The Relationship Between Psychological Resilience and Malicious Creative Behavior Tendency in Adolescents

Authors: Wang Dan, Wang Dianhui, Chen Wenfeng, Wenfeng Chen

Date: 2021-10-08T00:00:00+00:00

Abstract

Malicious creativity is distinguished from general creativity by its unique "harmfulness." As positive personality traits such as psychological resilience can promote general creativity while inhibiting maliciousness, their influence on malicious creativity remains unclear. Two studies were conducted to investigate the relationship between psychological resilience and malicious creativity and its underlying mechanisms, as well as the joint effects of psychological resilience and stress on malicious creativity. The results revealed that psychological resilience level significantly negatively predicted adolescents' malicious creative behavior, primarily operating through positive coping styles. Furthermore, the effect of psychological resilience on malicious creative behavior was moderated by the stress environment, such that the inhibitory effect of positive coping styles on malicious creative behavior was attenuated under stress conditions compared to non-stress conditions. These findings underscore the necessity of cultivating psychological resilience in adolescents to buffer against adverse external environmental influences and to appropriately guide the development of their creativity.

Full Text

The Relationship Between Adolescents' Psychological Resilience and Malevolent Creative Behavior Tendencies

WANG Dan, WANG Dianhui, CHEN Wenfeng
Department of Psychology, Renmin University of China, Beijing 100872, China

Abstract

Malevolent creativity is distinguished from general creativity by its unique "harmfulness." While positive personality traits such as psychological resilience may promote general creativity, they simultaneously inhibit malevolent tendencies, making their influence on malevolent creativity unclear. Through two studies, we examined the relationship between psychological resilience and malevolent creativity, its underlying mechanisms, and the joint effects of resilience and stress on malevolent creative behavior. The results indicate that: (1) Resilience levels significantly negatively predict adolescents' malevolent creative behavior, primarily through positive coping styles; (2) The influence of resilience on malevolent creative behavior is moderated by stress, such that stress attenuates the inhibitory effect of positive coping on malevolent creative behavior compared to non-stress conditions. These findings suggest the importance of cultivating adolescents' psychological resilience to resist adverse environmental influences and properly guide the development of their creativity.

Keywords: Malevolent creativity, Psychological resilience, Coping style, Stress, Adolescents

Received: March 17, 2021
Funding: This research was supported by the Renmin University of China Scientific Research Fund (Central University Basic Research Operating Expenses Special Fund, 18XNLG10, 19XNLG20), the 2020 Central University Special Fund for Building World-Class Universities (Disciplines) and Characteristic Development Guidance at Renmin University of China, and the "Philosophy and Cognitive Science Interdisciplinary Platform" project of Renmin University's "Double First-Class" Interdisciplinary Major Innovation Planning Platform.

Corresponding author: CHEN Wenfeng, E-mail: wchen@ruc.edu.cn

Introduction

When people mention "creativity," they typically associate it with positive images and values due to its tremendous driving force for human civilization and social development. However, everything has two sides, and creativity is no exception. When creativity is used to achieve malicious purposes, it can bring significant negative impacts to society—this represents the dark side of creativity, also known as malevolent creativity. Malevolent creativity generally refers to certain destructive creative activities that individuals consciously implement with the goal of harming themselves or others (Cropley, 2010; Cropley et al., 2008). As an aspect of creativity, malevolent creativity possesses some characteristics of traditional creativity, such as novelty and effectiveness, but it also has its unique feature—harmfulness (Harris & Reiter-Palmon, 2015).

Research on malevolent creativity initially began with criminals and terrorist organizations (Cropley, 2010; Cropley et al., 2008; Gill et al., 2013; Harris & Reiter-Palmon, 2015). Throughout history, many notorious criminal activi-

ties and terrorist incidents have exhibited creative characteristics while simultaneously causing negative social impacts. For example, the globally shocking "9/11" terrorist attacks represent a classic manifestation of malevolent creativity. Malevolent creative behavior is not limited to criminal activities or terrorist attacks; it may also appear in daily life in forms such as deception, lying, betrayal, and manipulation. For instance, during the COVID-19 pandemic, "mask scams" on social media emerged in various forms, and numerous novel telecom fraud methods have even made victims of many well-educated young people. Therefore, research on malevolent creativity can help people gain a more comprehensive and in-depth understanding of its nature and characteristics, holding certain social significance and value.

Since malevolent creativity shares characteristics with general creativity, its influencing factors can be examined within the creativity framework. A widely accepted creativity model is the 4P model (Product, Person, Process, and Press) (Rhodes, 1961). The 4P model emphasizes how personality traits, temperament, attitudes, and intelligence of creative individuals (Person), psychological processes such as motivation, perception, learning, and thinking (Process), and environmental pressures that promote or hinder creative work (Press) influence the generation of creative products (Product) such as novel ideas, inventions, discoveries, and theories. Based on this model, numerous studies on malevolent creativity have focused on individual personality traits and environmental pressures, revealing that the development of malevolent creativity results from the combined influence of individuals' environments, personal characteristics, and emotions.

1.1 Person Factors in Malevolent Creativity

Creativity itself is closely related to positive factors (Hsu, 2019; Käckenmester et al., 2019; Ritter & Ferguson, 2017). For example, psychological resilience may positively influence creativity through cognitive pathways. Psychological resilience refers to an individual's ability to move forward and adapt to changing environments after experiencing sadness or negative events, reflecting a stable personality trait that enables individuals to maintain mental health when facing setbacks or stress (Herrman et al., 2011). Jenkins (2005) studied the relationship between life experiences, psychological resilience, and creativity among African Americans, finding that those who experienced adversity developed stronger resilience and adaptability, enabling them to utilize dialectical thinking to seek more possibilities within limited resources and environments. Similarly, Chinese researchers have found that psychological resilience can enhance creativity levels by influencing cognitive flexibility (许为卫等, 2019). Psychological resilience embodies a continuous pattern of flexibility and adaptability through which people respond to changing environmental demands (Ionescu, 2012). The essence of this adaptive response is high cognitive flexibility—the mental capacity to adjust thinking flexibly according to current situations and changing contexts (Genet & Siemer, 2011). When facing difficulties, individuals need to activate relevant

cognitive processes and mobilize cognitive resources to promote problem-solving while simultaneously inhibiting certain cognitive processes flexibly to avoid unnecessary interference (Soltani et al., 2013).

Thus, psychological resilience positively influences general creativity through different pathways. But what about its impact on malevolent creativity? This remains an unanswered question, with no empirical studies providing results. Some researchers argue that both malevolent and general creativity essentially belong to the category of creativity, reflecting divergent thinking and cognitive flexibility (Harris & Reiter-Palmon, 2015), with the only difference being the purpose for which creative outcomes are applied. Therefore, the relationship between resilience and general or malevolent creativity may be similar.

However, other perspectives suggest that malevolent creativity reflects cognitive outcomes focused on harming others and is closely related to individuals' negative personality traits or qualities (Jia et al., 2020). These studies emphasize from a malevolent characteristics perspective that negative personality traits are a fundamental factor influencing malevolent creativity, leading most previous research to focus on negative factors. For example, low conscientiousness is significantly correlated with malevolent creativity levels and high aggressiveness (Lee & Dow, 2011); the Dark Triad personality traits (Machiavellianism, psychopathy, and narcissism) influence malevolent creativity levels through interaction with external environments (Jia et al., 2020); individuals with high aggressive tendencies perform better on malevolent creative tasks (Lee & Dow, 2011); and individuals induced with anger generate more and more novel malevolent ideas (程瑞等, 2021). Additionally, other factors such as emotional intelligence and gender influence malevolent creativity in specific ways (Harris & Reiter-Palmon, 2015; Perchtold-Stefan et al., 2020).

