The Usage of Sublimation and Regression in Stress Coping of High-Stress Students during Covid-19: a Pilot Study with Weibo Expressions

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ABSTRACT. This study aims at exploring effective approaches to dealing with high stress during COVID-19 by comparing the popularity and effects of two psychological defense mechanisms - sublimation and regression, through analyzing 100 Weibo posts published by highly stressed groups including undergraduates preparing for graduate school entrance exam, university graduates looking for jobs, high school graduates facing university entrance exam, middle school graduates facing high school entrance exam, and others. The study shows that about 1/5 highly stressed students used regression mechanism and the effectiveness was limited while about 1/2 such students used sublimation mechanism and were able to constructively channel their stress, which led to positive results. However, the latter emotion-focused coping was not able to meet the standard of effective coping which requires a fundamental resolution of the stressors. Therefore, the students, parents and schools all need to work together to help highly stressed students to manage stress and maintain a healthy balance.

KEYWORDS: Covid-19, Students stress, Coping strategies, Psychological defense mechanism, Sublimation, Regression

1. Introduction

During the winter holiday in early 2020, COVID-19 started to spread all over China. Due to the highly infectious nature of this virus, all universities and schools followed the government's guidance to extend the winter holiday for a few weeks and later moved teaching online. All students in China had to go online to complete their school curriculum.

Under such circumstances, the students are faced with unprecedented stress and stressors. Compared with in-person classes, online classes are less effective in improving students' academic proficiency [1]. Research also shows that COVID-19 has triggered psychological stress coping such as avoidance, agitation and alarm, mostly to a medium to high degree [2]. Not only university students, but students of

all ages are under stress of various degrees due to concerns about their study, fear about the risk of infection, anxiety about safety and health of family and friends, depression from limited movement.

Stress is the body and psyche's nonspecific adaptive coping to stress events. The most common coping strategy is emotion-focused coping caused by psychological defense mechanism, which includes regression and sublimation. Regression refers to the act of returning to childish and immature behaviors, such as nail-biting, childish bragging, and clinging behaviors when facing stress or anxiety[6]. Sublimation, on the other hand, is the transformation of unacceptable or undesirable feelings, desires, and impulses – often involves a sexual or aggressive nature – into positive, constructive, socially approved activity.[7]

Stress may not only cause uncomfortable psychological symptoms in terms of emotions, cognition and experiencing conflicts, but also lead to negative physiological symptoms such as ulcer and insomnia. Long team stress is found to be closely related to more than 80% of chronical diseases. Therefore, it is important and necessary for students to take effective approaches to deal with stress during COVID-10 in order to prevent, eliminate and reduce the impact of stress and sense of frustration.

The data used in this study come from Weibo searches. Weibo is a broadcasting social media and internet platform that shares short real-time information in the form of words, pictures and videos, with interactions between the Weibo author and audiences. Weibo, as a grassroots media, has no threshold for entering it and every citizen can join.[3] By the end of March, there are 550 million active Weibo users per month and 241 million active uses per day. People can publish information at time, any place as long as they are connected to internet. Compared with traditional questionnaires and school surveys, the individual data obtained through Weibo are closer to life, more genuine and more representative of the writers' psychological status.

The aim of this study is to assess that, during COVID-19, whether regression and sublimation are being used by high-stress students in China, whether they helped individual students effectively cope with stress, the positive and negative impact of these approaches and how we can help the students to better cope with stress during these challenging times.

2. Methods

2.1 Sample

There are five groups of participants in this study, which focuses on the students who are facing critical exams or who are experiencing big changes in their study and life. These students, in general, are under greater stress and their stress reactions are more obvious. Therefore, they can represent high stress students. Using 5 groups makes it easier to compare the similarities and differences between different groups

of students in responding to stress, and adds to the applicability of the conclusions. In addition, the selection of time period is in alignment with the objective of understanding stress caused by COVID-19.

The time period searched was set through advanced search function in Weibo as 31/12/2019 – 29/02/2020, during which COVID-19 was the most serious in China; the type of search was set as original to screen out the Weibo tweets that were originally created or edited. The five groups of key words with different combinations were input to search tweets from 5 subject groups:

(1)COVID-19, Stress, Graduate School Entrance Examination

(2)COVID-19, Graduation; Stress, COVID-19, Thesis; Stress, Thesis

(3)COVID-19, Stress, University Entrance Examination; Stress, University Entrance Examination

(4)COVID-19, Stress, High School Entrance Examination; Stress, High School Entrance Examination

(5)Stress, School Starts

Initial browsing screened out relevant Official Weibo accounts. 20 tweets were manually selected for each group as below, which describes the stress felt, the reactions taken with single stress coping approach

