate (increase, maintain, or decrease) emotions by intervening in specific

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Manuscript received January 5, 2024; revised March 5, 2024; accepted June 20, 2024; published November 29, 2024.

stages of emotion production [6]. Depending on the time point of intervention, each point represents a family of regulations: (1) situation selection, (2) situation modification, (3) attentional deployment, (4) cognitive change, and (5) response modulation. The first four families (antecedent-focused) occur prior to emotional activation, whereas the last strategy (response-focused) follows emotional activation [7].

Considering the significance of the distinction between antecedent- and response-focused strategies, two exemplars of each are cognitive reappraisal and expressive suppression. “If adopted in a timely manner, reappraisal can effectively modify subsequent emotional responses and lead to a decrease in negative emotions and an increase in positive emotions” [8]. Suppression has been found to be effective in reducing the behavioral expression of negative emotions but does not help in reducing the experiential component of negative emotions [3]. Studies conducted during COVID-19 across different disciplines have shown the need to investigate the issue of emotion regulation [9–12]. A study conducted with university-level learners taking a remote course during COVID-19 showed that “suppressors perceived more learning, whereas suppressors experienced more anxiety” [5].

### III. MATERIALS AND METHODS

Semi-structured in-depth interviews were conducted in order to facilitate communication with participants about COVID-19 emergency remote learning. A total of 23 home-studying students attending a university in southwest China were interviewed via network. Those students are voluntary and interviewed by an unfamiliar interviewer so that they are more candid about the related questions, as a result, the data collected will be more reliable. During the interview, participants were asked to: (a) briefly describe their learning during COVID-19, (b) describe what emotions they experienced, (c) think of examples of how they regulated emotions, and (d) discuss how emotion regulation affected their learning.

Charmaz [13] once recommended the procedures which this paper uses in data analysis. First, the data for references retrieved from the interview, ten-week self-report questionnaires, and students’ self-reflective journals. Second, the data were independently coded to develop initial themes. The analysis then focused on developing substantial themes by comparing codes and related quotes until the most important codes emerged. Descriptive codes were categorized given similarity or dissimilarity in interpretation. The iterative process continues until no new insights emerge in subsequent coding. NVivo 10.2.1 software was also used during the analysis process.

### IV. RESULT AND DISCUSSION

The iterative data analysis revealed three overarching categories. According to Gross’ (1998) process model, these categories fall into three phases (shown in Fig. 1.) along the timeline of unfolding emotional responses: (1)

Phase I – Situation-focused; (2) Phase II – Task-focused; and (3) Phase III – Self-focused. In Phase I, learners regulate emotions through situational choices or deployment of attention to situations. In Phase II, they focus on making changes by managing or modifying tasks. In Phase III, they focus on themselves by changing their mind-set or regulating their emotional responses.

Underneath the three broad categories shown in Fig. 1, twelve key themes were identified (i.e., avoidance of learning, doing nothing, distraction, planning or scheduling, prepping or reviewing, searching for information or taking notes, talking to others, suppression, reappraisal of emotion meaning, self-reminding, self-encouraging, self-reflecting). Some key themes may fall into more than one category. For example, “self-reflecting” is considered a self-focused strategy, because learners reflect on the emotions and behaviours of themselves. However, “self-reflecting” may also be interpreted as reflecting on a task in progress. Quotes related to each theme will be corroborated, analyzed, and discussed below.