It is evident that, like general creativity, malevolent creativity is a higher-order cognitive ability influenced by multiple complex factors. Previous research has emphasized that individual personality traits affect malevolent creativity through individuals' malevolent tendencies. Could psychological resilience, then, also influence malevolent creativity through malevolent pathways like negative personality traits? In daily life, people sometimes face heavy work pressures. For individuals with low resilience, coping with these setbacks and negative experiences often generates tremendous frustration and negative emotions, making it difficult to recover from adversity. In contrast, individuals with high resilience can regulate subjective emotional experiences aroused by negative events more quickly (Hildebrandt et al., 2016), address problems in positive ways, and learn from failures, thereby increasing individuals' creative behaviors. Liang and Liu (2017) administered creativity tests to individuals who experienced earthquake disasters and found that low-resilience individuals' creativity levels decreased as post-traumatic stress disorder (PTSD) levels increased, while high-resilience individuals showed the opposite trend. For this latter group, PTSD levels positively predicted creativity levels, indicating that people with good resilience can transform these negative experiences into creative inspiration and motivation

(Forgeard et al., 2013), thereby helping to enhance creativity levels. Therefore, as a positive psychological quality, resilience may inhibit malevolent creative behavior.

Based on this, we propose the first hypothesis of this study: Psychological resilience has a negative inhibitory effect on malevolent creativity (Hypothesis 1). Hunter' s hierarchical model of resilience suggests that resilience is not unidimensional but hierarchical (Hunter & Chandler, 1999). Research indicates that resilience may influence creativity through coping styles. Individuals at lower levels of resilience choose negative coping styles such as using violence and harmful means to protect themselves, while those at higher levels adopt positive coping styles to flexibly mobilize resources to address problems, such as seeking support or actively finding constructive problem-solving strategies to alleviate stress (Hunter & Chandler, 1999). Adolescents' resilience levels are significantly positively correlated with positive coping and significantly negatively correlated with negative coping (Weidong et al., 2013). High resilience, as a positive psychological quality, enables people to adopt positive attitudes to address problems in uncertain or highly stressful environments. Therefore, it is reasonable to speculate that this positive bias enhances people' s problem-solving abilities by broadening individual attention span while simultaneously reducing malevolence. In contrast, individuals with low resilience are more likely to use avoidance, venting, and other negative ways to escape problems, thereby increasing malevolence. Therefore, the mechanism through which resilience affects malevolent creativity may produce different effects on malevolent creativity through positive and negative coping styles (Hypothesis 2).

1.2 Press Factors of Malevolence and Their Interaction with Person Factors

According to the 4P model of creativity, the generation, expression, and development of creativity cannot be separated from the individual' s environment. Environmental pressure may be a factor that stimulates individuals' malevolent creativity. Negative external environmental factors such as unhealthy social atmospheres, unfair social situations, and family environments that neglect child development can all induce malevolent creative behavior (Cropley, 2010; Clark & James, 1999; Jia et al., 2020). Research shows that threatening social environments promote the generation of malevolent creative ideas (Baas et al., 2019). For example, for terrorists or fraud criminals with high aggressive motivation, due to threats from powerful anti-terrorism and anti-fraud forces, they must highly concentrate their cognition and constantly update their criminal methods; otherwise, they cannot achieve their goals (贡喆, 刘昌, 2016). Therefore, negative personality traits or psychological qualities make individuals' cognitive patterns biased toward malevolence (Anderson & Bushman, 2002). When facing difficulties, such individuals are more likely to solve problems in impulsive or destructive ways.

As an important environmental variable, stress may also become an environ-

mental factor affecting malevolent creativity. Psychological stress refers to a complex psychological adaptive reaction that individuals produce when coping with external stimuli and threats, including emotional stress reactions such as anxiety, fear, and anger; cognitive stress reactions such as paranoia and catastrophizing; and behavioral stress reactions such as avoidance, hostility, and aggression (Segerstrom & Miller, 2004). Previous studies have found that creative activities are directly affected by stress (Duan et al., 2019; Lovelace & Hunter, 2013). Acute or chronic stressful environmental factors can induce malevolent creative behavior (Cropley, 2010; Clark & James, 1999; Jia et al., 2020) or the generation of malevolent creative ideas (Baas et al., 2019). The effect of psychological stress on malevolent creativity may be produced through both emotional and cognitive processes. On the one hand, stress induces negative emotions related to fear and anger, as well as hostile and aggressive behaviors, causing people to generate more malevolent ideas to solve problems. On the other hand, stress may also affect creative cognitive abilities differently by influencing cognitive persistence or cognitive flexibility. Therefore, compared with normal situations, the relationship among resilience, coping styles, and malevolent creativity may change under stressful situations. If resilience is an inhibitory factor of malevolent creativity, then the series of emotional changes and cognitive alterations produced by stressful environments may further affect the inhibitory effect of resilience. However, the magnitude and direction of this moderating effect also depend on different individuals' reactions to stressful environments. Therefore, the effect of resilience on malevolent creativity is likely moderated by external environmental factors, and the development of malevolent creativity results from the combined effect of individual personality traits and environment (Hypothesis 3).

In summary, this study systematically investigated the relationship between psychological resilience and malevolent creativity through two sub-studies. Study 1 mainly examined the relationship between resilience and malevolent creativity and further explored the mechanism of resilience' s effect on malevolent creativity by constructing a mediation model. Since previous studies have shown that both resilience and malevolent creativity exhibit gender differences, we included gender as a variable in Study 1. Meanwhile, to reveal the main situational factors influencing the relationship between resilience and malevolent creativity, Study 2 added stress as a moderating variable to explore how the relationship among resilience, coping styles, and malevolent creativity changes under stressful versus non-stressful conditions and the reasons behind these changes.

Adolescence is a critical period of rapid physical and mental development. During this stage, adolescents often exhibit rebellious psychological characteristics such as "oppositional thinking," "identification with negative tendencies," and "habitual negation," along with rapidly developing creative thinking cognitive characteristics (沃建中等, 2009). For adolescents with creative motivation, oppositional thinking produces different innovative effects. Risk-taking ideas with rebellious colors are common characteristics of adolescence and, to some extent, form the basis of adult creativity (Bonetto et al., 2020). Additionally, adoles-

cents' contradictory psychological characteristics and their switching between opposing emotions and viewpoints may also trigger unconventional thinking outcomes.

Adolescents are in a sensitive period of social development. When coping with pressures from academics, schoolwork, interpersonal relationships, and physiological changes, their cognition and psychology are relatively susceptible to external influences. When facing stressful events, if they cannot be properly guided and channeled, or if good protective psychological mechanisms have not been cultivated, adolescents may develop adverse stress reactions such as suspiciousness, sensitivity, stubbornness, and paranoia, and even develop a series of unexpected malevolent behaviors. For example, in 2016, a junior high school student in Jinan, Wu, poisoned his classmate Zheng by putting 0.5 grams of lead nitrate in his water bottle due to daily academic conflicts. Therefore, by investigating the combined effects of positive psychological qualities and environmental factors on malevolent creativity, this study can provide a theoretical foundation for guiding and protecting the healthy development of adolescents' innovative thinking.

