



RESEARCH ARTICLE

Relationship between Self-Efficacy and Creativity during the COVID-19 Pandemic: Psychological Resilience as a Mediator

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ABSTRACT

The research investigates self-efficacy in terms of psychological support, creativity, and psychological resilience. Using the Runco ideational behavior scale, 881 Chinese university students participated in an online questionnaire survey to provide information on their demographics, self-efficacy, psychological resilience, and creativity. In terms of psychology, the coronavirus illness College students have been severely impacted by the COVID-19 pandemic, which has disrupted their academics and leisure plans. The main objective of the study is to identify the impact of medications that increase psychological resilience and self-efficacy, which may be used to improve psychological and mental health. After examining correlations and controlling for these variables, it was discovered that self-efficacy and creativity had a positive link ($r = 0.475$, $p < 0.01$). This association was mediated by psychological resilience, with positive correlations found between creativity and psychological resilience ($r = 0.388$, $p < 0.01$) and between self-efficacy and psychological resilience ($r = 0.188$, $p < 0.01$). The study concluded that those with more psychological resilience tended to be more creative and that self-efficacy positively predicted creativity. This relationship was strengthened by the ability to overcome obstacles with a positive attitude and innovative activities, which helped people see the useful relationship between creativity and self-belief.

INTRODUCTION

The coronavirus illness outbreak poses a serious threat to public health everywhere. There have

been notable variations in how individuals have handled this issue. Resilience is the ability to bounce back from setbacks, adjust constructively,

and overcome hardship. Resilience is necessary for successfully managing challenges, unknowns, and transitions. It can be used in situations related to prevention (avoidance of stress) or therapy (recovery from the negative consequences of such worry). Previous studies have demonstrated that resilience can mitigate the detrimental effects of ill health and lower mortality by 6%. It can also help to mitigate moderate depression and negative affect. Few research, however, have examined resilience's mode of action in populations of college students during the COVID-19 epidemic using resilience as an influencer. Here, we explore how college students' psychological well-being has been impacted by resilience in the context of the epidemic. However, considering the difficulties brought forth by the pandemic, the need for innovation cannot be overstated.

Psychologically, the coronavirus infection COVID-19 crisis has significantly affected college students (Wei, 2023) and disrupted their education and lifestyle (Agovino and Musella, 2021; Xia et al., 2022). This situation's worldwide prevalence has continuously affected students' well-being, severely impeding their ability to succeed in school. Due to the global health crises, COVID-19 has attracted international interest (Qin et al., 2023). According to Sun and colleagues (2021), mental health problems such as depression, anxiety, and other mental health difficulties are frequent among college students, and the frequency of these illnesses increased during the COVID-19 pandemic. Numerous research studies have examined the difficulties faced by students throughout the pandemic; Wei (2023) claims that during COVID-19, students experienced difficulties or setbacks in their professional development.

To highlight The difficulties of online lectures and the cancellation of physical events. Xia et al. (2022) revealed that lack of socialization and insufficient interaction between instructors and students are the most rated challenges. According to Qin et al. (2023), mental disorders have increased among students, and limited studies were conducted on the medicating factors associated with the potential to reduce depression or mental disorders among students. Thus, mediating factors such as an individual's self-efficacy help them cope with the challenges (Mathisen and Bronnick, 2009). Students' self-belief

can enhance and manage emotions and stress to deal with challenges (Mathisen, 2011). Self-assured people can better overcome obstacles and adapt to changing conditions, which helps lessen the pandemic's effects on college students. Researchers have studied self-confidence from various perspectives over the years (Gilak et al., 2013; Khastari and Asgari, 2019). Interestingly, there has been curiosity about the relationship between an individual's creativity and self-confidence. Self-confidence is the conviction that one can achieve a particular objective. Several studies show a relationship between creativity and self-belief. Self-assured individuals typically approach jobs with an attitude that increases productivity and effectiveness.

For instance, a study revealed that individuals with self-belief outperformed those with confidence in tasks requiring creative thinking (Tierney and Farmer, 2002; Jam et al., 2017). However, some research presents a contrasting viewpoint. Particular academics suggest a U-shaped correlation between self-confidence and innovation, suggesting excessive and insufficient self-confidence can affect creativity (Nosu, 2017; Zhang and Bartol, 2010). Excessive self-confidence can make individuals overly sure of themselves, hindering their potential for thinking. In contrast, inadequate self-confidence can prevent individuals from having the courage to engage in thought and behavior (Sadik, 2016; Mansurova et al., 2018; Zhou and Shalley, 2003). The connection between self-belief and creativity sparks debate. This implies that researchers should delve deeper into understanding the link and elucidate their mechanisms and impacts on each other. Moreover, studies indicate how the internal psychological environment, such as resilience, can affect one's self-belief in creativity. Denckla et al. (2020) defined resilience as a person's capacity to handle situations and obstacles. Studies have indicated a link between resilience, self-belief, and innovative thinking (Gilak et al., 2013; Khastari and Asgari, 2019; Yong-Ti and Ling, 2018).

Resilient people are better able to respond to adversity in a good way, which boosts their confidence and inventiveness. Still, further study is required to determine how psychological resilience affects creativity and self-assurance. This suggests a complex

relationship requiring careful investigation between resilience, creativity, and self-confidence. This study examined the relationship between college students' self-confidence and creativity in the context of the COVID-19 pandemic, focusing on the influence of psychological strength on this relationship.