1) 20 university students who were preparing for 2020 graduate school entrance examination

2) 20 university students who were graduating in 2020 (no clear plan to join the graduate school entrance examination)

3) 20 students who were preparing for the 2020 the university entrance examination

4) 20 students who were preparing for 2020 high school entrance examination

5) 20 students who were under other types of high stress

2.2 Measures

1) Coding manual for scoring sublimation degrees

Scores	Standards
0	No signs of sublimation
1	Some signs of sublimation but not obvious Having intention to transform psychological suppression into active beneficial actions
2	Obvious signs of sublimation Appearing able to transform psychological suppression into specific and constructive actions or plans that are in alignment with social norms

2) Coding manual for scoring regression degrees

Scores	Standards
0	No signs of regression
1	Some signs of regression but not obvious Having ideas or tendency to cope with the stressful situation in a primitive or childish way
2	Obvious signs of regression Having used primitive or childish behaviors to cope with the stressful situation

3) Coding manual for scoring coping effectiveness

Generally speaking, there are four common criteria for effective stress management: firstly, the psychological reactions to stress are controllable; secondly, hope and courage are aroused or maintained while sense of self-value is increased; thirdly, realization of social functions and roles; fourthly, facilitation of the recovery of biological functions.

Coping-effect scores	Standards
0	Does not meet any of the criteria
1	Meets any one of the four common criteria
2	Meets any two of the four common criteria
3	Meets any three of the four common criteria
4	Meets all four common criteria

Based on the scoring manuals, score the chosen 100 tweets on their degree of regression or sublimation and the effectiveness of the corresponding coping strategy was shown through the descriptions. Then, calculate the prevalence rate and effectiveness of each coping among each group by using Excel, quantifying the content of the tweets into processable data. Use bar charts to compare the data and find group differences.

3. Results

3.1 The Regression Prevalence

First, we calculated the percentage of subjects who used regression to cope with stress. Among the 100 samples, 20 exhibited regression characteristics under stress to some extent (higher than 0), accounting for 20% of the total number. The commonly exhibited characteristics include "just want to cry", "Weeping and puling", "all the trouble was caused by others", etc., with childish pictures or emoticons. The scoring details are as follows:

Scores	%
0	80%
1	11%
2	9%

It is worth noting that 7 of the university students preparing for graduate school exams have shown characteristics of regression, accounting for 35%, which is much higher than the regression percentage of other groups and that in the total subject population. Data show that university students preparing for graduate school exams were more likely to resort to regression and the degree of regression is also higher in this group, with more people scoring 2 than 1. Details are as follows:

Scores	%
0	65%
1	15%
2	20%

3.2 The Effects of Regression

The average effectiveness score of 20 regression subjects is 0.5; the average effectiveness score of 100 subjects is 1.33; the average effectiveness score of 80 subjects who have not exhibited regression characteristics is 1.54. This shows that regression tends to be less effective in dealing with stress. Some even showed signs of increased stress leading to breakdown and continuous crying, which was not helpful for solving the problem.

3.3 The Sublimation Prevalence

We calculated the percentage of subjects who used sublimation to deal with stress. 47 out of 100 samples showed some or obvious signs (0+) of sublimation under stress. The common characteristics of sublimation are shown as "Oh I'm under so much pressure but will need to work harder tomorrow", "Go, go, go! I will start exercising tomorrow!", "Come on! You need to work hard to memorize the English words". The detailed percentages are as follows:

Scores	%
0	53%
1	25%
2	22%

It is worth noting that only 30% of university students (including those who plan to take graduate school entrance exams and those who are looking for jobs) showed sublimation behaviors under stress while 70% of high school students preparing for university entrance exams and 80% of middle school students preparing for high school entrance exams used sublimation to relieve stress. The majority of the latter two groups of students, esp. the middle school group, were able to transform the stress of exams into active motivation to drive actions. The percentage of middle school students preparing for high school exams who scored 2 in sublimation behaviors was as high as 45%, much higher than the 22% of the total average.

