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Research Article

Causes and Self-regulatory Mechanisms of Frustration: A Qualitative Exploration of Rock Climbers

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Abstract

In recent years, rock climbing has become increasingly popular around the world. However, due to its challenging and competitive nature, it is common for rock climbers to encounter frustration. It leads to negative emotions, reduced participation, and withdrawal behavior, which requires effective self-regulation. Therefore, the purpose of this study was to explore the causes and self-regulatory mechanisms of frustration in rock climbing. Using qualitative methods, 15 rock climbers were interviewed, and 6 themes were identified by thematic analysis. Task comparison and social comparison are the main causes of frustration in rock climbing. The self-regulatory mechanism of task comparative frustration includes focusing on tasks and habitual reflection. The self-regulatory mechanism of social comparative frustration involves emotion regulation and changing goal orientation. It is suggested that future rock climbers, especially beginners, deal with frustration through the self-regulatory mechanisms that can help them enjoy and pursue rock climbing.

Keywords:
Frustration; causes; self-regulatory mechanisms; rock climbers; qualitative methods

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Introduction

Frustration is defined as a feeling of dissatisfaction due to unmet needs or lack of progress or inability to progress towards a goal due to limited skills and difficult tasks [1]. Sport participants are vulnerable to experiencing frustration because they often deal with stress, failure, and setbacks in sport [2], [3]. Moreover, sports participants often consciously and voluntarily place themselves in an environment of high evaluation and competition, in which winning or losing is always obvious [4]. In sports, frustration experiences can result from being unable to achieve one's goal, poor performance, an unwanted/unplanned competitive outcome, injury, performance plateau, or time constraints [5], [6], [7], [8]. The inability to effectively self-regulate frustration leads to sports participants experiencing low positive affect, poor social functioning, high distress, less than optimal performance, exercise dropout behavior, sport withdrawal [9], [10]. At present, some psychological research explored the regulatory mechanism of frustration, but the quantity and quality are still insufficient.

Rock climbing is a challenging and adventurous sport [11]. It can easily make people feel satisfied with conquest. As a result, rock climbing has become popular among young people around the world in recent years [12], [13]. Besides, rock climbing has become an official event in the 2020 Tokyo Olympics and 2024 Paris Olympics. However, rock climbing requires participants to complete thrilling movements such as traversing, turning, jumping, and pull-up on the climbing wall with different heights and angles, which puts forward extremely high requirements on physical and mental quality [14]. The challenge of rock climbing makes it difficult for participants to achieve their goals quickly. Failure makes it easy to experience frustration in rock climbing [15]. For example, a study showed that all rock climbers in a club experienced periods of frustration, weakness, and self-doubt [16]. Another study pointed out that pioneer climbers reported higher physical and mental requirements than top rope climbers, thus requiring more efforts and causing significantly greater setbacks [17]. Within the self-regulation literature, the development of self-regulation is realized through an individual-contextual interaction [18], and exercise has been proved to be a good way to develop self-regulation skills [19]. For rock climbers, although they often encounter frustration, the temptation to succeed and the desire to conquer motivate them to regulate frustration until realizing the present goal. Hence, the process involves the possibility of rock climbers' self-regulation to deal with frustration.

Self-regulation is a key research object in the field of psychology [20], [21], [22]. Zimmerman (2000) suggested that self-regulation was a process where individuals assumed the responsibility of learning, monitored their progress, and used strategies promoting self-improvement and goal achievement [23]. When individuals encounter frustration, it is necessary to deploy self-regulation strategies on time.

Previous studies have found a variety of self-regulation strategies. For example, disengaging from a goal and reengaging in alternative goals may be effective when goals are not attainable [24]. Metacognitive/elaboration strategies, effort regulation, and adaptive help-seeking are effective self-regulatory strategies for learning sports skills [25]. In sports, studies also found that participants adopt self-regulatory strategies to deal with frustration, such as self-compassion [26], [27], dealing with self-criticism, using social support, and striving for balance [8]. However, the self-regulatory mechanisms of frustration may change in different situations. Additionally, there are few studies on self-regulation for rock climbing frustration. Therefore, it is necessary to understand how rock climbers perceive and experience rock climbing frustration, and to learn how they self-regulate the frustration.