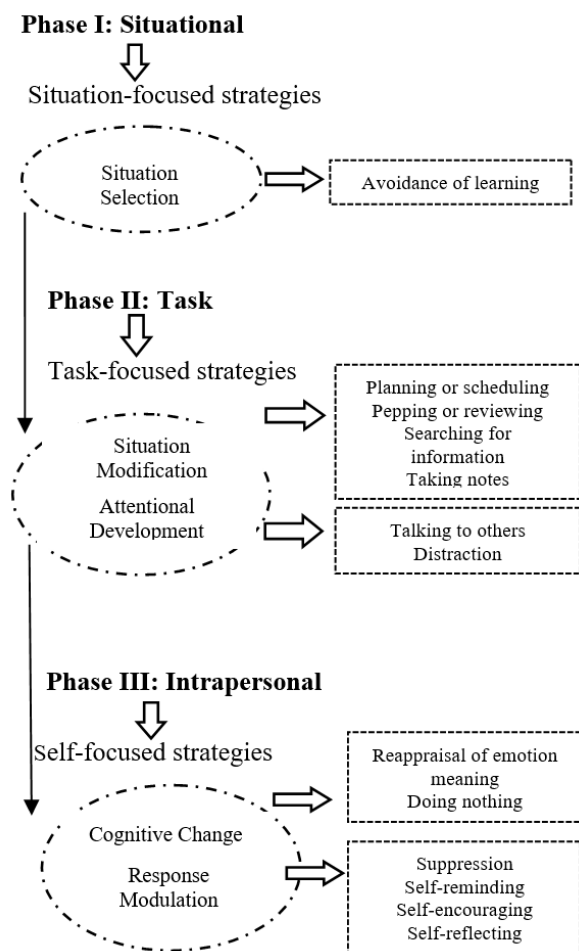


Fig. 1. The process model of remote learners’ emotion regulation strategies.

#### A. Phase I: Situation-Focused

Fig. 1 shows in this semi-structured interview, the first phase of this emotion regulation strategy concentrated on situation selection or deployment of attention to situations.

One significant strategy was uncovered: *avoidance of learning*.

Avoidance of learning was an unsurprising strategy used by respondents in their remote learning process, which is consistent with situation selection, temporally putting aside the tasks.

“That’s the case with *Advanced Mathematics*. I handed in the homework twice, but I made three mistakes for a total of seven questions. It was very annoying.” said Student No. 3.

Then, Student No. 6 stated that “I will find some fitness practices or aerobic activities on “*keep*” (an app for body building), and leave it aside for a while, not thinking about the assignments. If really annoyed and frustrated, I will avert the tasks, especially when I have no mood carrying on the activity at the time.”

Faced with troubles or hard problems, some respondents also mentioned an extreme practice to ease their excessive stress, and some participants will simply stop their learning process for the time being. Student No. 9 declared that “I will power off my computer.” and Student No. 10 announced that “I pretend to forget the problem when I encounter this kind of thing, I seem to hypnotize myself. It is not a big deal and forgetting it will be better.”

Obviously and precisely, the respondents would employ strategies of situational choice or situation deployment to regulate their emotions consciously as well as unconsciously. These findings, to a certain extent, deepen our understanding of human being’s seeking advantages and avoiding disadvantages, and also provide valuable references for educational policy makers, educators and developers, and operators of online courses to assess the quality and efficiency of the MOOCs.

#### B. Phase II: Task-Focused

The second phase focuses on making alterations through task management or modification. Five significant strategies were uncovered: planning or scheduling, prepping or reviewing, searching for information, taking notes, and distraction and engagement of other activities, which have previously been identified beneath the three overarching categories by Gross’ (1998) process model.

##### (1) Strategy 1: Planning or scheduling

By focusing on planning or scheduling of situation selection, respondents were effectively able to manage their emotions and continue carrying on their remote learning task. For example, Student No. 1 mentioned that “The completion of the scheduled task each day generally filled me with satisfaction.” Student No. 2 also mentioned “After completing my own plan each day, I always feel that I am quite comfortable with this, which will give me more time to reasonably arrange and coordinate my work, and then I can have my most concentrated time to study and it is very satisfying, and I think the most important thing is to arrange my own time reasonably.” These responses reflect that well planning or scheduling will efficiently pave the way for students to enhance and optimize their learning experience and increase their emotional satisfaction.

The core theme of planning was not only a strategy which participants used to manage their emotions, but also as an outcome of regulation (increase, maintenance, or decrease). Student No. 6 indicated “In fact, I am a person who prefers to arrange things for myself, rather than hoping that things oppress and force me to move forward, so I don’t like that, and basically, I will make a study plan for myself every day.” Student No. 10 even asserted that “If the teacher leaves us something (homework), I will immediately set the alarm or set it to the memo.” These findings provided support for the crucial role that planning or scheduling plays in the development of emotion regulation.

##### (2) Strategy 2: Prepping or reviewing

Prepping or reviewing constitutes a vital role in situation selection and plays an essential part in planning so that the students will well regulate their emotions in remote learning, such as the emotion arising from watching the micro-video, submitting the required work, the pressure of other assignment and coming up with questions or answers in the discussion zone. To a certain extent, prepping or reviewing can decrease and avert the negative emotions (anxiety, nervousness, fear) and increase the proficiency in remote learning.