LITERATURE REVIEW

It is important to acknowledge that some young people today are not overwhelmed by significant adversity or hardship before delving into resilience. One definition of resilience is the ability of an individual to fend off negative consequences when faced with stressful situations by combining their psychological characteristics. Tolerance, happy emotions, extroversion, self-efficacy, spirituality, self-esteem, and good influence are some protective variables identified in earlier resilience research. The results corroborate Rutter's theory that resilience is an interactive construct involving a mix of high-risk experiences that ultimately lead to comparatively good psychological consequences.

In the academic world, there is ongoing discussion on the definition of psychological resilience. For instance, it has been described as a class of occurrences where positive outcomes occur when significant risks to development or adaptation are present. Put another way, it represents a wide range of behavioral inclinations and personal traits that help someone succeed in the face of difficulty. One way to think about how successful a person is at displaying resilience while facing significant problems is due to various circumstances coming together in ways that either positively or negatively impact the person's well-being.

Self-efficacy

Self-efficacy plays a vital role in the cognitive theory defined by (Bandura, 2001), which is one's ability to complete tasks to achieve goals. The cognitive theory suggests that individuals shape their environment rather than respond to it (Bandura, 1978; Bandura 1998). This theory is rooted in the belief that people possess symbolic capabilities. With these abilities, individuals can observe and assess their thoughts, behaviours, and feelings; they can create alternative courses of action, anticipate outcomes, experiment with their expectations, and assess their hypotheses

(Bandura, 1977). In addition, environmental events, individual internal factors (cognitive, emotional, and biological events), and behavior are mutually influenced. People respond to stimuli in three ways: through their thoughts, feelings, and actions (Stirin Tzur et al., 2016). In addition, through cognition, people have control over their behaviour, which affects not only the environment but also their cognition, emotions, and biological state. Self-belief is influenced by support from others' exercises to boost creativity. The goals one aims to achieve. It is a psychological trait that can be improved upon, and it is also an essential factor in determining how a person behaves, thinks, and reacts in the face of challenges. Greater self-efficacy is intrinsically linked to more significant effort. In other words, an individual imbued with self-efficacy will be better able to face challenges (Zhao et al., 2015). Self-efficacy affects our thinking, emotion, behavior, and motivation and thus plays a vital role in forming our perceived life experience (Bandura, 2011).

Therefore, one's belief in one's capabilities could clarify how cognitive skills and results are connected, as Chen et al. stated in 2001. In the face of the difficulties arising from the pandemic, self-efficacy can affect one's health behaviour (Xiong et al., 2020). Zalewska-Puchała et al. (2007) suggest that individuals with self-confidence are more inclined to feel motivated to make a move, enabling them to accomplish more and experience improved well-being. People with self-confidence are more likely to play a role in bringing about changes amid the pandemic. As a result, they can cope confidently with the hardships and inconveniences posed by the pandemic and indulge in healthy, creative activities.

Creativity

Creativity as an intellectual quality has always interested educators (Cohen and Cromwell, 2021; Zutshi et al., 2021). The American psychologist Guilford coined the term creativity, which considers creation a process embodying both actions and thought, generating novel and unique concepts that are valuable or beneficial to the individual or society (Guilford, 1950). The focus of creativity research has changed from examining the work of highly skilled professionals to taking a comprehensive look at the inventiveness of regular people (Joseph

and Linley, 2006). There isn't a single, widely acknowledged definition of creativity (Zeng et al., 2021). This is due to its complexity and the fact that it incorporates multiple points of view from different fields (Treffinger et al., 2023). The ability to generate a result that is considered novel or noteworthy is the definition of creativity. According to this viewpoint, only a few people—like Einstein—possess originality and achievements that make them deserving of praise (Kaufman and Beghetto, 2009).

However, another dominant view of creativity encompasses everyday creativity, which refers to the originality of people in their daily lives and various activities at work and leisure (Richards, 2010). This category of creativity emphasizes the everyday scenario of ordinary people. It suggests that ordinary places like the home, job, school, and social situations are good places to find and foster creativity (Chen and Yang, 2024; Runco et al., 2001). According to research on creativity, most people agree that it is a cognitive process characterized by the capacity to develop original ideas (Fatima et al., 2023; Varshney et al., 2013; Xu et al., 2021). During the pandemic, research has shown that creativity might also be stimulated (Hofreiter et al., 2021; Mercier et al., 2021). It plays a crucial role in helping individuals cope with anxiety, stress, depression, and boredom during the pandemic (Guo and Chueachainat, 2024; Karwowski et al., 2021; Morse et al., 2021). People may have a variety of novel behaviours and ideas to alleviate their dilemmas in the face of difficulty and boredom during the pandemic lock down. For instance, Li et al. (2020) examined how China's college students responded to movement restrictions brought on by the COVID-19 pandemic regarding their novelty seeking behaviour and the results of mental health problems. They discovered that Chinese college students were becoming more interested in unusual experiences. For example, Huang and Tsai (2021) investigated how innovation in rural China's food production and distribution contributed to social growth and poverty reduction. Additionally, pedagogical innovations in education have proliferated in response to the epidemic; Li et al. (2021) have designed and implemented short-term courses centered around the Thinking-Based Instruction Theory (TBIT). In addition to improving instruction, these micro-courses significantly boosted

student motivation and completed online coursework compared to the national curricula.