Study 1: The Relationship Between Psychological Resilience and Malevolent Creative Behavior and Its Mechanism: The Mediating Role of Coping Styles

Malevolent creativity is significantly correlated with negative personality traits, but it remains unclear how psychological resilience—a positive personality trait—relates to malevolent creativity. On the one hand, malevolent creativity may be positively affected by resilience due to its creative nature; on the other hand, it may be negatively affected due to its unique harmfulness. To reveal the relationship between resilience and malevolent creativity, this study divided participants into high and low resilience groups based on their scores on the resilience scale, examining differences in malevolent creative behavior levels between the two groups and whether such differences were related to gender. Additionally, since individuals with different resilience levels always accompany different life coping styles, resulting in distinct behavioral consequences, this study further explored the mechanism of resilience and malevolent creativity using coping style as a mediating variable.

2.1.1 Participants

G*Power 3.1.9.2 software was used to estimate the required sample size beforehand. With a medium effect size of f = 0.25 and statistical power of 0.8 (α = 0.05), the minimum sample size was estimated to be 179. A total of 370 students were randomly selected from grades 7-8 of a junior high school and grades 10-11 of a senior high school in a certain region as participants for questionnaire testing. After screening, 366 valid questionnaires were obtained. Participants ranged in age from 11 to 18 years, including 185 males (50.54%) and 181 fe-

males (49.45%), with 172 junior high school students (46.99%) and 194 senior high school students (53.05%).

2.1.2 Measures

Psychological Resilience Measurement
The Chinese version of the Connor-Davidson Resilience Scale (CD-RISC), compiled by Connor and Davidson and revised by Yu Xiaonan and Zhang Jianxin (于肖楠, 张建新, 2007), was used to assess participants' resilience levels. The scale consists of 25 items across three sub-dimensions: tenacity, optimism, and strength, using a 5-point rating scale (1-5). The total score was calculated. In this study, the scale' s α coefficient was 0.90.

Malevolent Creative Behavior Scale (MCBS)
Since people's malevolent creativity is mostly manifested through their behavior, this study used the Malevolent Creative Behavior Scale as the measurement tool for participants' malevolent creativity. This scale was revised by Hao Ning and colleagues at East China Normal University based on the "Runco Ideational Behavior Scale" and is primarily used to assess individuals' levels of malevolent creative behavior in daily life (Hao et al., 2016). The scale contains 13 items using a 4-point rating scale ("never" = 0, "always" = 3), with higher total scores indicating higher levels of malevolent creative behavior. The scale has demonstrated good reliability and validity in Chinese samples (Jia et al., 2020). In this study, the scale' s α coefficient was 0.83.

Coping Style Measurement
The Simplified Coping Style Questionnaire, compiled by Xie Yaning in 1998 (解亚宁, 1998), was used to measure participants' coping styles. The scale contains 20 items using a 4-point rating scale ("never used" = 0, "occasionally used" = 1, "sometimes used" = 2, "often used" = 3) to measure participants' positive coping levels. The scale has been widely applied in China with high reliability and validity (李彩娜等, 2017). In this study, the Cronbach' s α coefficient for the positive coping subscale was 0.87, and for the negative coping subscale was 0.79.

2.1.3 Procedure

All participants completed the Resilience Scale, MCBS, and Coping Style Scale sequentially according to the instructions.

2.2.1 Common Method Bias Test

Multiple methods were used to examine common method bias: Harman' s single-factor test, factor model comparison, and the unmeasured latent method construct (ULMC) test (汤丹丹和温忠麟, 2020; 熊红星等, 2012). First, Harman' s single-factor test results showed that the unrotated exploratory factor analysis extracted 16 factors with eigenvalues greater than 1, and the maximum factor

variance explanation rate was 26.03%, below the 40% critical threshold. Second, comparing a single-factor model (method factor) with a four-factor model (resilience, positive coping, negative coping, and malevolent creativity) showed that the four-factor model was significantly better than the single-factor model ($\Delta\ ^2/\Delta df = 75.41$, $p < 0.001$, $\Delta CFI = 0.75$, $\Delta TLI = 0.74$, $\Delta RMSEA = -0.05$). Finally, the ULMC test was conducted by establishing a bifactor model with all items as indicators of a global method factor on top of the trait factors (resilience, positive coping, negative coping, and malevolent creativity) and comparing it with a model containing only trait factors. The results showed no significant difference between the two models ($\Delta\ ^2/\Delta df = 0.36$, p 1, $\Delta CFI = 0.005$, $\Delta TLI = 0.01$, $\Delta RMSEA = -0.001$). These results collectively indicate that there is no serious common method bias across variables.

2.2.2 Descriptive Statistics and Correlation Analysis

Table 1 presents the means, standard deviations, and correlation matrix of resilience, malevolent creative behavior, and coping styles. The results show that resilience is significantly positively correlated with positive coping and significantly negatively correlated with negative coping; malevolent creative behavior is significantly negatively correlated with positive coping and significantly positively correlated with negative coping; resilience is significantly negatively correlated with malevolent creative behavior.

Table 1 Correlation Matrix of Resilience, Coping Styles, and Malevolent Creative Behavior

Variable	1	2	3	4
1. Resilience	1			
2. Positive coping	0.85***	1		
3. Negative coping	-0.82***	-0.64***	1	
4. Malevolent creative behavior	-0.78**	-0.65***	0.63***	1

Note: *** represents $p < 0.001$, ** represents $p < 0.01$.

2.2.3 The Relationship Between Resilience and Malevolent Creative Behavior

Correlation analysis showed that resilience was significantly negatively correlated with malevolent creative behavior scores ($r = -0.64$, $p < 0.001$). Participants were sorted by their resilience scores, with those above and below the mean defined as high and low resilience groups, respectively. The high resilience group included 184 participants, and the low resilience group included 182 participants. A variance analysis was conducted with malevolent creative behavior scores as the dependent variable and resilience level and gender as independent variables. The results showed that the main effect of gender was not significant,

F(1, 361) = 0.81, p = 0.36; the main effect of resilience was significant, F(1, 361) = 142.58, p < 0.001, ^{2}p = 0.28, with the low resilience group' s malevolent creative behavior scores (M = 14.58, SD = 3.94) significantly higher than the high resilience group' s scores (M = 9.73, SD = 3.67). The interaction between gender and resilience was not significant, F(1, 361) = 0.05, p = 0.83.

[Figure 1: see original paper] shows the malevolent creative behavior scores (M ± SE) of participants under different conditions.

2.2.4 The Relationship Between Resilience and Malevolent Creative Behavior: Mediation Effect Test

First, Hayes' (2013) SPSS Process macro Model 4 was used to test the mediating effect of coping styles on the relationship between resilience and malevolent creative behavior while controlling for gender and age. The results showed that resilience had a direct positive predictive effect on positive coping (β = 0.84, p < 0.001) and a direct negative predictive effect on negative coping (β = -0.21, p < 0.001). When resilience, positive coping, and negative coping simultaneously predicted malevolent creative behavior, positive coping had a significant negative predictive effect (β = -0.56, p < 0.001), negative coping had a significant positive predictive effect (β = 0.17, p = 0.03), and the predictive effect of resilience was no longer significant (β = -0.20, p = 0.16).

Table 2 Regression Analysis Between Variables

Predictor	Overall Fit Index	Regression Coefficient Significance
Resilience	4.16***	30.72***
Positive coping	-26.97***	-7.90***
Negative coping	0.08*	

Note: All data in the table were centered. *** represents p < 0.001, * represents p < 0.05, the same below.