Based on the above, the purpose of this study was to (a) explore the frustration causes, and (b) effective self-regulation efforts, and then, (c) construct self-regulatory mechanisms for rock climbing frustration. According to the study's purpose, this study used qualitative methods and adopted a constructivist epistemology. Qualitative methods have drawn in more attention and application in the field of sports and exercise psychology [28]. Qualitative methods focus on describing sports participants, helping them to provide a deeper understanding of their own sports experiences, and showing the dynamic process between psychology and behavior so that researchers can better understand them and make an in-depth comprehensive analysis. This study expected to provide effective self-regulation mechanisms for rock climbers, especially novice climbers, helping them overcome frustration, enjoy climbing, and adhere to climbing.

Methods

Participants

Upon approval from the university research ethics board, two researchers joined a rock climbing club of a well-known university in East China from September 2018 to January 2019. During rock climbing in this club, researchers established social relationships with other club members and recruited them as interviewees through convenience and purposive sampling. Participants were included according to the following criteria: (a) has rock climbing experience for 1 year or more; (b) rock climbing twice a week or more; (c) rock climbing for 1 hour or more at a time. The determination of the number of interviews was based on the principle of saturation of the information provided. At the same time as collecting interview data, researchers conducted data analysis. When the coding results of the latter interview data were similar to the previous results, and no new prominent themes appeared, then the invitation and recruitment of participants were stopped. Finally, with consent, a total of 15 rock climbers were interviewed (see Figure 1). Among these participants, 9 were male rock climbers and 6 were female rock climbers, with an average age of 23.1 years old (SD = 1.61, range = 21-27). Take the level of bouldering as an example, with 9 participants below V3 and 6 participants above V4. Also, all participants had a rock climbing experience of one year or more and a rock climbing frequency of two or more times a week. Table 1.

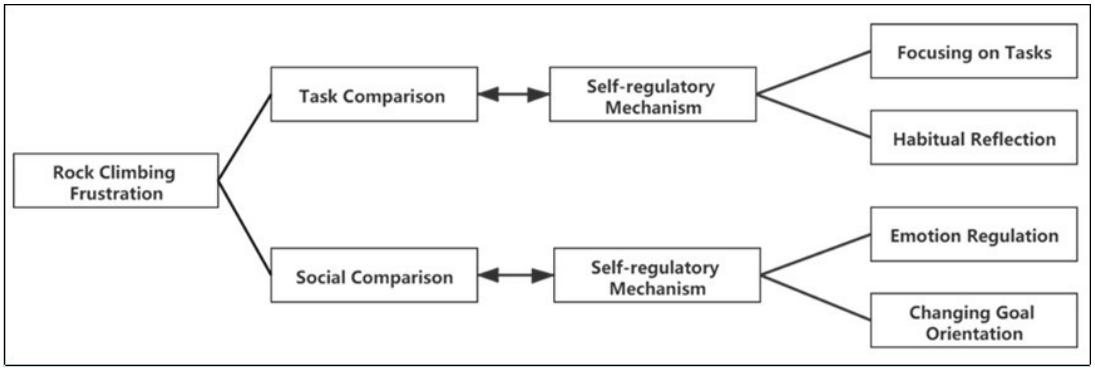

Figure 1. Causes and self-regulatory mechanisms of frustration in rock climbing

Table 1. Basic information of interviewees

Name	Sex	Age	Time	Current Levels	Frequency
Xu	M	22	2.5 years	V5	3 times a week
Tian	M	23	2.5 years	V4	3 times a week
Shen	M	22	1.5 years	V4	2-3 times a week
Fang	F	21	1.5 years	V2	3 times a week
Liu	F	22	1.5 years	V2	3 times a week
Zhang	M	26	2 years	V4	3 times a week
Huang	F	23	2.5 years	V2-V3	3 times a week
Zhu	M	23	2 years	v3	2 times a week
Hu	M	21	2 years	V3	2-3 times a week
Li	F	24	2.5 years	V3	2 times a week
Hong	M	25	3 years	V5	3 times a week
Ge	F	21	1 year	V2	2 times a week
Shi	F	23	2 years	V3	2 times a week
Zheng	M	24	2.5 years	V3	3 times a week
Wang	M	26	3 years	V4	2-3 times a week

Procedure

This study adopted relativism ontology (reality is pluralistic, created, and depends on thought) and constructivism epistemology (knowledge is constructed and subjective) as philosophical underpinnings.