In this regard, stimulating creativity during the pandemic is strongly related to self-efficacy. People possessing high self-efficacy can be expected to respond more positively and confidently to the difficulties posed by the pandemic, inadvertently promoting creative behaviour. Besides, studies show a positive association between self-efficacy and creativity (Jaiswal and Dhar, 2016; Newman et al., 2018). The research conducted by Ambles in 1997 found a connection between creativity and self-assurance. As the authors explain, self-efficacy pertains to an individual's confidence in accomplishing a task. Creativity involves the creation of valuable ideas, products, or methods. The authors state that self-efficacy can influence an individual's creativity because when individuals believe they can accomplish a task effectively, they are more motivated to try creative solutions. Furthermore, Tierney and Farmer (2002) studied how creativity and belief in one's abilities are linked. Their findings showed that a person's task performance was strongly influenced by their confidence and creativity. The study also discovered that honing creative thinking and problem-solving techniques can raise creative self-efficacy. According to this research, creativity and self-efficacy are positively correlated, and those with high self-efficacy levels are typically better at generating original ideas and solutions. In conclusion, there is good evidence that personal self-efficacy positively predicts creativity (Jaiswal and Dhar, 2016) it seems sensible for us to propose the idea;

Hypothesis 1: Self-efficacy positively correlates with creativity

Psychological resilience

According to the American Psychological Association (2014), resilience is usually understood to be a process that permits positive reactions to dangers or significant adversity. The concept of resilience includes various traits that demonstrate overall resourcefulness, moral fortitude, and adaptability to various environmental circumstances (Luthar and Cushing, 1997). The academic community needs to agree upon a common definition of psychological resilience. Psychological resilience can be defined from three different perspectives (Denckla et al.,

2020). These perspectives are the perspective of a developmental outcome (outcome definition), the perspective of an individual's ability or quality characteristic (competence definition), and the perspective of a dynamic process of developmental change (process definition).

On the other hand, the competence perspective defines resilience as a personal attribute or skill that individuals inherently have, as per Luthar et al. (2000). Resilience is a person's ability to recover from emotions and make appropriate adjustments. A process definition describes resilience as an evolving process in which individuals effectively adjust to challenges such as trauma, threats, tragedies, and significant life stressors (Luthar et al., 2000). The third view-point, the process definition, essentially incorporates competence and outcome definitions by highlighting an individual's capacity to adapt successfully. The transformation process results that outline the interplay between risk and protective factors are widely acknowledged (Mukherjee and Kumar, 2016).

According to studies, people confident in themselves are better equipped to face obstacles head-on and successfully adjust (Zhao et al., 2015). These people frequently see possibilities rather than challenges when faced with difficult situations (Liu and Li, 2018). Unlike people with lower self-efficacy, they manage well by adapting to the circumstances (Zhao et al., 2015). Self-efficacy among college students is essential for reducing the detrimental effects of stress and promoting early adaptability (Morton et al., 2014). Researchers found that people with psychologically solid resilience also typically had high levels of self-efficacy in Kuang et al. (2021) study. Therefore, it is reasonable to propose that.

Hypothesis (2a): Self-efficacy positively correlates with psychological resilience.

As highlighted by Killgore et al. (2020), the ability to bounce back psychologically is essential for dealing with difficulties amid the pandemic. It also fosters elements, as Metzl and Morrell (2008) noted. Flexibility, a core component of creativity, is essential in coping with difficulties by generating changes in behaviour and adapting to new ways of living and interacting with others (Metzl and Morrell, 2008; McFadden and Basting, 2010). Flexibility

implies being attentive to changing situational needs, making strategies to meet those needs, monitoring the effectiveness of the selected methods, reassessing the changing situation, and modifying the strategy whenever necessary (Fredrickson et al., 2003; Rashid et al., 2023). Responding to tricky situations and generating alternatives reflect one's flexibility to adapt to change and ingenuity to create new ideas and alternatives. Thus, as shown in several studies, psychological resilience is closely related to creativity (Runco et al., 2001; Xu et al., 2021). For example, in Liang et al. (2021), the researchers noted that resilience was closely related to creativity and that more resilient college students could be predicted to be better creative thinkers. Xu et al. (2021) surveyed to evaluate the creativity levels of college students. The results showed that individuals better equipped with psychological resilience were more creative during the COVID-19 pandemic. In summary, we can reasonably propose that.

Hypothesis 2b: Psychological resilience positively correlates with creativity.

The second hypothesis, H2a and H2b, can be further integrated and summarised as:

Hypothesis 2: Psychological resilience mediates the effect of self-efficacy on creativity.

Significance of the study

In light of the COVID-19 pandemic, this study offers new insights into the psychological condition of Chinese college students. Due to the tendency of earlier research to view creativity as a dependent variable, tests have been conducted to determine how different psychological factors affect creativity. According to our research, creativity moderates the relationship between self-efficacy and resilience, affecting college students' psychological well-being. The correlation between psychological resilience and self-efficacy indicates that college students with a better sense of self-efficacy were those who dared to confront the challenges posed by the pandemic. They had more confidence in their actions since they were resilient to setbacks.