The bias-corrected nonparametric percentile Bootstrap method was used to further test the mediation effect. The results showed that in the indirect effects composed of resilience → positive coping → malevolent creative behavior and resilience → negative coping → malevolent creative behavior, the Bootstrap 95% confidence intervals were [-0.191, -0.092] and [-0.079, -0.001], respectively, neither containing 0, indicating that the mediating effects of both positive and negative coping were significant. The mediating effect value of positive coping was -0.14, accounting for 79.10% of the total effect, while the mediating effect value of negative coping was -0.04, accounting for 20.96% of the total effect. The direct effect of resilience on malevolent creative behavior was not significant.

The results of Study 1 preliminarily indicate that adolescents' malevolent creative behavior differs significantly across resilience levels but shows no gender

differences. Specifically, the malevolent creative behavior level of the high resilience group is significantly lower than that of the low resilience group. This result supports Hypothesis 1, that resilience can significantly negatively predict individuals' malevolent creative behavior, suggesting that resilience may primarily inhibit malevolent creative behavior by reducing malevolence.

Adolescent groups face pressures from society, school, and family, and their mental development is not yet fully mature. When facing pressure or adversity, without higher resilience capabilities to protect and adjust individual mental health, individuals may not adapt well to negative situations, be more susceptible to negative impacts from negative situations, tend to interpret current environmental information with negative, failure cognitive schemas, and adopt harmful and destructive ways to solve problems, exhibiting the malevolent side of creativity.

In contrast, high-resilience individuals show lower malevolent creative behavior than low-resilience individuals, but this does not necessarily mean that high-resilience individuals' creative ability is reduced—it may be that the harmfulness of their malevolent creativity has decreased. Subsequently, we examined the pathway through which resilience affects malevolent creativity by using coping style as a mediating variable. The results showed that resilience significantly positively predicted positive coping and significantly negatively predicted negative coping, consistent with previous research findings (金雪等, 2016). Positive coping significantly negatively predicted malevolent creative behavior levels, while negative coping significantly positively predicted malevolent creative behavior levels, and the direct effect of resilience on malevolent creative behavior was not significant, indicating that resilience predicted malevolent creative behavior levels through the complete mediating role of coping styles. The results support Hypothesis 2, with the mediating effect of positive accounting for a larger proportion, further demonstrating that resilience indeed primarily inhibits malevolent creativity by reducing malevolence.

The results show that individuals with higher resilience levels tend to adopt positive coping styles. High-resilience individuals can solve problems with a gentle, positive mindset. They are better at discovering positive meanings in things, consciously and flexibly mobilizing various resources to regulate behavior, rather than using passive endurance, avoidance, or violent venting to solve problems. This effective coping strategy helps individuals reduce the harm caused by negative events, alleviate negative emotions, view current situations with a positive mindset and perspective, and consequently reduce the malevolence of creative behavior. In contrast, individuals with low resilience levels have negative cognitive schemas when coping with stressors, tend to use extreme methods such as escape, fantasy, and self-harm or harming others to solve problems (Richardson, 2002). They are more likely to break through social moral constraints, ignore others' interests, and consequently exhibit more malevolent creative ideas (Petrou et al., 2020; 乔熙诺, 2019).

Study 2: The Effect of Psychological Stress on Malevolent Creative Behavior: A Moderated Mediation Model

Study 1 suggested that the malevolent creative behavior level of the high resilience group was significantly lower than that of the low resilience group, and that resilience' s effect on malevolent creative behavior occurred indirectly through coping styles. However, these results were obtained under normal conditions. If individuals are truly in stressful or emergency situations, would this effect of resilience on malevolent creativity remain stable? Or would stressful situations change the mechanism through which resilience affects malevolent creativity? To address this question, Study 2 incorporated the variable of "stress" to further explore how resilience affects malevolent creativity in real stressful situations.

3.1.1 Participants

A total of 244 students from grades 7-8 of a junior high school and grades 10-11 of a senior high school in a certain region (who did not participate in Study 1) were randomly selected as the stress group participants. Participants from Study 1 who did not undergo the stress task served as the non-stress group. The Depression-Anxiety-Stress Scale (DASS-21) was administered to all participants. Stress group participants ranged in age from 12 to 18 years, including 114 males (46.72%) and 130 females (53.28%), with 118 junior high school students (48.36%) and 126 senior high school students (56.64%).

3.1.2 Measures

Malevolent Creative Behavior, Resilience, and Coping Styles
Same as in the previous study.

Trier Social Stress Test (TSST)
The TSST is widely used due to its repeatability and operability. Participants exhibit obvious stress responses and physiological reactions under the TSST paradigm (Kirschbaum et al., 1993). TSST procedure: Participants were brought to the stress testing classroom and informed that they needed to stand before several judges to complete a 5-minute speech task and a 5-minute mental arithmetic task. For the speech task, there was 1 minute of preparation time; if the speech exceeded the time limit, judges would interrupt the participant. Subsequently, judges would provide a number (e.g., 2023) and ask participants to subtract 17 sequentially as quickly as possible. If the answer was correct, judges would prompt participants to continue; if incorrect, judges would require participants to recalculate until correct. The entire interview and mental arithmetic task was filmed, and judges evaluated participants based on their facial expressions, language, and body movements.

Depression-Anxiety-Stress Scales (DASS-21)
To test the effectiveness of the stress manipulation, the simplified Chinese version of the Depression-Anxiety-Stress Scales (DASS-21), compiled by Lovibond

et al. and revised by Moussa et al., was used to measure participants' depression, anxiety, and stress levels (Lovibond & Lovibond, 1995; Moussa et al., 2001). The scale includes three subscales assessing individuals' experiences of negative emotions in depression, anxiety, and stress dimensions, using a 4-point (0-3) scoring system. Higher scores indicate more pronounced levels in the corresponding dimension. The scale has high reliability and validity in primary and secondary school student samples (张芳等, 2016). In this study, the α coefficients for the depression, anxiety, and stress subscales were 0.80 and 0.81, 0.83 and 0.83, and 0.82 and 0.80 for pre- and post-test, respectively.

Runco Ideational Behavior Scale (RIBS)

To better understand how stress affects malevolent creativity, the Runco Ideational Behavior Scale (RIBS) was used to measure participants' creative behavior tendencies in daily life (Runco et al., 2001). RIBS is a self-report scale using a 5-point Likert scale to assess individuals' actual behaviors. The scale has good psychometric properties and can clearly reflect a person' s use and appreciation of innovative ideas or thoughts (Runco et al., 2011), with an internal consistency α coefficient of 0.86 and good discriminant validity.

3.1.3 Procedure

Stress group participants first completed the pre-test of the Depression-Anxiety-Stress Scale upon arrival at the laboratory, then participated in the 10-minute TSST task. After the TSST task, participants completed the post-test of the Depression-Anxiety-Stress Scale, Resilience Scale, Coping Style Scale, Malevolent Creative Behavior Scale, and General Creative Behavior Scale.