“Previewing the (English) course in advance, I, affirmatively, will not have a particularly big problem and the point I understand is very closer to my teacher’s.” announced Student No. 8.

For example, Student No. 14 proclaimed that “in a MOOC learning, the teacher may leave us a little time to watch the micro-video in class, but sometimes I may go through the PPT handed out by my teacher ... In general, once the teacher releases a MOOC task, and I will finish watching it on weekends. Then, you may ... or review what the teacher said in class.”

Student No. 1 again said “Teachers usually hand out learning materials relevant to the in-class content, which I will review after class.” And Student No. 2 mentioned that “I think the best thing is that the online course or video can be replayed. However, in the live classroom, once you may miss this knowledge point or something, you can’t review it well, whereas online learning will enable you to review all of interactivities or knowledge points.”

Moreover, Student No. 1 affirmed that “Being anxious, I can only spend more time before and after class to try my best to keep up with the teacher’s pace.”

Apparently, the strategy of prepping or reviewing will greatly enable participants to ease their intensive emotions since they can avert stepping into an unknown situation which, in general, will increase some negative emotions. For one thing, this solution of prepping or reviewing has found its popularity and acceptance among the respondents in the remote learning situation. With facilitation of replay of the video, students will not worry about the reviewing and possible lagging behind other peers. For another, it’s unsurprising that the full prepping and reviewing can effectively decrease the participants’ worries in remote learning as they believe they should be able to make it up after reviewing relevant work.

(3) Strategy 3: Searching for information

To better prepare for the course and manipulate the emotion in remote learning, searching for information provided an effective strategy for participants to make out a proper learning schedule and decrease their anxiety and stress, giving them a sense of relaxation both in remote learning and in classroom learning.

Student No. 1 responded that “I might just go online and search it quickly...If, at that moment, I don’t know how to answer the question, I would search it on the Internet for reference. ... (For instance) in my Basic English class, the teacher asked me a question and I might not be able to answer it in spoken English, and then I would take the translated version on Baidu for reference.”

And Student No. 3 replied “While watching the video, I will browse the word for the specific pronunciation.”

“If I don’t understand a grammatical problem, such as certain fixed collocations or certain specific grammatical structures, I may enter this sentence online and check it out.” uttered Student No. 4.

The above quotes clearly demonstrated that searching for information was not only an approach to improve learning efficiency but also a practicable strategy to decrease psychological pressure in learning for these respondents.

(4) Strategy 4: Taking notes

Taking notes was another strategy the participants took in situation modification and three respondents mentioned the strategy of taking notes.

Student No. 3 once reported that “I think what was missing in remote learning was a lack of some interactivities and timely communications. I could take notes of the knowledge points similar to that in classroom learning.” and Student No. 4 verbalized that “I think it was the best way to record the problem in a notebook.”

With the question, Student No. 8 asserted that “Then if I still had some puzzles, I could only jot them down quickly.”

To tackle the problems or puzzles in MOOCS, the participants would take notes of those essential points for the sake of later discussion with peers or teachers, and in this way, they would greatly ease their anxiety in remote learning.

(5) Strategy 5: Distraction

To avert the pressure of continuous intensive learning, to regulate the positive emotions and increase the positive emotions in class, especially in remote learning, the participants mentioned the strategies of distraction of attention or the deployment of attention to situation.

Student No. 1 suggested that “After class, I usually watch some variety shows or something else to relax myself.” To alleviate the pressure and anxiety, Student No.4 &14 also advised that “I could listen to music, but I would not watch TV shows.”

To find a way out, Student No. 5 proposed that “Feeling sad or frustrated, maybe, I would get over by posting a complaint in WeChat Moments or having a word with someone. ... When I had night classes online

and felt tired in the past, I would find something to drink or eat.”

Student No. 6 once again mentioned that “To decrease my negative emotion or to cheer myself up, I would do some other things I want to do; for example, I might swipe my phone or do some sports.”

Student No. 7 also affirmed that “To get over from the bad mood, I would divert my attention by having a talk with others, and I would not indulge myself in an emotion, especially in a negative emotion.”

The above feedback provided a glimpse that educational policy makers and educators should modify course syllabi and that the online course developers and operators would take the learners’ practical and emotional needs into consideration and release some quality courses to optimize the learning experience, to arouse the learners’ interest in learning activity, and to decrease the learners’ psychological burdens.