Simultaneously, we discovered a strong correlation between increased creativity and self-efficacy. College students' psychological resilience would be strengthened and consolidated if teachers taught them how to use creativity to overcome

obstacles brought on by the pandemic. This would result in higher levels of self-efficacy, which would be advantageous for the student's academic performance and future professional development. Consequently, when fostering creativity in college students, parents, educators, and educational institutions should focus on providing appropriate and constructive assistance, being cautious not to encourage excessively unconventional thinking that could hinder the students' capacity for ad-aptation.

METHODOLOGY

Research design

An online questionnaire was used in a quantitative investigation. Between April 10 and June 15, 2020, a technical college in Guangdong, China, carried out the research project. Guangdong Province, one of the most impacted locations by COVID-19 outbreaks, is a typical coastal region of China with a high volume of internal and international exchanges. An ethical statement has been authorized before the study's implementation. See the section on ethical considerations. In this investigation, a stratified random sample technique was employed. Four institutions that are representative of the region were chosen after 67 universities in Guangdong Province, China, were subjected to stratified sampling. However, because the institutions' administration was closed during the COVID-19 outbreak, only one of these four campuses was given permission to be polled.

At this authorized university, a random sample of 918 sophomores was selected from more than 20,000 students in 44 undergraduate majors. Following the last screening, the total was downsized to 881 eligible students (i.e., 37 participants were not included). These participants were all willing study subjects who endured varied levels of rigorous isolation or travel limitations during the epidemic. 317 (36.0%) males and 564 (64.0%) women made up the participant count. The sample includes a range of majors, geographies, and genders, as the afore mentioned data demonstrate. Informal discussions before to data collection revealed that participants experienced difficulties during the COVID-19 pandemic, confirming the significance of our study. A number of people expressed feeling uneasy about the pandemic's advancement, citing

disruptions to their daily routines and schooling.

Data collection

A questionnaire survey was carried out to gather data. The participants scanned the QR code (a matrix barcode) containing survey information to complete the questionnaire voluntarily during the break from college English class. The questionnaire was divided into four sections: (a) demographic data; (b) self-efficacy scale items; (c) Runco ideational behavior scale items; and (d) psychological resilience scale items. Data regarding the participant's gender, residential address, and area of study were gathered by the researchers. The questionnaire was initially created in English. Translated it into Chinese after that. They used a technique known as back translation to confirm the accuracy of the questionnaire. In order to resolve any disparities, this required comparing the translation with the original text in English.

Measures

Self-efficacy scale: This research utilized a scale on self-belief that included 10 items (Schwarzer et al., 1997). The rating system employs a 4-point scale ranging from 1 to 4, representing a shift from "not true to "highly true." In this research, the scale demonstrated a cronbach alpha coefficient of 0.875.

Runco Ideational Behavior scale: The creativity of the individuals as assessed by utilizing the Runco Ideational Behavior Scale as described by Runco et al. (2001). This scale appraises the creative behaviour of individuals in their daily lives and has 23 items. On a scale of 1 to 5, participants rated their agreement levels moving from disagreement to agreement. The cronbach alpha coefficient for the Runco Idea Behavior Scale utilized in this research was high, at 0.938.

Psychological Resilience Scale: The researchers employed the Psychological Resilience Scale to evaluate resilience. This scale comprises five dimensions: support, positive thinking, goal orientation, family backing, and emotional regulation (Hu and Gan, 2008). The 27 items on the questionnaire assess participants' responses to indicators on a 5-point scale (Connor and Davidson, 2003). The scoring from 1 to 5 represents the change in participants' perceptions from complete disapproval to full approval. The cronbach's alpha coefficient was 0.805 in this study.

Statistical analyses

The researchers used IBM SPSS 23.0. to analyze the data. Harman's analysis found that there was no bias in the method. Eleven factors had eigenvalues exceeding 1, explaining 64.278% of the variability. The first factor contributed only 26.989%, well below the critical criterion of 40%. The intrinsic characteristics of the variables, rather than the methods employed to measure and gather the data, led to the differences between the dependent variables. Descriptive statistics computed each variable's mean and standard deviation to identify concentration and dispersion tendencies. A correlation analysis was conducted between all variables to determine the Pearson product moment correlation coefficient. PROCESS V3.3 (Hayes, 2013) was employed in our study to assess the mediation effect in model 4. A bias corrected bootstrap technique with 5,000 samples and a 95% confidence interval was used to

examine the impacts. According to Shrout and Bolger (2002), the mediation is statistically significant if the confidence interval does not include zero.

RESULTS AND ANALYSIS

Descriptive statistics

The research findings and connections between factors are detailed in Tables 1 and 2. A study discovered a connection between self-assurance and artistic flair among university students with a correlation coefficient of $r = .475^{**}$ and a significance level of $p < 0.01$. Moreover, there was a connection between self-assurance and resilience (correlation coefficient = 0.188^{**} , $p < 0.01$), and psychological resilience was found to have an association with creativity as well (correlation coefficient = 0.388^{**} , $p < 0.01$). These findings support the proposed hypothesis about the interconnections among these factors.