3.2.1 Common Method Bias Test

Similar to Study 1, multiple methods were used to test for common method bias. First, Harman' s single-factor test results showed that the unrotated exploratory factor analysis extracted 14 factors with eigenvalues greater than 1, and the maximum factor variance explanation rate was 24.01%, below the 40% critical threshold. Second, factor model comparison showed that the four-factor model was significantly better than the single-factor (method factor) model ($\Delta\ ^2/\Delta$df = 118.70, $p < 0.001$, ΔCFI = 0.70, ΔTLI = 0.71, ΔRMSEA = -0.047). Third, the CFA marker variable method was used to test whether serious common method bias existed in the stress group' s resilience, positive coping, negative coping, and malevolent creativity data (汤丹丹和温忠麟, 2020). In Study 2, the Brief Personal Report of Confidence as a Speaker (Hook et al., 2008) was administered to stress group participants after the speech task and could serve as a marker variable for the CFA marker variable method. Following Tang and Wen' s (2020) recommendations, Step 1 compared the baseline model and Model C, showing significant differences ($\Delta\ ^2/\Delta$df = 2.61, p 0.050, ΔCFI = -0.001, ΔTLI = 0, ΔRMSEA = 0), suggesting possible common method bias. Step 2 tested Model C' s strong assumption of equal method effects by comparing Model C and Model U, showing significant differences ($\Delta\ ^2/\Delta$df = 3.13, $p < 0.001$, ΔCFI

= -0.026, ΔTLI = -0.019, ΔRMSEA = 0.002), indicating unequal method effects. Step 3 tested for serious common method bias by comparing Model R and Model U (superior to Model C), showing no significant difference ($\Delta\ ^2/\Delta df$ = 0.15, p 1, ΔCFI = -0.01, ΔTLI = -0.017, ΔRMSEA = 0.001). These comprehensive test results indicate that Study 2 may have common method bias but it is not serious.

3.2.2 Descriptive Statistics and Correlation Analysis

Table 3 presents the means, standard deviations, and correlation matrix of resilience, malevolent creative behavior, and coping styles under stress conditions. The results show that under stress conditions, resilience is significantly positively correlated with positive coping and significantly negatively correlated with negative coping; malevolent creative behavior is significantly negatively correlated with positive coping and significantly positively correlated with negative coping; resilience is significantly negatively correlated with malevolent creative behavior.

Table 3 Correlation Matrix of Resilience, Coping Styles, and Malevolent Creative Behavior (Stress Condition)

Variable	1	2	3	4
1. Resilience	1			
2. Positive coping	0.85**	1		
3. Negative coping	-0.79**	-0.62**	1	
4. Malevolent creative behavior	-0.75**	-0.55**	0.48**	1

Note: ** represents $p < 0.01$.

3.2.3 Acute Psychological Stress Effectiveness Test

The means and standard deviations of depression, anxiety, and stress for the non-stress and stress groups at pre- and post-test are shown in Table 4 .

Table 4 Means and Standard Deviations of Depression, Anxiety, and Stress for Non-Stress and Stress Groups at Pre- and Post-Test (M ± SD)

Group	Depression	Anxiety	Stress
Non-stress (pre)	3.51 ± 2.41	3.98 ± 2.41	5.72 ± 2.70
Stress (pre)	3.51 ± 2.29	4.02 ± 2.55	5.71 ± 2.62
Stress (post)	4.82 ± 2.90	6.13 ± 3.12	7.59 ± 2.84

Paired samples t-tests on the stress group' s pre- and post-test scores showed that post-test depression, anxiety, and stress levels were significantly higher

than pre-test levels (ps < 0.001). Independent samples t-tests comparing the non-stress and stress groups' pre-test scores showed no significant differences in depression, anxiety, and stress levels (ps > 0.1). These comprehensive results indicate that the stress intervention significantly increased participants' depression, anxiety, and stress levels, demonstrating that the TSST effectively induced stress responses.

3.2.4 The Effect of Psychological Stress and Resilience on Malevolent Creative Behavior: A Moderated Mediation Model

Hayes' (2013) SPSS macro Model 58 was used to test the interaction effect of stress and resilience while controlling for gender and age. The results (Table 5) showed that resilience had a significant positive predictive effect on positive coping (β = 0.34, p < 0.01) and a significant negative predictive effect on negative coping (β = -0.20, p < 0.001). Resilience had a significant negative predictive effect on malevolent creative behavior (β = 0.09, p < 0.001). Positive coping had a significant negative predictive effect on malevolent creative behavior (β = 0.28, p < 0.001). The interaction term between positive coping and stress significantly predicted malevolent creative behavior (β = 0.36, p < 0.01). Further simple slope analysis showed that for the non-stress group, positive coping significantly negatively predicted malevolent creative behavior (Bsimple = -0.36, t = -8.50, p < 0.001). For the stress group, although positive coping still negatively predicted malevolent creative behavior, its negative effect was reduced compared to the non-stress group (Bsimple = -0.13, t = -2.79, p $<$ 0.001), indicating that under stress conditions, the inhibitory effect of positive coping on malevolent creative behavior decreased (see Figure 3 [Figure 3: see original paper]). Hypothesis 3 was supported.

Table 5 Moderated Mediation Model Test

Predictor	Overall Fit Index	Regression Coefficient Significance
Resilience × Stress (Positive coping)	0.87**	38.93***
Resilience × Stress (Negative coping)	0.34**	-33.31***
Positive coping × Stress	-	2.66**
Negative coping × Stress	-	-5.45***
Resilience (Malevolent creativity)	-	-6.92***
Positive coping (Malevolent creativity)	-	4.43**

[Figure 2: see original paper] shows the moderated mediation effect model.

3.2.5 The Effect of Psychological Stress on Malevolent and General Creativity

Participants were sorted by their post-test scores on the Depression-Anxiety-Stress Scale, with those above and below the mean defined as high and low stress

response groups, respectively. The high stress group included 123 participants, and the low stress group included 121 participants. One-way ANOVA with three levels was used to compare differences in malevolent creativity and general creativity scores among the high stress, low stress, and no stress groups. The results showed that malevolent creativity scores decreased sequentially from high stress to no stress to low stress groups, with all pairwise comparisons significant (ps < 0.05). For general creativity scores, the low stress group was significantly higher than the other two groups (ps < 0.05), while the difference between high stress and no stress groups was not significant.

Study 2 constructed a moderated mediation model and found results largely consistent with previous findings: resilience significantly positively predicted positive coping, significantly negatively predicted negative coping, and both resilience and positive coping significantly negatively predicted malevolent creative behavior. Additionally, the results showed that the indirect effect of resilience on malevolent creative behavior through positive coping was moderated by stress. Simple slope analysis indicated that compared to non-stress conditions, stress conditions weakened the inhibitory effect of positive coping on malevolent creative behavior. This suggests that under stressful situations, resilience can still inhibit malevolent creative behavior through positive coping, but this inhibitory effect is significantly reduced compared to non-stressful situations. This also demonstrates from another perspective that stress indeed more easily induces malevolent behavior, and malevolent creativity is no exception. The joint analysis of high/low stress and general/malevolent creative behavior also supports this conclusion.

Discussion

4.1 The Relationship Between Psychological Resilience and Malevolent Creative Behavior

Previous research has focused on the influence of negative emotions, personality, and environmental factors on malevolent creativity, showing that these negative factors mostly promote malevolent creativity (Cropley, 2010; Cropley et al., 2008; Jia et al., 2020; Lee & Dow, 2011; Perchtold-Stefan et al., 2020). This study examined the influence of positive personality qualities such as resilience on malevolent creativity from another perspective, revealing the relationship, mechanism, and stress context effects through two studies. The results show that resilience negatively predicts malevolent creative behavior, with low-resilience individuals scoring significantly higher on malevolent creative behavior than high-resilience individuals. Resilience primarily negatively affects malevolent creativity by positively predicting positive coping styles. Additionally, compared to non-stress conditions, the weakening effect of positive coping on malevolent creative behavior is reduced under stress, possibly because certain effects produced by stressful situations moderate this influence.