Semi-structured interviews are usually used in qualitative research. The advantage of a semi-structured interview is that it can give both the interviewer and the interviewee a certain degree of freedom to jointly discuss the central issues of research [29]. The researchers conducted semi-structured interviews with participants to guide them to think, understand, and accurately express their psychology and behavior, to collect complete information of participants. Moreover, the researchers encouraged participants to focus on the dialogues of self-expression [30]. Before the interviews, according to the purpose of this study and relevant literature, researchers developed the semi-structured interview guide in advance. The interview questions mainly include: (1) Have you ever experienced frustration in rock climbing? (2) For you, what is the cause of frustration? (3) How do you regulate yourself to deal with frustration?

The researchers conducted two rounds of semi-structured interviews from January 2019 to March 2019. The first round of interviews collected the participants' basic information at first, such as grade, age, current level, how often per week. Next, according to the interview guide, the researchers mainly understood participants' frustration experience and self-regulation. During interviews, the interview guide was supplemented and adjusted based on their answers. The interviews lasted an average of 40 minutes (SD = 6.92), mostly in the cafe of the university. The researchers informed participants about the purpose of the interview and guaranteed the anonymity of the interview. After obtaining the consent of participants, interviews were done by audio-record. All potential identification information (e.g., name and major) was modified or deleted from the transcripts to protect the confidentiality of the participants. After the initial coding of the transcripts from the first round of interviews, the researchers found some

information omissions, and further understanding of some issues was needed from participants. As a result, the second round of online voice interviews was conducted to supplement interview information.

Data Analysis and Quality Standards

In qualitative research, data collection and analysis are generally carried out simultaneously. At the end of each interview, the researchers quickly turned the recording into a transcript and summarized key statements of the rock climber. Given the large amount of data generated in the interview process, this study used NVivo11.0, a qualitative analysis software, to store and analyze the data. According to the thematic analysis steps outlined by Braun and Clarke (2006), the researchers conducted an inductive thematic analysis of the transcripts [31]. Thematic analysis steps mainly consist of familiarity with data, generating initial codes, creating themes, and reviewing themes.

First, the researchers read the interview transcripts many times to get familiar with the content and deeply understand the participants. Then, six transcripts were initially coded for ideas and experiences of the rock climbers. Nine additional participants who met the criteria were interviewed, and their transcripts were analyzed using initial codes generated by the first six transcripts, allowing for the identification of new prominent codes at the same time. After all the transcripts were analyzed, the researchers and experts discussed and reviewed each code to ensure that they had sufficient narrative support. Next, the researchers classified the codes, identified common themes among several codes, and created a list of themes. At last, the list of themes was reviewed by the researchers and experts, to ensure that each theme summarized the contained codes and had clear differences from other themes. Codes and themes were constantly reviewed by the researchers, and they were refined, merged, separated, or discarded until all researchers believed that the current themes list accurately summarized and represented data.