Table 1: Presents an overview of the data for the three variables studied

Variables		N	M	SD
(1) Self-efficacy	Female	317	2.4525	0.57268
	Male	564	2.2421	0.50112
(2) Creativity	Female	317	3.2754	0.63416
	Male	564	3.2339	0.51948
(3) Psychological Resilience	Female	317	3.1737	0.50077
	Male	564	3.2384	0.30451

Note: *N* = number; *M* = mean; *SD* = Standard Deviation

Table 2: Pearson's correlation coefficient, *r*, for the three variables

Variables	(1) Self-Efficacy	(2) Creativity	(3) Psychological Resilience
(1) Self-Efficacy	-	-	-
(2) Creativity	0.475**	-	-
(3) Psychological Resilience	0.188**	0.388**	-

Note: ** $p < 0.01$

Mediating effect of psychological resilience

In this study, the researchers examined the mediational model that they developed. The results shown in Table 3 suggest that the influence of self-efficacy on creativity was found to be $\beta=0.4374$, $SE=0.0298$ $p < 0.001$). Self-efficacy impacted resilience ($\beta=0.1359$, $SE=0.0239$ $p < 0.001$). Psychological resilience was positively and significantly correlated with creativity ($\beta=0.4492$, $SE=0.0412$ $p < 0.001$). The relationship between creativity and self-confidence has been discovered to

be mediated by psychological resilience. According to an analysis, the mediating component was responsible for a smaller fraction of the total effect, whereas the direct influence accounted for the majority of it. Table 4 indicates that there appears to be a relationship between resilience and inventiveness, which is mediated by self-confidence.

The information indicates that psychological resilience helps establish a connection between confidence and creativity without cancelling their relationship.

Table 3: Mediating effect of psychological resilience on the relationship between self-efficacy and creativity

Predictors	On					On				
	Psychological Resilience	β	SE	t	95 % CI	B	SE	t	95 % CI	
Self-Efficacy	0.1359	0.0239	5.6829***	[0.0889, 0.1828]	0.4374	0.0298	14.6980***	[0.3790, 0.4958]		
Psychological Resilience					0.4492	0.0412	10.8939***	[0.3683, 0.5302]		

Note: *** $p < 0.001$. Analyses conducted by PROCESS Model 4, $N = 881$

Table 4: The total effect, direct effect, and indirect effect among the variables

	Effect Size	Boot SE	Boot CI Lower Limit	Boot CI Upper Limit	Relative Effect Size
Total Effect	0.4985	0.0311	0.4374	0.5595	
Direct Effect	0.4375	0.0298	0.379	0.4958	87.76%
Indirect Effect	0.061	0.0207	0.0244	0.1052	12.24%

DISCUSSION

The researchers created a model to show how self-belief and innovation are connected in university students amidst the challenges of the COVID-19 outbreak. The results showed that (1) confidence and creativity were somewhat correlated, and (2) resilience was another component that helped to moderate this positive relationship between the two. The theory was validated by these findings. in line with the results of earlier studies.

The study's findings validated hypothesis H1, showing that self-belief and creativity were related in 2021, as suggested by Xu et al. (2021) The findings corroborated the hypothesis that creativity in research findings is correlated with self-confidence. As stated by Bandura (1978) and Bandura (1988), the idea holds that those who possess a higher level of self-confidence are better equipped to confront challenges and make an effort to overcome them. Therefore, when it comes to creativity, self-efficacy enables people to express themselves creatively even in challenging circumstances. Conversely, individuals deficient in self-efficacy may stop trying when confronted with dilemmas and challenges and, therefore, fail to develop creatively suitable reactions. Furthermore, Amabile (1988) model of the creativity component asserts that internal motivation is one of the main variables affecting creativity. People who believe in themselves are more likely to be driven,

eager to create goals, and confident in their capacity to achieve them (Intasao and Hao, 2018). During the COVID-19 lockdowns, college students' heightened sense of self-efficacy may have supported their creativity (Zeng et al., 2021).

They might have better equipped themselves to assemble diverse ideas from their life experience, which would have stimulated their creative initiatives. Dietrich (2004) discussed research results from cognitive neuro science that demonstrated the relationship between creativity and self-confidence. According to the research, the lobe, temporal lobe, hippo campus, and cortex are important brain regions for creative processes. These regions, closely linked to a person's self-efficacy, become active after creative tasks are finished. When it comes to creative tasks, those who have a high feeling of self-efficacy might be more likely to recognize the creative potential of these regions and exhibit higher levels of creativity. The relationship between creativity and self-efficacy is favorable, which is to be expected. The current research also confirmed H2a, demonstrating that self-belief was connected with resilience in a manner that supports findings from earlier studies. In a study by Kuang et al. (2021), it was observed that people with psychological resilience showed a notable increase in self-confidence compared to those with lower resilience levels. Those with enhanced self-confidence are likely to handle challenges, viewing

potential obstacles as chances for growth rather than threats, as highlighted by Liu and Li (2018). Individuals are inclined to employ coping strategies when they possess self-belief compared to those lacking self-confidence (Zhao et al., 2015). Therefore, self-confidence is connected to resilience.

