

The impact of social comparison on emotions in social media: the regulation of negative emotions by cognitive reappraisal strategies

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Abstract. Research on the emotional issues caused by upward social comparison, combined with previous research, proposes a cognitive reappraisal strategy in emotion regulation strategies to address this negative emotion, and uses interviews and questionnaire surveys to examine the effectiveness of this strategy. The results show that cognitive reappraisal strategies have a significant improvement effect on the negative emotions caused by upward social comparison. During the research process, it was also found that educational status has an impact on the understanding and use of cognitive reappraisal strategies, and higher educated individuals are more able to fully utilize cognitive reappraisal strategies.

1 Introduction

Due to the continuous development of social media, people can rely on the information on social media for reference and evaluate their current situation through social comparison [1]. But this process may lead to some emotional problems, such as the emotional and social effects [2]. Social comparison can be divided into upward social comparison, downward social comparison, etc., and the upward social comparison is more inclined to affect people's negative emotions, including jealousy, anger, depression and other emotions, and even make bad behaviors such as malicious remarks on social platforms [3, 4]. In previous studies, it is also said that upward social comparison may also produce emotional diet. Among them, adolescent emotional diet based on negative social comparison is investigated, which is manifested as eating disorder [5]. In addition, the upward social comparison will also indirectly affect people's self-esteem level and sense of belonging [6].

Emotion regulation strategies can adjust negative emotions. In this study, the negative effects of the cognitive reevaluation strategy on the upward social comparison were investigated in the form of questionnaires and interviews, and the negative impact of the upward social comparison was improved by the learning and application of the cognitive reevaluation strategy.

2 Method

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2.1 Questionnaire

2.1.1 Study subjects

This study mainly focuses on early adulthood (18~25 years old), with no restrictions on education or major.

2.1.2 Questionnaire design

In this study, the author refers to the social comparison tendency scale, the emotional orientation correspondence questionnaire for the design [7,8]. This questionnaire includes 7 questions in total and uses a first level scoring method (Table 1 for details).

The explanation of the cognitive reassessment strategy in the questionnaire is:

Cognitive reevaluation is that when you see things with negative emotions, you change your opinions, opinions or attitudes. By reevaluating and rebuilding your ideas and beliefs, you change your view of things to achieve the effect of alleviating your negative emotions. Explain the application of this method to the scenario:

I'm not worthless to evaluate myself when I see others are better, maybe I'm not doing well enough in this area, but I'm still valuable, I'm trying to be better, that doesn't mean I'm a loser.

The pre-test contents and the post-test contents are completely consistent (see Table 1).

Table 1. The impact of the upward social comparison

Number	When I see others doing better than me on social media:
1	I start to examine my own shortcomings
2	I feel guilty and guilty
3	I want to turn off social media
4	I will recall this post/comment and feel sad for a long time in the future
5	I feel like I am a failure
6	I feel encouraged rather than discouraged
7	I feel jealous

2.1.3 Questionnaire distribution and recovery

A total of 56 questionnaires were collected during the study, and after some excluded, 39 valid data were left.

2.2 Interview

2.2.1 Questionnaire distribution and recovery

During the process of questionnaire assignment, 3 subjects were randomly selected for the interview (see Table 2).

Table 2. Subject information

Number	Age	Sex	Record of formal schooling
A	20	woman	undergraduate course
B	20	woman	undergraduate course
C	21	man	undergraduate course

2.2.2 Interview outline

The interview was divided into three aspects:

1. What emotions will arise in the face of upward social comparison.
2. In the middle study of cognitive reevaluation, whether this strategy is considered effective, and whether it will be used in future life.
3. What kind of new insights are gained into the case through cognitive reevaluation, and what effect this has on mood

2.2.3 Interview process

The interview was done by telephone, about 5 minutes, and the process was recorded by audio recording.

2.3 Statistical Methods

This study considers the use of cognitive reappraisal strategies as the independent variable and changes in emotions as the dependent variable, exploring the impact of cognitive reappraisal strategies on negative emotions caused by upward social comparison and whether this effect is significant.

2.4 Study hypothesis

Hypothesis 1: The use of the cognitive reassessment strategy is effective (negative emotion scores are lower in post-test compared to pretest)

Hypothesis 2: Effective use of the cognitive reassessment strategy (the negative emotion scores in the post-test were not significantly different compared to the pretest)

Hypothesis 3: The influence of high educated subjects is significantly H3 relative to low educated subjects

Hypothesis 4: The influence of high education subjects is not significant compared to low education subjects

3 Result

3.1 Questionnaire results

3.1.1 Pre-test and post-test comparison

These data were analyzed, and an independent sample T-test (sig <0.01) was significantly different between the pretest and posttest data (see Table 3, Table 4). The significant difference between pretest and posttest indicates that the cognitive reevaluation strategy

significantly improved the negative emotions generated in the ascending social comparison. Demonstrate the research hypothesis.