According to the philosophical underpinnings of this study, the quality evaluative criteria proposed by Smith and Caddick (2012) were used: impact, coherence, credibility, and transparency [32]. Impact was realized through identifying themes that have implications on future studies, establishing self-regulatory mechanisms for rock climbing frustration, and providing suggestions for rock climbers to self-regulate frustration. Coherence was attained by taking every participant's data into account through thematic analysis and ensuring that the identified themes were supported by sufficient data. Credibility was ensured by the researchers joining the rock climbing club before semi-structured interviews, and socializing with potential participants to build trust relationships in advance. These made the participants willing to share the real frustration experiences in the interviews. Moreover, semi-structured interviews had a certain degree of freedom and flexibility, enabling the researchers to follow up on participants' ideas which were not necessarily in the interview guide. Also, member reflections were used to provide participants with the opportunity to reflect and discuss credibility. They checked interview transcripts and research results to ensure accuracy and empathy with their experiences [33]. The researchers reviewed and revised the themes according to the comments and suggestions of participants. Transparency was kept throughout the process. Several researchers worked together to develop the interview guide, analyze data, and create themes. Senior authors questioned and challenged the process of data collection, theme creation, and interpretation, and encouraged further in-depth thinking and refinement of the theme list.

Results

Six themes were identified by thematic analysis. There are two causes of rock climbing frustration: (a) task comparison and (b) social comparison. Against the frustration of task comparison, a self-regulatory mechanism is established including (c) focusing on tasks and (d) habitual reflection. In response to the frustration of social comparison, a self-regulatory mechanism is established including (e) emotion regulation and (f) changing goal orientation (see Figure 1).

Causes of Rock Climbing Frustration

Almost all participants said that they often encountered frustration in rock climbing, and task comparison and social comparison were the two main causes of frustration.

Task Comparison

Some rock climbers experienced frustration simply because of task comparison. They were blocked from completing a task (e.g., a route or an action) or had no progress for a long time. For example, Tian(M) described his frustration experience, "When I've been rock climbing for half a year, there was a very difficult route, I couldn't finish it all the time. I doubted myself at that time and felt depressed." Hu (M) felt similar to Tian(M); he said, "I feel frustrated when I can't climb up some routes." Huang (F) was anxious about her progress; she said, "I feel frustrated when I can't overcome a certain level. Mostly because there has been no progress for a long time."

Social Comparison

Some rock climbers experienced frustration simply because of social comparison. For the same task (e.g., a route), they would feel frustrated if others earlier finished or made more progress than themselves. For instance, Shen(M) said, "I don't feel too frustrated every time I can't climb over. But frustration usually occurs when I compare myself with others, that is, I get frustrated when others have similar conditions in all aspects but climb much better than me." Ge (F) also felt a strong sense of frustration when comparing herself with others; she said, "If there is a climbing holds that everyone passes easily, but somehow I can't pass, I will feel frustrated, get desperate and want to cry. I begin to doubt myself and sometimes have to admit that rock climbing requires talent. " Zhu (M) thought that being competitive would lead to frustration. Exemplifying this, he said, "if others can pass a certain route, but I can't, I will think that my training today isn't effective. I feel weaker than before and feel like not making any progress."

Other rock climbers believed that both task comparison and social comparison led to frustration. For example, Shi (F) said, "If the route being climbed now is always unable to climb up, or if I am falling behind with others, I will feel frustrated." Similarly, Fang (F) described her feelings about two kinds of frustration, "At times, there is a route or climbing holds that I've been trying for one night even a week or two, but I still can't do it, it frustrates me. Then I see that everyone else can do it, thus I will feel very annoyed and frustrated again."

The Self-regulatory Mechanism of Task Comparative Frustration

All the rock climbers recalled their self-regulation in dealing with rock climbing frustration. They were asked to describe what would be effective self-regulation strategies. For task comparative frustration, two themes emerged: focusing on tasks and habitual reflection.

Focusing on Tasks

Confronted with task comparative frustration, rock climbers regulated their attention to focus on the tasks that frustrated them and increased their efforts to complete the tasks. Even in adverse situations (i.e. under the pressure and blow of task failure), they still maintained a high level of achievement motivation and tried their best to complete tasks. Wang (M) introduced his frustration self-regulatory experience in climbing a roof route, "Climbing to the roof is different from climbing on the wall. There's great psychological pressure, and falling from the roof can give you a special psychological blow. So it requires a lot of perseverance to overcome the roof route. At that time, I always fell from the roof and suffered great psychological shocks, but I never gave up and kept climbing. It takes me more than one year to climb up the roof route." Hong (M) also regulated himself by focusing on his task during frustration; he said, "Last year when I was bouldering, I felt that my ability had not improved for some time. I was very depressed at that time. Then I focused on that route, kept climbing and practicing, so my ability was raised a little."