Furthermore, the theory was supported by the research data, which showed a favorable correlation between creativity and mental resilience. This outcome was in line with the findings of Liang et al. (2021), who observed a relationship between resilience and creativity. This means that college students who possess greater resilience will also be more skilled and innovative thinkers. Researchers at an independent institution in China answered a survey on creativity among students as part of a study by Xu et al. (2021).

The study's ultimate findings, merging H2a and H2b, suggested that psychological resilience moderated the connection between self-assurance and creativity. The analysis revealed that self-confidence had an impact, explaining 87.763% of its overall influence on creativity. However, the impact of self-efficacy on creativity through means was found to be minor, accounting for 12.237% of its overall influence. When the putative mediating factor was taken into account, the confidence interval changed noticeably, suggesting that psychological resilience contributed to the relationship between self-efficacy and creativity. The study's conclusions improved our understanding of how college students act in situations similar to the pandemic. They also clarified the relationship between students' self-belief and their creative ability in the face of adversity, such as the pandemic, highlighting the role that psychological resilience plays as a mediator in this interaction.

CONCLUSION AND RECOMMENDATIONS

In this study, we examine theoretical associations between self-efficacy and creativity to deepen our understanding of the influence of self-efficacy on creativity. Thinking about this issue makes it clear that psychological resilience links abilities to self-confidence. It implies that resilient college students are more resourceful in their problem-solving. Furthermore, if these students took action to strengthen their psychological resilience, they might

be more creative in their regular tasks or areas of specialization. The study's findings about the relationship between the three variables may help researchers better understand how psychological resilience fosters creativity by providing different viewpoints on the creative process. The research found that believing in oneself positively influences creativity and having resilience could enhance this connection to some degree. Individuals with high psychological resilience tend to be more creative in this connection because they can respond to difficulties by making behavioral changes. Adapting to new lifestyles and interactions with others in this manner is conducive to creative development. These findings help to advance appreciation and understanding of the complex mechanisms that link self-efficacy, creativity, and psychological resilience.

Limitations and future research directions

There are two limitations to the research. At first, everyone involved were Chinese college students from Guangdong Province who were enrolled in the university to further their education. Because of this, the study's sample group might not be entirely representative, but the conclusions drawn from it can still be applied outside of its specific context and may call for more extensive generalization. Second, because this study is cross-sectional, more research on the longitudinal components is required. Researchers may use participants in follow-up studies and longitudinal studies in the future. Researchers might also investigate different mediating variables that more clearly illustrate the impact of psychological resilience on creativity.

REFERENCES

- Agovino M, Musella G; 2022. Economic losses in tourism during the COVID-19 pandemic. The case of Sorrento. *Current Issues in Tourism*, 25(23):3815-3839.
- Amabile TM; 1997. Motivating creativity in organizations: On doing what you love and loving what you do. *California Management Review*, 40(1):39-58.
- American Psychological Association, The road to resilience; 2014. <https://shorturl.at/slYIZ>.

- Bandura A; 1977. Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84(2):191.
- Bandura A; 1978. Self-efficacy: Toward a unifying theory of behavioral change. *Advances in Behaviour Research and Therapy*, 1(4):139-161.
- Bandura A; 1988. Organisational applications of social cognitive theory. *Australian Journal of Management*, 13(2):275-302.
- Bandura A; 2001. Social cognitive theory: An agentic perspective. *Annual Review of Psychology*, 52(1):1-26.
- Bandura A; 2011. A social cognitive perspective on positive psychology. *International Journal of Social Psychology*, 26(1):7-20.
- Chen F, Yang P; 2024. Promoting early childhood learning education: A systematic review of structural quality of preschool education in China. *Journal of Advances in Humanities Research*, 3(1):41-58.
- Cohen AK, Cromwell JR; 2021. How to respond to the COVID-19 pandemic with more creativity and innovation. *Population Health Management*, 24(2):153-155.
- Connor KM, Davidson JR; 2003. Development of a new resilience scale: The Connor-Davidson resilience scale (CD-RISC). *Depression and Anxiety*, 18(2):76-82.
- Denckla CA, Cicchetti D, Kubzansky LD, Seedat S, Teicher MH, Williams DR, et al.; 2020. Psychological resilience: An update on definitions, a critical appraisal, and research recommendations. *European Journal of Psychotraumatology*, 11(1):1822064.
- Dietrich A; 2004. The cognitive neuroscience of creativity. *Psychonomic Bulletin & Review*, 11:1011-1026.
- Fatima T, Zalfaqr M, Mehdi AA, Ahmed S; 2023. Investigation of professional, spiritual and emotional intelligence on organizational learning. *International Journal of Management Thinking*, 1(1):1-19.
- Fredrickson BL, Tugade MM, Waugh CE, Larkin GR; 2003. What good are positive emotions in crisis? A prospective study of resilience and emotions following the terrorist attacks on the United States on September 11th, 2001. *Journal of Personality and Social Psychology*, 84(2):365.
- Gilak M, Mohammadi AZ, Bagheri F; 2013. The relationship of resiliency and self-concept with self-efficacy of handicapped females: The mediating role of creativity. *Developmental Psychology: Journal of Iranian Psychologists*, 9(35):307-316.
- Guilford J; 1950. Creativity. *American Psychology*, 5(9):444-454.
- Guo Q, Chueachainat K; 2024. Cross-cultural communication and co-directional theory: Assessing the impact of cultural background on communication efficacy among international students in Malaysia. *Journal of Advances in Humanities Research*, 3(1):22-40.
- Hayes AF; 2017. Introduction to mediation, moderation, and conditional process analysis: A regression-based approach. Guilford Publications.
- Hofreiter S, Zhou X, Tang M, Werner CH, Kaufman JC; 2021. COVID-19 lockdown and creativity: exploring the role of emotions and motivation on creative activities from the Chinese and German perspectives. *Frontiers in Psychology*, 12:617967.
- Hu YQ, Gan YQ; 2008. Development and psychometric validity of the resilience scale for Chinese adolescents. *Acta Psychologica Sinica*, 40(8):902-912.
- Huang GQ, Tsai FS; 2021. Social innovation for food security and tourism poverty alleviation: Some examples from China. *Frontiers in Psychology*, 12:614469.
- Intasao N, Hao N; 2018. Beliefs about creativity influence creative performance: The mediation effects of flexibility and positive affect. *Frontiers in Psychology*, 9:411756.
- Jaiswal NK, Dhar RL; 2016. Fostering employee creativity through transformational leadership:

- Moderating role of creative self-efficacy. *Creativity Research Journal*, 28(3):367-371.
- Jam FA, Donia MB, Raja U, Ling CH; 2017. A time-lagged study on the moderating role of overall satisfaction in perceived politics: Job outcomes relationships. *Journal of Management & Organization*, 23(3):321-336.
- Joseph S, Linley PA; 2006. Growth following adversity: Theoretical perspectives and implications for clinical practice. *Clinical Psychology Review*, 26(8):1041-1053.
- Karwowski M, Zielińska A, Jankowska DM, Strutyńska E, Omelańczuk I, Lebeda I; 2021. Creative lockdown? A daily diary study of creative activity during pandemics. *Frontiers in Psychology*, 12:600076.
- Kaufman JC, Beghetto RA; 2009. Beyond big and little: The four c model of creativity. *Review of General Psychology*, 13(1):1-12.
- Khastari S, Asgari P; 2019. The relationship between emotional regulation, action flexibility and self-efficacy with the emotional creativity of Ahvaz painters. *Salamat Ijtimai*, 6(2):149-156.
- Killgore WD, Taylor EC, Cloonan SA, Dailey NS; 2020. Psychological resilience during the COVID-19 lockdown. *Psychiatry Research*, 291:113216.
- Kuang D, Gu DF, Cao H, Yuan QF, Dong ZX, Yu D, et al.; 2021. Impacts of psychological resilience on self-efficacy and quality of life in patients with diabetic foot ulcers: A prospective cross-sectional study. *Annals of Palliative Medicine*, 10(5):5610618-5615618.
- Li WW, Yu H, Miller DJ, Yang F, Rouen C; 2020. Novelty seeking and mental health in Chinese university students before, during, and after the COVID-19 pandemic lockdown: A longitudinal study. *Frontiers in Psychology*, 11:600739.
- Liang Y, Zheng H, Cheng J, Zhou Y, Liu Z; 2021. Associations between posttraumatic stress symptoms, creative thinking, and trait resilience among Chinese adolescents exposed to the Lushan earthquake. *The Journal of Creative Behavior*, 55(2):362-373.
- Liu C, Li H; 2018. Stressors and stressor appraisals: The moderating effect of task efficacy. *Journal of Business and Psychology*, 33:141-154.
- Luthar SS, Cicchetti D, Becker B; 2000. The construct of resilience: A critical evaluation and guidelines for future work. *Child Development*, 71(3):543-562.
- Luthar SS, Cushing G; 1997. Substance use and personal adjustment among disadvantaged teenagers: A six-month prospective study. *Journal of Youth and Adolescence*, 26(3):353-372.
- Mansurova I, Burkov A, Shilov I, Shirokova Ye S, Dolgiy E, Khoussainov A, et al.; 2018. Relaxation behavior of elastomer composites: The effect of a hybrid carbon black/carbon nanotubes filler. *International Journal of Applied and Physical Sciences*, 4(3):76-80.
- Mathisen GE, Bronnick KS; 2009. Creative self-efficacy: An intervention study. *International Journal of Educational Research*, 48(1):21-29.
- McFadden SH, Basting AD; 2010. Healthy aging persons and their brains: Promoting resilience through creative engagement. *Clinics in Geriatric Medicine*, 26(1):149-161.
- Mercier M, Vinchon F, Pichot N, Bonetto E, Bonnardel N, Girandola F, et al.; 2021. COVID-19: A boon or a bane for creativity?. *Frontiers in Psychology*, 11:601150.
- Metzl ES, Morrell MA; 2008. The role of creativity in models of resilience: Theoretical exploration and practical applications. *Journal of Creativity in Mental Health*, 3(3):303-318.
- Morse K, Fine PA, Friedlander KJ; 2021. Creativity and leisure during COVID-19: Examining the relationship between leisure activities, motivations, and psychological well-being. *Frontiers in Psychology*, 12:609967.
- Morton S, Mergler A, Boman P; 2014. Managing the transition: The role of optimism and self-efficacy for first-year Australian university students. *Journal of Psychologists and Counsellors in Schools*, 24(1):90-108.