At the same time, through the interview of the interviewer, the author found that the interviewer has a significant improvement.

Table 3. Data from pre-test / post-test

Title	Pre-test / post-test	Average value	Standard error	Standard error mean
total points	front	26.2308	4.78188	0.76571
	behind	18.5385	7.00694	1.12201
1	front	3.95	0.647	0.104
	behind	2.9	1.314	0.21
2	front	3.79	1.005	0.161
	behind	2.67	1.264	0.202
3	front	3.82	1.073	0.172
	behind	2.82	1.167	0.187
4	front	3.67	1.06	0.17
	behind	2.74	1.117	0.179
5	front	3.64	0.873	0.14
	behind	2.64	1.386	0.222
6	front	3.74	1.069	0.171
	behind	2.56	1.373	0.22
7	front	3.62	1.067	0.171
	behind	2.21	1.031	0.165

Table 4. T-test score

	t	free degree	Significance (double-tailed)	Mean difference	Standard error difference	Difference value with 95% confidence interval	
						lower limit	superior limit
A	5.663	76	<0.01	7.69231	1.35839	4.98684	10.39777
1	4.483	76	<0.01	1.051	0.234	0.584	1.518
2	4.365	76	<0.01	1.128	0.258	0.613	1.643
3	3.94	76	<0.01	1	0.254	0.494	1.506
4	3.744	76	<0.01	0.923	0.247	0.432	1.414
5	3.813	76	<0.01	1	0.262	0.478	1.522
6	4.234	76	<0.01	1.179	0.279	0.625	1.734
7	5.938	75.91	<0.01	1.41	0.237	0.937	1.883

3.1.2 Academic background

After investigated and divided into bachelor's degree or above and junior college or below, they analyzed the pre-test and post-test data of different degrees and found that the difference between the two groups was not significant ($\text{sig} = 0.32 > 0.05$), and the difference in the two groups was significant ($\text{sig} = 0.032 < 0.05$) (see Table 5). The reliability of the scale was evaluated ($\alpha = 0.802$) with good reliability and validity ($\text{KMO} = 0.808$).

Table 5. Comparison of educational levels between groups

	record of formal schooling	The number of cases	average value	standard error	Standard error mean	t	free degree	conspicuousness
Pre-test	Bachelor degree or above	17	25.3529	6.46085	1.56699	-1.008	37	0.32
	Junior college and below	22	26.9091	2.9099	1.68533			
Post-test	Bachelor degree or above	17	15.8235	6.70108	1.62525	-2.233	34.394	0.032
	Junior college and below	22	20.6364	6.63716	1.41505			

There were significant differences in before and post data between the subjects (bachelor degree and above) and the subjects (college and below) (sig <0.05) (see Table 6).

Table 6. Comparison of educational levels within the group

record of formal schooling	Front / rear test	The number of cases	average value	standard error	Standard error mean	t	free degree	conspicuousness
Bachelor degree or above	front	17	25.3529	6.46085	1.56699	4.221	31.957	<0.01
	behind	17	15.8235	6.70108	1.62525			
Junior college and below	front	22	26.9091	2.9099	0.62039	4.06	42	<0.01
	behind	22	20.6364	6.63716	1.41505			

In the comparison of academic qualifications, the two groups showed no significant difference between the two groups, and the post-test data showed a significant difference between the two groups. However, the difference between the test and post mean of the undergraduate and above groups was greater than the difference of the positive college group (9.5249 > 6.2727).

3.2 Interview results

By interviewing the subjects in the questionnaire, the subjects reported that they used the cognitive reevaluation strategy to reevaluate their ideas in the previous social comparison, so as to reduce negative emotions. Participants reported that because they were in the same group with acquaintances, they preferred to make social comparison with acquaintances in social media. In addition, the participants reported that the study of cognitive reevaluation strategies would produce more positive appreciation for others' success or their happiness rather than jealousy or self-blame. The interviewees all said that the cognitive reevaluation strategy has a certain role and significance and will be applied to life.