In daily life, although people with high resilience levels tend to adopt positive

coping styles to solve problems, showing less malevolence in creative activities, when facing sudden stressful events, people' s emotions and cognition are inevitably negatively affected, such as the generation of negative emotions and reduced cognitive inhibition and flexibility (Liston et al., 2009; 罗跃嘉等, 2013). These negative effects further interfere with the inhibitory effect of positive coping on malevolent creativity, resulting in reduced differences in malevolent creative behavior between high and low resilience individuals. The results suggest that when facing sudden stressful events, high resilience can help people maintain a positive, optimistic mindset to solve problems, actively adjust cognition, help individuals resist the impact of stressful events, and reduce cognitive malevolence.

Psychological resilience is a multifaceted psychological quality composed of different levels and components, including cognition, emotion, spirit, and behavior (Hunter & Chandler, 1999; Kumpfer, 1999), and reflects abilities in problem-solving, emotional stability, self-efficacy, and mobilizing social and psychological resources. Resilience' s influence on malevolent creativity may operate through two pathways: one is the inhibitory effect on malevolence, and the other is the promoting effect on creativity.

High-resilience individuals possess good subjective initiative, self-efficacy, and self-esteem. In their growth process, protective factors in resilience help them resist external pressures, adapt to environments more quickly, and reduce negative impacts from adverse events (Richardson, 2002). These positive factors inhibit individuals from adopting destructive methods to solve problems. In Study 1, resilience negatively predicted malevolent creative behavior through the complete mediation of coping styles. Previous research with middle school students found that higher resilience levels were associated with more positive coping styles (金雪等, 2016). Consistent with previous findings, this study also showed that resilience significantly positively predicted positive coping, and this relationship was not disturbed by other factors, indicating that the relationship between resilience and positive coping is relatively stable. Even in high-intensity pressure and potentially life-threatening events, high-resilience individuals can adopt positive coping strategies such as relaxation, humor, and optimism to alleviate stress and actively explore new environments (Segovia et al., 2012). When facing stressful events, everyone experiences temporary negative emotions, but high-resilience individuals are better at adopting flexible coping methods for timely adjustment, thus experiencing fewer negative emotions and more positive emotions than low-resilience individuals.

Fredrickson's (1998) broaden-and-build theory suggests that positive states help expand individuals' thinking and enhance attention to the external environment (Isen et al., 1985). This may explain why resilience promotes general creativity rather than malevolent creativity. Low resilience, conversely, becomes a promoting factor for malevolent creativity. Richardson' s (2002) resilience process theoretical model suggests that during personal growth, resilience primarily maintains physical and mental balance. Once sudden risk factors appear, indi-

viduals' internal physiological and psychological balance is broken, leading to cognitive reorganization and different outcomes: if resilience levels are too low, individuals exhibit maladjustment, loss of belief, reduced self-agency, and disorganized states when encountering stressful events. In this state, individuals adopt negative coping methods such as escape, fantasy, and self-harm or harming others, while their cognition of self and environment also changes. In this study, low-resilience adolescents tended to show higher malevolent creative behavior levels, possibly because these individuals are more susceptible to negative emotions when facing stressful events, have lower adaptability to adversity, and tend to resist external pressures with negative cognition, producing the third outcome of the resilience process described above. According to mood congruence theory, information consistent with individuals' current emotions is more easily processed (Knight et al., 2002). Individuals trapped in negative cognition and emotions mobilize more cognitive resources to process negative information, which in creativity manifests as enhanced harmfulness and destructiveness. Additionally, low-resilience individuals may be more likely to break rules and moral constraints, showing higher malevolent creativity (乔熙诺, 2019).

Notably, the malevolent creativity measurement tool used in this study is the MCBS scale, which measures more of individuals' subjective self-evaluation of their trait potential for malevolent creativity rather than objective malevolent creativity performance. This reflects from another perspective that adolescents' resilience levels can affect self-perception of malevolent creativity—that is, high-resilience individuals exhibit less cognitive malevolence under positive factors' influence, while low-resilience individuals believe they can generate more malevolent creative ideas.

4.2 The Moderating Effect of Stress on Malevolent Creative Behavior

Study 2 added a stress task to reveal whether the effect of resilience on malevolent creative behavior would change under stressful environments. The results found that in the stress group, resilience still inhibited malevolent creative behavior levels through positive coping, but the inhibitory effect was weakened, indicating that stressful environments reduced the inhibitory effect of positive coping on malevolent creativity.

Researchers believe that not only criminals exhibit the malevolent side of creativity—everyone has the potential for malevolent creativity, but its expression is simultaneously influenced by environmental and individual differences (Lee & Dow, 2011). Many factors influence malevolent creativity, with external situational factors primarily playing an activating role. Currently, limited literature is available on the effect of stress on malevolent creativity, but in known studies, we find inconsistent effects of stress on general creativity. Byron et al. (2010) used meta-analysis to summarize three possible relationships between stress and creativity: positive, negative, or inverted U-shaped, with the final effect depending on task difficulty and stress intensity.

Although this study did not observe a direct effect of stress on malevolent creativity, this does not mean that stress cannot affect malevolent creativity. First, the measurement tool used in this study is a self-report scale of malevolent creativity rather than traditional evaluation tools like the alternative uses task. This scale can only reflect individuals' malevolent creative behavior levels and subjective cognitive tendencies, not directly detect malevolent creativity in the current situation. Second, due to individual differences in stress sensitivity, the same stressor produces different effects on different participants. Based on participants' stress responses, they can be divided into high and low stress response groups. The results showed that high stress response individuals scored significantly higher on the MCBS scale than low stress response individuals, but had lower general creative behavior. This may mean that stress' s real effect on malevolent creativity comes more from increased malevolence. We also found stress' s negative moderating effect on the relationship between positive coping and malevolent creative behavior, indicating that stressful situations, as important environmental factors, still promote malevolent creativity in some way.

On the one hand, human cognitive resources are limited. According to distraction-arousal theory (Teichner et al., 1963), when people cope with stressful situations, some cognitive resources are allocated to the stressor, leaving fewer cognitive resources for other tasks. In Study 2, compared with the non-stress group, stress group participants needed to consume additional cognitive resources to handle the stressful event, which may have partially affected the degree to which positive coping inhibited malevolent creative behavior. On the other hand, the human brain' s prefrontal cortex has a high density of stress hormone receptors and is easily affected by stress (Arnsten, 2009). Multiple studies have shown that acute psychological stress interferes with prefrontal cognitive function and reduces cognitive inhibition ability (Jiang & Rau, 2017; Starcke et al., 2016). Prefrontal function is closely related to moral judgment. Research has found that individuals with damage to the dorsolateral prefrontal cortex and ventromedial prefrontal cortex exhibit more deceptive behavior (Zhu et al., 2014) and show negative effects on moral judgment ability (Moll & de Oliveira-Souza, 2007).

As mentioned earlier, everyone has the potential for malevolent creativity, but the degree of expression differs. The purpose of malevolent creativity is to harm others, and its malevolence violates social morality. When individuals express malevolent creativity, they need to break moral constraints and rules to manifest malevolent creativity. In normal situations, when evaluating their own malevolent creativity, high-resilience individuals accustomed to positive problem-solving may be more constrained by social moral norms and social desirability, tending to evaluate lower malevolent creativity scores. However, when experiencing acute psychological stress, individuals' prefrontal functions responsible for planning and monitoring are inevitably affected (Fumagalli & Priori, 2012), to some extent releasing suppressed malevolent creativity tendencies and reducing the moral constraints on individuals' original self-cognition, ultimately weakening the inhibitory effect of positive coping on malevolence. Simulta-

neously, stressful environments also cause negative emotions such as anxiety, tension, and anger, which weaken the inhibitory effect of positive coping on malevolent creativity compared to non-stress states.