High School Students Preparing for University Entrance Exams:

Scores	%

0	30%
1	45%
2	25%

Middle School Students Preparing for High School Entrance Exams
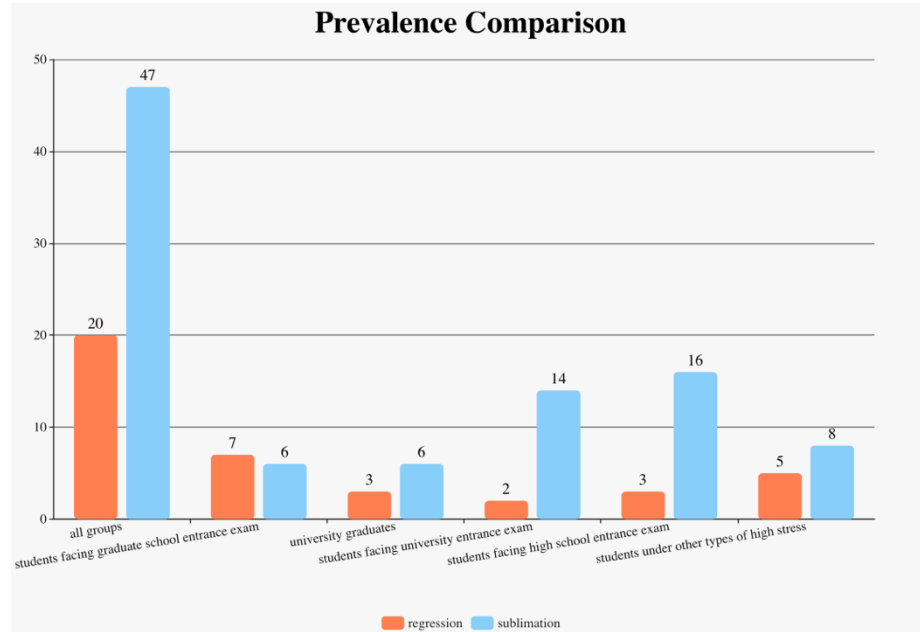
Scores	%
0	20%
1	35%
2	45%

3.4 The Effects of Sublimation

The average effectiveness score of 47 sublimation samples is 2, representing a high level of effectiveness compared with 1.33 of the total 100 samples and 0.74 of the samples which consist no signs of sublimation. It is worth noting that there are only 6 samples whose effectiveness score are 3 and above (meeting three or more effectiveness criteria), which are all individuals who utilize sublimation and account for 13% of total group. The majority of individuals who used sublimation ended up with constructive intentions or actions, facilitated the solution of their problems or improved personal ability to deal with the situation.   For students who were facing critical exams, the results of sublimation included increased motivation to study, the reduction of anxiety and the strengthening of execution capability.

## 4. Comparative Analysis of Regression and Sublimation in All Groups

4.1 Comparison of Prevalence

In most subject groups, the use of sublimation far outweighed the use of regression, which means that students facing the high stress of exams were able to release their stress using positive approaches such as exercising. However, there are a small number of individuals who used regression to deal with stress. Another finding is that the number of regression users is higher than sublimation users in the group of students preparing for graduate school entrance exams, which is categorically different from other sample groups. The university students preparing for graduate school exams are the oldest in age with the most years of life experiences, but this group are shown to be least capable of resolving the source of stress with skills, and the groups most likely to move away from the more mature ways of responding to stress and regress into a childish and impulsive coping mechanism. The comparison details are as follows:

4.2 Comparison of Coping Effectiveness

Based on the comparison of the effectiveness average scores of two coping mechanisms, it is clear that sublimation has a general higher level of effectiveness than regression in dealing with stress. However, both scores are way below the optimal score of 4. Data of the groups show that the effectiveness score for sublimation of all the groups is at around 2 (meeting two criteria of effective coping), while the score of regression effectiveness is much lower. The average score of effectiveness of regression in the groups of university graduates and high school graduates is 0, which shows that this mechanism has not created any positive effect, and may have even weakened and impaired the opportunity and ability of these individuals to solve problems in life. It is worth noting that the average effectiveness score of sublimation for middle school students is lower than the average of all groups, while the average effectiveness score of regression is twice higher. The detailed comparison of the effectiveness of the two coping mechanisms is as follows:

Coping Effectiveness Comparison
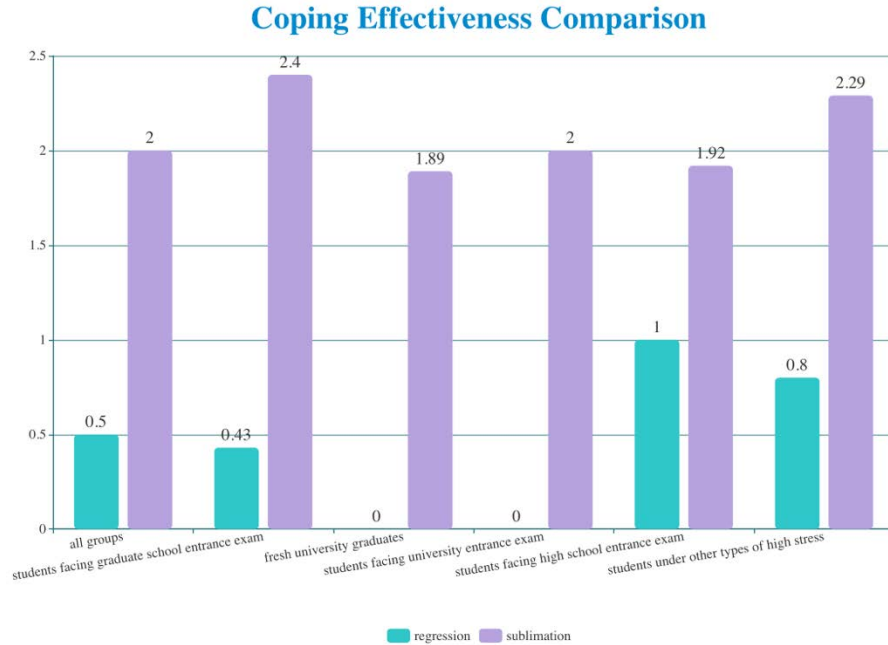
5. Discussion

This study aims at assessing the popularity and effectiveness of two psychological defense mechanisms - sublimation and regression - among high-stress students in China, and exploring the best approaches to deal with high stress during COVID-19, through collecting, sorting and analyzing Weibo tweets. In general, the study shows that about 1/5 highly stressed students used regression mechanism and the effectiveness was limited while about 1/2 such students used sublimation mechanism and were able to constructively channel their stress, which led to positive results.

There are also differences in behavioral patterns. For instance, regression is most common among university students preparing for graduate school entrance exam; it may be because, in addition to the stressors experienced by other groups, they were also facing stressors like interpersonal relationships, financial burden and internships, which were more complex and thus difficult to deal with using other methods, and they then turned to a more primitive way to try to relieve the stress in a short period of time. Regression was slightly more effective for middle school students, relatively younger with less life experiences. Sublimation is most commonly seen among students facing entrance examination for middle school and college; it may because they experience relatively less and simpler stressors like exam scores, which seemed easier to improve through certain actions. However, perhaps due to lack of capability of transforming stress into effective actions, sublimation has lower positive impact on their resolving the stress. Among

university students preparing for graduate school exams, who have more life experiences and are able to transform stress into more effective actions, as soon as they started to implement sublimation, sublimation produced the highest positive impact.

For high-stress students who are facing graduation or exams, sublimation is more effective than regression in dealing with anxiety, fear, nervousness and in reducing stress, so it is especially recommended for university students preparing for graduate school entrance exam who are more prone to resort to childish approaches. Regression is not recommended for the above university students due to its low level of effectiveness. However, regression seems to have some effect of relieving stress and restore psychological balance for teenagers.

Nevertheless, neither of these two psychological coping mechanisms have met the optimal criteria; rather, they are far below the standard. There should be more effective, reasonable and feasible strategies for the students to apply. For all groups, problem-focused coping seems to be the best choice. Emotion-focused coping does not solve the essential problems, so the individuals are advised to transition their energy to resolving the source of stress after they are able to maintain some basic stability of emotional and psychological state.

It is critical for parents of high-stress students to take the right approach to guide their children though this high-stress period, and facilitate their well-being and growth. There is a positive correlation between the level of intimacy and freedom of emotional expression in a family, and the use of mature defense mechanism by the child. [4] Schools and universities also play an important role. They should not only ensure learning goals are completed and reduce stress caused by the delayed curriculum, but also support psychological health and facilitate growth of the students leveraging the challenges as a development opportunity.

However, this study's results are attenuated by several limitations. First, posts on Weibo only presented an incomplete picture of the situation and feelings that the individual was experiencing, and thus, judging individual stress level and the effectiveness of their coping strategies based on those posts can be imprecise, or occasionally inaccurate. Second, as the coding manual did not go through a rigorous test on its effectiveness in quantifying the content of tweets and the scoring process involves subjectivity, the credibility of the scores could not be completely guaranteed. Third, due to the limited number of the samples, only quantitative comparisons and simple calculations were done. This study is meant to serve as a pilot study in the field of individual stress-coping under pandemics, particularly COVID-19, and the field of analyzing data from online social media.

It is strategically important to understand the impact of different defense mechanisms on high-stress students in China during COVID-19, and identify more effective coping strategies, to help students to deal with stress and maintain psychological health during this unprecedented crisis. In future studies, larger data sample and more robust calculations are needed in order to further examine the proposed conclusions.

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