Because of frustration, some rock climbers even greatly enhanced their desire to complete tasks or achieve goals. For instance, Xu (M) thought that he would be motivated by his frustration; he explained, "I would be very upset if I couldn't complete something. I like to do my best until I achieve it. For example, if there's a route I can't climb up, I will keep climbing all the time, even for a month. I won't stop until I climb to the top."

Habitual Reflection

It was important self-regulation when facing task comparative frustration. Rock climbers drove themselves to gradually form a habit of self-reflection, often thinking about the reasons for their failures and solutions to the problems. For example, Zhang (M) believed that timely reflection when encountering frustration helps to achieve the goal; he said, "If I have been climbing this route for so long, but still failed, I won't be discouraged. After climbing, I will consider how to overcome, how to solve, how to climb up. I was used to reflecting on myself before I participated in rock climbing, so rock climbing is so suitable for me." Likewise, Tian (M) thought that he was influenced by rock climbing to reflect on why he failed in a route; he explained, "After climbing for a long time, I sometimes reflect on myself because of the influence of rock climbing. I wonder why I can't finish the route. Maybe my foot movement is not in place, or there is a foothold that I did not notice, or I'm not proficient in climbing skills. I need to reflect on how I climbed just now, and how to solve such problems if I encounter them later."

Notably, based on a three-year climbing experience, Wang (M) concluded that most high-level rock climbers, regardless of whether they are in frustration or not, have the habit of reflection. He said, "Not every climber gets used to reflection, but you must be like this if you want to climb well. Most of the masters I've met usually watch silently, think quietly, and then climb quietly. "

The Self-regulatory Mechanism of Social Comparative Frustration

For social comparative frustration, two themes were identified: emotion regulation and changing goal orientation.

Emotion Regulation

When rock climbers met with social comparative frustration, they often experienced very negative emotions and feelings, such as "ashamed", "anxious", "depressed", "sad", "angry" and "incompetent". In general, emotion regulation was the first method to deal with social comparative frustration, which aimed to reduce the negative reaction caused by frustration and protect self-esteem. For example, Liu (F) found out her achievements through downward comparison to improve her mood; she shared, "I feel I'm the worst with these people at ordinary times. But whenever new members joined, I think that when I just joined, I climbed as badly as they did, and I've improved after a year of training, so I'll be in a better mood." Xu (M) said that he consciously controlled his emotions by distraction. Illustrating this, he said, "I will get irritated when I can't climb up all the time but others can. Then, I will gradually control my emotions, take a rest, play with my cell phone, or talk to others." Shen (M) reappraised the frustration and soothed himself when he felt depressed due to social comparison; he explained, "I will be a little sad, but I will comfort myself that I may not be as strong as my friend, so it is reasonable for him to climb up so easily. I will climb up that route if I practice more."

Moreover, rock climbers' emotional regulation ability gradually improved with more rock climbing time. When faced with similar frustration again, they were less likely to produce negative emotions. For instance, Hu (M) said, "If encounter situation like this again, I will not feel so bad."

Changing Goal Orientation

In the field of sports and exercise, Nicholls (1984) generally distinguishes the goal perspective into task orientation and ego orientation [34] People with task orientation focus on personal progress and their success comes from mastering skills. In contrast, people with ego orientation pay more attention to success from surpassing others[35,36]. For social comparative frustration, rock climbers changed their goal orientation. Specifically, they changed from ego orientation to task orientation, and from pursuing conquer others to conquer themselves. Zhu (M) thought that after climbing for some time, his point of view changed, he said, "I think my competitive spirit has weakened to a certain degree, from comparing with others before to comparing with myself now." Likewise, Li (F) said that her goals in rock climbing had changed: "Before, I thought that I could do what other climbers could do, but now it's different. As long as I make progress, that's fine with me."