Finally, to better distinguish how psychological stress affects malevolent and general creativity, we compared differences in the two types of creative behavior among the no stress, high stress, and low stress groups. The results showed that psychological stress had complementary effects on the two types of creativity. Specifically, high-intensity stress responses stimulated high-level malevolent creativity, while low-intensity stress responses stimulated low-level malevolent creativity and high-level general creativity. Combined with the above results, it can be speculated that moderate psychological stress responses may enhance cognitive ability, reduce negative cognitive thinking, and consequently show lower malevolent creativity and higher general creativity. As stress responses increase, people' s cognitive control abilities are impaired, and cognition tends to show greater "malevolence," resulting in higher malevolent creativity scores.

Limitations and Future Directions

This study primarily examined the relationship between psychological resilience and malevolent creative behavior and the effect of stress on this relationship. Although it provides some reference value for revealing the nature of malevolent creativity, caution is still needed in interpreting the results. First, the study used self-report methods to measure participants' daily malevolent creativity. While this method can reflect associations between traits, reference to participants' actual malevolent creativity levels is still needed, especially under stress conditions in Study 2. Study 2 found that stress negatively moderated the mediating effect of positive coping, but the results cannot directly conclude whether stress, as an enhancing factor of the "malevolence" dimension or the "creativity" dimension in malevolent creativity, weakened the inhibitory effect of positive coping. Therefore, future research should combine alternative uses tasks and problem-solving tasks to directly measure different dimensions of malevolent creativity to reveal this internal mechanism.

Second, only one mediating variable was selected in examining the mechanism of resilience' s effect on malevolent creativity. In fact, resilience is related to factors such as cognitive flexibility (Ram et al., 2019), emotion regulation ability (Kinsley et al., 2015), and personality traits (Campbell-Sills et al., 2006), all of which are key factors affecting malevolent creativity. Therefore, whether other possible pathways exist in resilience' s influence on malevolent creativity needs further discussion in future research.

Third, although the results showed that participants' stress levels increased significantly after stress manipulation, different individuals have different stress response levels (罗跃嘉等, 2013). The effect of stress on malevolent creativity may also depend on individuals' reactive traits. For stress-susceptible individuals, they are easily affected by pressure environments, and the effect of stress

conditions on these two groups differs, which may lead to different effects on malevolent creativity. Future research could consider conducting stress manipulations separately on stress-susceptible and non-susceptible individuals and combine malevolent creativity scales and tasks for comprehensive research.

Finally, creativity itself is neither good nor evil. Only due to human subjective malevolence or harmfulness is it distinguished from general creativity, forming the concept of malevolent creativity. This shows that malevolent creativity has a strong association with human moral concepts. In fact, existing research evidence indicates that people' s unethical behavior is closely related to general creativity (Liu et al., 2020). Without rule constraints, more creative individuals are more likely to cross moral boundaries, break rules, and jump out of fixed thinking patterns (Gino & Ariely, 2012; Gino & Wiltermuth, 2014; Mai et al., 2015). Since malevolent creativity is largely influenced by human subjective intentions due to its harmful purpose, what is the connection between malevolent creativity and morality? Can strengthening moral education help inhibit malevolent creative behavior? How can we find a balance in the educational field that reduces malevolent creativity in adolescents without suppressing the development of general creativity? These are important practical issues that require future consideration.

In summary, this study found that: (1) Resilience levels negatively predict malevolent creative behavior levels, with higher resilience individuals showing lower malevolent creative behavior; (2) Coping styles play a mediating role between resilience and malevolent creative behavior, with resilience positively predicting malevolent creative behavior through negative coping and negatively predicting it through positive coping; (3) The indirect effect of resilience on malevolent creativity through positive coping is moderated by stress, specifically, stressful environments weaken the inhibitory effect of positive coping on malevolent creative behavior compared to non-stress conditions.

References

Ames, M., & Runco, M. A. (2005). Predicting entrepreneurship from ideation and divergent thinking. *Creativity and Innovation Management, 14*(3), 311–315.

Anderson, C. A., & Bushman, B. J. (2002). Human aggression. *Annual Review of Psychology, 53*(1), 27–51.

Arnsten, A. F. (2009). Stress signalling pathways that impair prefrontal cortex structure and function. *Nature Reviews Neuroscience, 10*(6), 410–422.

Baas, M., Roskes, M., Koch, S., Cheng, Y., & De Dreu, C. K. (2019). Why social threat motivates malevolent creativity. *Personality and Social Psychology Bulletin, 45*(11), 1590–1602.

Bonetto, E., Pichot, N., Pavani, J., & Adam–Troïan, J. (2020). Creative individuals are social risk–takers: Relationships between creativity, social risk–taking

and fear of negative evaluations. *Creativity. Theories –research –Applications, 7*(2), 309–320.

Byron, K., Khazanchi, S., & Nazarian, D. (2010). The relationship between stressors and creativity: A meta–analysis examining competing theoretical models. *The Journal of Applied Psychology, 95*(1), 201–212.

Campbell–Sills, L., Cohan, S. L., & Stein, M. B. (2006). Relationship of resilience to personality, coping, and psychiatric symptoms in young adults. *Behaviour Research and Therapy, 44*(4), 585–599.

Cheng, R., Lu, K. L., & Hao, N. (2021). The effect of anger on malevolent creativity and strategies for its emotion regulation. *Acta Psychologica Sinica, 53*(8), 847–860.

Clark, K., & James, K. (1999). Justice and positive and negative creativity. *Creativity Research Journal, 12*(4), 311–320.

Cropley, D. H., Cropley, A. J., Kaufman, J. C., & Runco, M. A. (Eds.). (2010). *The dark side of creativity.* Cambridge university press.

Cropley, D. H., Kaufman, J. C., & Cropley, A. J. (2008). Malevolent creativity: A functional model of creativity in terrorism and crime. *Creativity Research Journal, 20*(2), 105–115.

Duan, H., Wang, X., Hu, W., & Kounios, J. (2019). Effects of acute stress on divergent and convergent problem –solving. *Thinking & Reasoning, 26*(1), 68–86.

Dumont, M., & Provost, M. A. (1999). Resilience in adolescents: Protective role of social support, coping strategies, self–esteem, and social activities on experience of stress and depression. *Journal of Youth and Adolescence, 28*(3), 343–363.

Forgeard, M. J. (2013). Perceiving benefits after adversity: The relationship between self–reported posttraumatic growth and creativity. *Psychology of Aesthetics, Creativity, and the Arts, 7*(3), 245–264.

Fredrickson, B. L. (1998). What good are positive emotions? *Review of General Psychology, 2*(3), 300–319.

Fumagalli, M., & Priori, A. (2012). Functional and clinical neuroanatomy of morality. *Brain: A Journal of Neurology, 135*(7), 2006–2021.

Genet, J. J., & Siemer, M. (2011). Flexible control in processing affective and non–affective material predicts individual differences in trait resilience. *Cognition and Emotion, 25*(2), 380–388.

Gill, P., Horgan, J., Hunter, S. T., & Cushenbery, L. D. (2013). Malevolent creativity in terrorist organizations. *The Journal of Creative Behavior, 47*(2), 125–151.

Gino, F., & Ariely, D. (2012). The dark side of creativity: Original thinkers can be more dishonest. *Journal of Personality Social Psychology, 102*(3), 445–459.