- Mukherjee S, Kumar U. Psychological resilience: A conceptual review of theory and research. In: *The Routledge International Handbook of Psychosocial Resilience* Routledge; 2016. p. 3-12.
- Newman A, Herman H, Schwarz G, Nielsen I; 2018. The effects of employees' creative self-efficacy on innovative behavior: The role of entrepreneurial leadership. *Journal of Business Research*, 89:1-9.
- Nosu K; 2017. Analysis of behavior of adults with Aphasia in a community. *Journal of Advances in Health and Medical Sciences*, 3(2):75-87.
- Qin LL, Peng J, Shu ML, Liao XY, Gong HJ, Luo BA, et al.; 2023. The fully mediating role of psychological resilience between self-efficacy and mental health: Evidence from the study of college students during the COVID-19 pandemic. *Healthcare*, 11(3):420.
- Rashid A, Jehan Z, Kanval N; 2023. External shocks, stock market volatility, and macroeconomic performance: An empirical evidence from Pakistan. *Journal of Economic Cooperation & Development*, 44(2):1-26.
- Richards R; 2010. Process and way of life-Four key issues. In: *The Cambridge handbook of creativity*. Cambridge University Press Cambridge, UK.
- Runco MA, Plucker JA, Lim W; 2001. Development and psychometric integrity of a measure of ideational behavior. *Creativity Research Journal*, 13(3-4):393-400.
- Sadik F; 2016. Investigating primary school teachers' views about their classroom management behavior. *Journal of Advances in Humanities and Social Sciences*, 2(2):76-84.
- Schwarzer R, Bäßler J, Kwiatek P, Schröder K, Zhang JX; 1997. The assessment of optimistic self-beliefs: Comparison of the German, Spanish, and Chinese versions of the general self-efficacy scale. *Applied Psychology*, 46(1):69-88.
- Shrout PE, Bolger N; 2002. Mediation in experimental and nonexperimental studies: New procedures and recommendations. *Psychological Methods*, 7(4):422.
- Stirin Tzur K, Ganzach Y, Pazy A; 2016. On the positive and negative effects of self-efficacy on performance: Reward as a moderator. *Human Performance*, 29(5):362-377.
- Tierney P, Farmer SM; 2002. Creative self-efficacy: Its potential antecedents and relationship to creative performance. *Academy of Management Journal*, 45(6):1137-1148.
- Treffinger DJ, Isaksen SG, Stead-Dorval KB; 2023. *Creative problem solving: An introduction*. Routledge.
- Varshney LR, Pinel F, Varshney KR, Schörgendorfer A, Chee YM.; 2013. Cognition as a part of computational creativity. In: *2013 IEEE 12th international conference on cognitive informatics and cognitive computing IEEE* .
- Wei ZB; 2023. Analysis of learning obstacles for high-performance student athletes in Chinese universities during the COVID-19 pandemic. *International Journal of Higher Education*, 12(3):1-80.
- Xia Y, Hu Y, Wu C, Yang L, Lei M; 2022. Challenges of online learning amid the COVID-19: College students' perspective. *Frontiers in Psychology*, 13:1037311.
- Xiong H, Yi S, Lin Y; 2020. The psychological status and self-efficacy of nurses during COVID-19 outbreak: A cross-sectional survey. *INQUIRY: The Journal of Health Care Organization, Provision, and Financing*, 57:0046958020957114.
- Xu Y, Shao J, Zeng W, Wu X, Huang D, Zeng Y, et al.; 2021. Depression and creativity during COVID-19: Psychological resilience as a mediator and deliberate rumination as a moderator. *Frontiers in Psychology*, 12:665961.
- Yong-Ti Y, Ling Z; 2018. How psychological resilience influence employees' creativity: The role of psychological safety and creative self-efficacy. *Journal of Psychological Science*, 41(1):118.
- Zalewska-Puchała J, Majda A, Gałuszka A, Kolonko J; 2007. Health behaviour of students versus a sense of self-efficacy. *Advances in Medical Sciences*, 52:73-77.

- Zeng W, Zeng Y, Xu Y, Huang D, Shao J, Wu J, et al.; 2021. The influence of post-traumatic growth on college students' creativity during the COVID-19 pandemic: The mediating role of general self-efficacy and the moderating role of deliberate rumination. *Frontiers in Psychology*, 12:665973.
- Zhang X, Bartol KM; 2010. Linking empowering leadership and employee creativity: The influence of psychological empowerment, intrinsic motivation, and creative process engagement. *Academy of Management Journal*, 53(1):107-128.
- Zhao FF, Lei XL, He W, Gu YH, Li DW; 2015. The study of perceived stress, coping strategy and self-efficacy of Chinese undergraduate nursing students in clinical practice. *International Journal of Nursing Practice*, 21(4):401-409.
- Zhou J, Shalley CE; 2003. Research on employee creativity: A critical review and directions for future research. *Research in Personnel and Human Resources Management*, 22:165-217.
- Zutshi A, Mendy J, Sharma GD, Thomas A, Sarker T; 2021. From challenges to creativity: Enhancing SMEs' resilience in the context of COVID-19. *Sustainability*, 13(12):6542.