After climbing for some time, rock climbers' idea of winning the competition would weaken. Zhang (M) indicated that he no longer pursued to surpass others in rock climbing, he shared, "Now I rock climbing is to release stress and have fun, and I don't care about whether I climb better than others."

Liu (F) gradually stopped paying attention to achievements and results, and she enjoyed the climbing process more. She admitted, "At first, I was a little competitive, but later it seemed to become less with climbing more. As long as I try my best, it doesn't matter what the result is."

Rock climbers gradually realized that rock climbing was a self-challenging sport. Tian (M) stated, "I found later that rock climbing is a process of constantly challenging yourself. The difficulty of each route is there. If you have strength, you can complete this route. If you don't have strength, you can't. This is a process of competing with yourself." Similarly, Hong (M) analyzed why he likes rock climbing so much, "Rock climbing lets you challenge yourself, there is no need to compare with other people's level."

Discussion

This study used qualitative methods to explore the causes of rock climbing frustration and constructed effective self-regulatory mechanisms of rock climbing frustration, which provided targeted suggestions for future rock climbers. The study found that task comparison and social comparison were the main causes of rock climbing frustration. For the former, rock climbers mainly adopted a self-regulatory mechanism including focusing on tasks and habitual reflection. For the latter, they mainly adopted a self-regulatory mechanism involving emotional regulation and changing the goal orientation.

The task comparative frustration indicates that rock climbers are very difficult to complete the task, they cannot reach, delay, or need extra efforts to reach their goals [37]. The occurrence of task comparative frustration is related to the high challenge characteristic of rock climbing [38]. The increase of the routes' difficulty level will put forward higher requirements on rock climbers' skills and abilities. If their skills and abilities do not meet the requirements of routes' difficulty, they will fail many times or fall into a long plateau period. When the high challenge and low skills prevent rock climbers from meeting their expectations [39] and their competence needs cannot be satisfied [40], rock climbers will experience task comparative frustration.

Social comparison is also considered as an important cause of rock climbing frustration. In sports, individuals tend to evaluate their abilities through the performance of others [41], because the key to success or failure depends on their relative differences with others in most cases. Therefore, according to social comparison theory, social comparative frustration derives from rock climbers' negative self-evaluation based on the performance of others [42], [43]. Moreover, when activities are related to individuals, the higher achievement of others, the closer the relationship between individuals and others, the more self-esteem individuals lose in the comparison process [44]. Similarly, in rock climbing, the better others perform, the closer the relationship between rock climbers and others, the easier it is for rock climbers to experience frustration, negative self-concept, and low self-esteem. Besides, opponents playing well has also proved to be an important stressor in sports [45].

Aiming at task comparative frustration, rock climbers adopt a self-regulatory mechanism including focusing on tasks and habitual reflection. They face up to challenges and difficulties, seeking to solve problems and complete tasks. Focusing on tasks is a regulation of attention. Attention control is a key component of self-regulation when individuals encounter frustration and barriers in pursuing their goals [46]. Despite the pressure from frustration, depression, anxiety, anger, and self-doubt, rock climbers still focus on the current task and rarely shift their attention or change their plans. Focusing on tasks helps them to eliminate the interference of frustration and increase their efforts towards their goal. Therefore, it is helpful for rock climbers to complete the task as soon as possible and prevent withdrawal behavior [47]. Furthermore, this result corroborates the findings of the previous work in self-regulation strategies. For instance, concentration on the task is one of the most frequently mentioned stress coping strategies for athletes [6], [48], [49]. Concentration and focused attention are important self-regulation strategies in the learning process [50], [51].

Habitual reflection is important self-regulation to solve task comparative frustration. After climbing, rock climbers habitually reflect on their climbing movements and skills, find out problems and shortcomings, and think about how to complete the task the next time. Rock climbing is not a mechanical exercise. It requires rock climbers to study the climbing wall conditions, the best climbing route, and the combination of movements, to come up with the best solution to the route [52]. Therefore, it is not

enough to climb to the top with strength alone. Rock climbers need to think hard and reflect habitually, just as Zhang (M) emphasized that you must think in climbing, he explained, "If you don't reflect, you will fall off in which you fell off last time." In previous studies, systemic reflection and thinking in advance are effective self-regulatory strategies for coping with stress and frustration [49], [53]. On the contrary, too hasty and too much effort are related to ineffective strategies [49], [54].