4 Discussion

In life, people will consciously or unconsciously want to understand their own status, ability, level and other situations, and only in the social environment, through comparison with others, can they truly realize themselves and others, to realize their own value and ability. However, in social comparison, there are upward social comparison and downward social comparison, there are differences between the two comparison objects, and in the process of social comparison, there are a series of psychological activities, which may cause negative emotions or positive emotions. This is particularly true in social media, where users are exposed to a large number of images and content shared by their peers for comparison. This comparison is usually divided into one of three categories, up (target is considered superior to oneself), down (target is considered less than oneself) or horizontal (target is considered equal to yourself), because people tend to show the perfect part of life, so more on social media will produce upward social comparison in this situation is likely to lead to negative emotions, so should pay more attention to social media upward social comparison caused by negative emotions [9]. Cognitive review strategy by changing the cognition or interpretation of events to regulate emotional response, in the process of observing others positive self-expression may trigger upward social comparison, but in the process is better at identifying their negative thoughts and positive explanation instead of people tend to experience less upward contrast, to achieve effective improvement of negative emotions [10].

In previous studies, it was found that applying cognitive reevaluation strategies to adverse social comparisons during epidemics could significantly improve the generation of negative emotions and help achieve more positive and healthier social comparisons [11]. In this study, the cognitive reappraisal strategy regulating emotion was applied in the negative emotions generated by social comparison, to explore the improvement that this strategy produced negative emotions in the upward social comparison in the social media scenario. The data found that the reliability and validity value of the scale was good ($\alpha = 0.802$, $KOM = 0.808$). The data of the pretest were significantly different, indicating that the negative emotions caused by the upward social comparison were significantly improved after the cognitive reevaluation strategy, which proves that the hypothesis H1 is true.

Group by degree, bachelor degree and above 17 people, college and the following 22 people, the two groups of subjects before test data difference are significant, but the test data analysis showed that the two groups are not significant, the difference, and the data difference between undergraduates and above groups more than college and the following group, this shows that although the cognitive review strategy for social media of upward social comparison has significant influence, but higher education subjects show better emotional regulation effect, assuming H3.

Through interviews learned in social media for acquaintances between upward social is more likely to cause negative emotions, this may be due to the relationship between acquaintances and the same group under the similarity is higher more likely to stimulate the

cause of social comparison, subjects: "I think I friends of friends to share successful content, will themselves and they compare sometimes will produce 'why oneself so bad idea" " may be because their academic pressure is bigger, see others in academic achievement, will re-examine themselves, criticize yourself." In terms of his views on the cognitive reevaluation strategy, the interviewee said," The cognitive reevaluation strategy is similar to the idea I would use when I was in a bad mood in my daily life, but I did not know this adjustment method before, and I think this method is probably an effective strategy summarized from our daily life." This means that the participants may have had self-regulation similar to the cognitive reassessment method, which also indicates the universality and effectiveness of cognitive reevaluation strategies.

Combined with the interview records, the cognitive reevaluation strategy as an emotion regulation strategy has a significant role in the regulation of negative emotions, and this strategy is also applied to the negative emotions due to the upward social comparison, including jealousy, self-criticism, lack of self-confidence, etc. This strategy has a certain effectiveness and universality, can be applied to most situations in life, the use cost is low, the effect is significant.

In terms of the influence of academic education, it can only be determined that the subjects with higher education have a more significant effect on the cognitive reevaluation strategy. There may be two reasons for this result. One is that higher-educated people often use the cognitive reevaluation strategy or the ideas similar to the cognitive reevaluation strategy to self-regulate in their life. Another reason is that highly educated people can better understand the examples of upward social comparisons in the questionnaire. No specific experiment is designed to explore and analyze the conjecture of the two reasons. In the future, the experiment can be designed again to explore whether the cognitive reevaluation strategy is often used, and this strategy can be better used in social comparison under social media.

5 Conclusion

In the process of using social media, people will inevitably compare themselves with others, and when comparing the upward social media, people will have jealousy, depression, anger and other emotions. Therefore, this study explored the use of cognitive reappraisal strategies to reduce the resulting negative emotions, and the results showed that cognitive reappraisal strategies have a significant improvement effect on negative emotions in social media. In addition, for the factor of academic background, it is concluded that the understanding and application effect of cognitive reevaluation strategies are more significant.

However, this study did not conduct a thorough analysis of the reasons for the impact of education on the learning of cognitive reappraisal strategies. In future research, further research and analysis can be conducted on how education factors affect the learning perspective of cognitive reappraisal strategies. Research has found that cognitive reappraisal strategies have a significant improvement effect on negative emotions caused by upward social comparison in social media. They can be applied to people's daily social activities in the future and have a positive impact, further exploring social comparison.

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