*C. Phase III: Self-Focused*

The third phase focuses on cognitively changing remote learners’ mindset from the traditional classroom learning situation to independent online study. When participants regulated their emotions during their online learning, these respondents indicated that they concentrated on regulating themselves by viewing and experiencing the learning task. They regulated their emotion through talking to others, suppression, reappraisal of emotion meaning, self-reminding, self-encouraging, and self-reflecting.

(1) Strategy 1: Talking to others

Talking to others means the interpersonal communication about things and emotions among the students and functions as a regulation strategy used by participants through their learning process, which indicates that social support can be conducive to the problem-solving and emotional comfort, leading to better emotional outcomes. While the majority of remote learners were engaged in their learning task, they would regulate or modulate their emotions with the comfort or suggestions of others (school peers or teachers) in the remote learning.

Student No. 2 once pointed out “To relieve tension and anxiety to a great extent, it was better for the classmates to tackle problems together after class... you could chat with your partner about the problems so as to moderately ease the emotions since some homework was group work.” Even Student No. 12 often made complaints, saying “my classmates complained much more than me” ... “then I sought help from my boyfriend and made complaints to him.” ... “I felt very helpless when I had to finish what I did not understand, and then consulted my classmate about it.” Moreover, Student No. 8 said that “feeling bored, I would poke my classmate in class, asking ‘Is there any question or complaint?’”

As for the task to be finished, some participants also stressed:

Student No. 3 disclosed that “I poked my friend privately to see if he had finished watching (the video).”

And Student No. 9 remarked that “In general, I don’t communicate with classmates on remote courses, but I would discuss the specific problems. It seemed that online communications about the remote learning problems occurred more frequently than before.”

To further illustrate it, Student No. 10 mentioned that “For example, which teacher’s class sounds more difficult to me. I could not help asking other students if this is also the case?”

“I usually tended to discuss the problems with my classmates first before I sought the help of my teacher.” said Student No. 13.

The above quotes indicated that by knowing the situation or pace of the school peers, the respondents in remote learning would feel less anxious. In addition, the familiar situation or environment would decrease the students’ anxiety and enable them to regulate emotions and have a sense of relaxation.

#### (2) Strategy 2: Suppression

Suppression is the manipulation of emotions as well as other sub-strategies, focusing on individuals’ modulation of their personal emotional responses, which tended to occur in the process of emotion generation initiated from the remote learning activity as strategy to hold in the emotion for the moment for the sake of continuing the learning task. The study showed that some participants manipulated their emotions in a variety of ways, some of which seemed to directly have impact on the behavioural or psychological responses.

The findings showed that some participants attempted to manipulate their emotions. Student No. 1 more than once mentioned that “It’s best to endure the negative emotion in class, because if you did something else in class, you would not be able to keep up with the rhythm... you must calm down and adjust yourself, and then think about how to solve this problem later.” What’s more, Student No. 4 put forward that “When it came to a certain teacher, he spoke it very slowly, or was not very clear, I had no choice but to endure”. Student No. 8 also affirmed that “There might be problems when the teacher was speaking. At that time, the teacher might not be able to reply your question instantly, so you had to wait till the end of class.”

The suppression typified a manipulation of negative emotions, which might be beneficial to the remote learner for the moment. Confronted with the remote learning, the participants would surely have various unexpected emotions and had to control their negative emotions or hold in their emotions. The educational policy makers, educators, and online course developers and operators should take the learners’ possible emotional reactions into full consideration and minimize the drawbacks, and maximize the benefits of the online course mode.

#### (3) Strategy 3: Reappraisal of emotion meaning

Different from the traditional classroom learning, remote learning provides the students with an innovative and novel situation of learning experience, and the remote learner would evaluate all the aspects involved in the learning activity. Reappraisal of emotion meaning enables the remote learner to re-considerate the subjects,

process, and objects of learning activity and to have some new ideas about the online mode, which would hugely decrease the learners’ negative emotions and increase their confidence in remote learning. For example:

“I just would not be afraid of others because they did not know what you looked like?... I feel what was awkward was not me, but my voice.” said Student No. 1.

Student No. 3 also pointed out “It would be fine after class, without comparison with others, I didn’t need that much and just made progress.”