In response to social comparative frustration, rock climbers adopt a self-regulation mechanism including emotional regulation and changing goal orientation. Emotion regulation modifies the subjective experience of emotion, which is effective in alleviating cognitive pain and decreasing negative experience [55],[56,57]. The cause of social comparative frustration is that rock climbers evaluate themselves by other people's performance, so they adopt emotion regulation strategies to deal with it, which involving downward comparison, distraction, reappraise, and self-soothing. These strategies may be explained as follows. Downward comparison can improve mood states [58]. Diverting attention can avoid falling into negative emotions [59]. Reappraisal makes individuals calm and rational [60]. Self-soothing helps reduce stress and negative emotions [57]. Also, emotion self-regulation ability can be learned and trained. For example, in general, the cognitive anxiety and physical anxiety of experienced climbers are significantly lower than those of less experienced climbers. Through practice, they have formed the habit of coping with stress and learned how to perform better under anxiety [61].

Changing goal orientation aims to fundamentally solve the social comparative frustration. The reason for rock climbers to compare with others is that their achievement motivation is ego orientation. They pursue to perform better than others. Therefore, their perceived competence and self-confidence are closely linked with the comparison with others, rather than with objective improvement of skills [35], [36]. However, rock climbers will gradually realize that comparing with others is meaningless after experiencing frustration caused by social comparison. As a result, they will realize that it is sensible to compare with themselves and concentrate on their progress. Their achievement motivation will also change from ego orientation to task orientation. This self-regulation can effectively deal with social comparative frustration, and encourage rock climbers to choose challenging tasks, make high-level efforts, and exhibit high-level persistence [34], [38].

This study has some limitations. The sample of rock climbers was relatively homogenous because they were all young rock climbers as members of the rock climbing club in a Chinese university. However, the rock climbers did share heterogeneous frustration experiences and self-regulation efforts. In general, groups of rock climbing are relatively young (taking China as an example, the average age of rock climbers in 2018 was 30.93 years old) [52], thus the group of college rock climbers has a certain degree of representativeness. Besides, it was possible that some rock climbers felt embarrassed or ashamed to describe their frustration experiences (especially social comparative frustration). To minimize this possibility, this study adopted various ways to ensure that the rock climbers spoke freely in the interviews. The participants were told that their replies would be anonymous and any identifying information would be eliminated.

Recommendations for future research. Previous research has pointed out that the stress coping strategies acquired from a certain sport can be generalized to other sports or even non-sports stress events (e.g., diseases, financial crisis, unemployment, etc.). Moreover, rock climbing has been developed into an exercise therapy [62] and adventure recreation education [63] aimed at helping young people develop internal resources and mental abilities (e.g., self-esteem, self-efficacy, ability to cope with setbacks and solve problems, etc.) [64]. Therefore, future research is needed to explore the possibility and methods that the frustration self-regulatory mechanisms of rock climbing can be generalized to daily life as interventions for other frustration events.

Conclusion

Overall, the rock climbers who were interviewed in this study provided in-depth insights, shared their frustration experiences, and concluded their self-regulatory efforts. This study has shown that task comparison and social comparison are the main causes of rock climbing frustration. According to the causes, different self-regulatory mechanisms are suggested. Focusing on tasks and habitual reflection are effective self-regulation for task comparative frustration. Emotion regulation and changing goal orientation are effective self-regulation for social comparative frustration. It is suggested that future rock

climbers cope with frustration through the self-regulatory mechanisms of frustration. Rock climbing teaching programs need to include the self-regulatory mechanisms of frustration to help beginners improve their self-regulation ability for rock climbing frustration.

Affiliations

Zhejiang University

Competing Interests

No potential conflict of interest was reported by the authors.

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