To further justify it, Student No. 7 commented that “What was the cause of my negative emotion? For example, if the teacher caused it, I could not do anything about it. Maybe I was very forgetful. It might last for a while, and I could not remember it at all after class. It was just you reminding me here. I may have experienced that emotion and it didn’t last for a long time.” and Student No. 9 again said that “In remote learning, I should be more irritable bored, but then I had no other choice but to accept it.”

These findings indicated that the receivers of online courses sometimes would feel bored and impatient especially when the recorded video online was tedious and uninteresting enough, but remote learners would take other strategies to regulate their emotions, or specifically, to decrease the influence of negative emotions on the one hand. The online course provided the participants with the avoidance of face-to-face embarrassment so that they would conceal or decrease the negative emotions, such as imperfect performance, frustration, awkwardness, and low mood in learning on the other hand.

#### (4) Strategy 4: Self-reminding

As for cognitive modulation, not so many respondents mentioned self-reminding, which had some overlapping meanings with reappraisal of emotion meaning. Student No. 6 indicated that “I basically took my initiative to adjust my mentality. Of course, it was always difficult for me to maintain a high level of concentration. I only told myself to listen as much as possible and try not to get distracted.” To an extent, the remote learners would actively regulate their emotions by reminding themselves of the task they were engaged in so that they would not be distracted or feel dreamy in their learning process. Accordingly, timely and appropriate mental intervention (from teachers or students themselves, or both) would contribute the online learners to maintaining a high level of learning statement.

#### (5) Strategy 5: Self-encouraging

The results showed that taking a positive attitude of self-encouragement would effectively release the pressure arising from learning tasks. Student No. 6 pointed out that “Then I would do some physical exercises to release my stress. After the exercises, I still had to confront the learning assignment, from which I could only escape for a while. I definitely have to do this.” Practicably, this strategy of easing negative emotions has found its popularity and recognition in remote learning, and a variety of other strategies should also be based on the similar positive attitude.

#### (6) Strategy 6: Self-reflecting

As one of the self-focused strategy, self-reflecting demonstrates the learners' reflection on their emotions and behaviours as well as the task itself, enables them to accumulate experience (successful and failed) to avert the later setback, and provides them with a strategy to form a habit of thinking critically and internally. Appropriate self-reflecting will assertively trigger the outcoming of the new ideas to problem solving and effectively and efficiently regulate the learners' emotions in remote learning. Student No. 3 mentioned that "I would look at where the correct answer to that question came from, thought about why I was wrong, and I won't be wrong next time."

## V. CONCLUSION

This study reveals how learners used a variety of strategies to regulate their emotions when faced with a fully remote course during the pandemic. The results of the study, hopefully, help learners notice the diversity of emotion regulation strategies and help them to utilize those strategies that lead to more positive emotions. Educational policy makers and educators should recognize that students use strategies that can be adaptive (e.g., making plans) and maladaptive (e.g., avoidance). There is a need to circumvent learners' use of maladaptive strategies and increase the likelihood of using adaptive strategies as much as possible. For example, based on the extensive collection of data on the national policies for responding to the pandemic in various countries, those that have been effective in providing emotional support to learners can be drawn upon. School authorities should design and develop (preferably Internet-based) training programs designed to prepare learners with low levels of adaptive regulation to adopt healthy emotion regulation strategies. In addition, educators should also consider ways to make more connections with students as well as help students make more connections with each other during periods when face-to-face classes are not possible.

While the results of this research make contributions to the study of emotion and emotion regulation in the field of education in global emergencies, several limitations of this study will be highlighted. In conclusion, this study used emotion regulation as a guiding framework to reveal three phases of emotion regulation strategies—situation-focused, task-focused, and self-focused—used by remote learners in the COVID-19 pandemic. It provides a glimpse into how government authorities and educators should modify policies and course syllabi by considering learners' emotions and emotion regulation.

## CONFLICT OF INTEREST

The authors declare no conflict of interest.

## AUTHOR CONTRIBUTIONS

This work was collaborated by three authors. Ting Zhao gave the general ideas of the theoretical basis and framework of the work, and also provided some valuable

suggestions for the improvement of the paper; Zhongbin Hu analysed the collected data and finished the writing of the paper; In the process of finishing this paper, Zheng Shu gave some precious advice for this work and finished the necessary submitting and registration of this work and also kept regular contact with the relevant personnel; all authors had approved the final version.

## ACKNOWLEDGMENT

The authors wish to thank the participants (students) involved in this program for their efforts and cooperation.

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