Gino, F., & Wiltermuth, S. S. (2014). Evil genius? How dishonesty can lead to greater creativity. *Psychological Science, 25*(4), 973–981.

Gong, Z., & Liu, C. (2016). Malevolent creativity: Concept, measurement, influence factors and future research. *Journal of Psychological Science, 39*(1), 63–68.

Hao, N., Tang, M., Yang, J., Wang, Q., & Runco, M. A. (2016). A new tool to measure malevolent creativity: The malevolent creativity behavior scale. *Frontiers in Psychology, 7*, 682.

Harris, D. J., & Reiter-Palmon, R. (2015). Fast and furious: The influence of implicit aggression, premeditation, and provoking situations on malevolent creativity. *Psychology of Aesthetics, Creativity, and the Arts, 9*(1), 54–64.

Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York: Guilford Press.

Hernández, Ó. S., Méndez, F. X., & Garber, J. (2015). Divergent explanatory production: The relationship between resilience and creativity. *Electronic Journal of Research in Educational Psychology, 13*(3), 551–568.

Herrman, H., Stewart, D. E., Diaz-Granados, N., Berger, E. L., Jackson, B., & Yuen, T. (2011). What is resilience? *The Canadian Journal of Psychiatry, 56*(5), 258–265.

Hildebrandt, L. K., McCall, C., Engen, H. G., & Singer, T. (2016). Cognitive flexibility, heart rate variability, and resilience predict fine-grained regulation of arousal during prolonged threat. *Psychophysiology, 53*(6), 880–890.

Hook, J.N., Smith, C.A., & Valentiner, D.P. (2008). A short-form of the Personal Report of Confidence as a Speaker. *Personality and Individual Differences, 44*(6), 1306–1313.

Hsu, Y. (2019). Advanced understanding of imagination as the mediator between five-factor model and creativity. *The Journal of Psychology, 153*(3), 307–326.

Hunter, A. J., & Chandler, G. E. (1999). Adolescent resilience. *IMAGE: Journal of Nursing Scholarship, 31*(3), 243–247.

Ionescu, T. (2012). Exploring the nature of cognitive flexibility. *New Ideas in Psychology, 30*(2), 190–200.

Isen, A. M., Johnson, M., Mertz, E., & Robinson, G. F. (1985). The influence of positive affect on the unusualness of word associations. *Journal of Personality and Social Psychology, 48*(6), 1413.

Jenkins, A. (2005). Creativity and resilience in the african american experience. *The Humanistic Psychologist, 33*(1), 77–88.

Jia, X., Wang, Q., & Lin, L. (2020). The relationship between childhood neglect and malevolent creativity: The mediating effect of the dark triad personality. *Frontiers in Psychology, 11*, 613695.

Jiang, C., & Rau, P. P. (2017). The detrimental effect of acute stress on response inhibition when exposed to acute stress: An event-related potential analysis. *Neuroreport, 28*(14), 922-928.

Jin, X., Xiong, M., & Wang, H. L. (2016). The Relationship between replying style and guizhou province rural high school students' resilience. *China Journal of Health Psychology, 24*(09), 1413-1418.

Käckenmester, W., Bott, A., & Wacker, J. (2019). Openness to experience predicts dopamine effects on divergent thinking. *Personality Neuroscience, 2*, e3.

Kinsley, C. H., Bales, K. L., Bardi, M., & Stolzenberg, D. S. (2015). Reproductive experiential regulation of cognitive and emotional resilience. *Neuroscience and Biobehavioral Reviews, 58*, 92-106.

Kirschbaum, C., Pirke, K. M., & Hellhammer, D. H. (1993). The 'Trier Social Stress Test' -a tool for investigating psychobiological stress responses in a laboratory setting. *Neuropsychobiology, 28*(1-2), 76-81.

Knight, B. G., Maines, M. L., & Robinson, G. S. (2002). The effects of sad mood on memory in older adults: A test of the mood congruence effect. *Psychology and Aging, 17*(4), 653.

Kumpfer, K. L. (2002). Factors and processes contributing to resilience. In *Resilience and Development* (pp. 179-224). Springer, Boston, MA.

Lee, S. A., & Dow, G. T. (2011). Malevolent creativity: Does personality influence malicious divergent thinking? *Creativity Research Journal, 23*(2), 73-82.

Li, C. N., Sun, C. C., Xu, E. Z., Gu, J. J., & Zhang, Q. Y. (2017). The influence of coping strategies and pressure on social adjustment in secondary school students: Longitudinal mediation models. *Psychological Development and Education, 33*(02), 172-182.

Liang, Y. M., & Liu, Z. K. (2017). Resilience moderating the relationship between trauma and creativity. *Chinese Psychological Society* (eds.) *The 20th National Psychology Conference - Abstracts of Psychology and National Mental Health* (pp. 924-925).

Liston, C., McEwen, B. S., & Casey, B. J. (2009). Psychosocial stress reversibly disrupts prefrontal processing and attentional control. *Proceedings of the National Academy of Sciences, 106*(3), 912-917.

Liu, X., Liao, H., Derfler-Rozin, R., Zheng, X., Wee, E. X., & Qiu, F. (2020). In line and out of the box: How ethical leaders help offset the negative effect of morality on creativity. *Journal of Applied Psychology, 105*(12), 1447-1465.

Lovelace, J. B., & Hunter, S. T. (2013). Charismatic, ideological, and pragmatic leaders'influence on subordinate creative performance across the creative process. *Creativity Research Journal, 25*(1), 59-74.

Lovibond, S.H. & Lovibond, P.F. (1995). *Manual for the depression anxiety stress scales* (2nd Ed.). Sydney: Psychology Foundation.

Luo, Y. J., Lin, W. J., Wu, J. H., & Qin, S. Z. (2013). Cognitive neuroscience of stress. *Progress in Physiology, 44*(5), 345-353.

Mai, K. M., Ellis, A. P. J., & Welsh, D. T. (2015). The gray side of creativity: Exploring the role of activation in the link between creative personality and unethical behavior. *Journal of Experimental Social Psychology, 60*, 76-85.

Moll, J., & de Oliveira-Souza, R. (2007). Moral judgments, emotions and the utilitarian brain. *Trends in Cognitive Sciences, 11*(8), 319-321.

Moussa, M. T., Lovibond, P. F., & Laube, R. (2001). Psychometric properties of a Chinese version of the 21-item depression anxiety stress scales (DASS21). Sydney, NSW: Transcultural Mental Health Centre, Cumberland Hospital.

Perchtold-Stefan, C. M., Fink, A., Rominger, C., & Papousek, I. (2020). Creative, antagonistic, and angry? Exploring the roots of malevolent creativity with a real world idea generation task. *The Journal of Creative Behavior*. Advance online publication. https://doi.org/10.1002/jocb.484

Petrou, P., van der Linden, D., & Salcescu, O. C. (2020). When breaking the rules relates to creativity: The role of creative problem-solving demands and organizational constraints. *The Journal of Creative Behavior, 54*(1), 184-195.

Qiao, X. N. (2019). *Neural correlates of malevolent creativity* (Unpublished master' s dissertation). East China Normal University.

Ram, D., Chandran, S., Sadar, A., & Gowdappa, B. (2019). Correlation of cognitive resilience, cognitive flexibility and impulsivity in attempted suicide. *Indian Journal of Psychological Medicine, 41*(4), 362-367.

Rhodes M. (1961). An analysis of creativity. *Phi Delta Kappan, 42*(7), 305-310.

Richard, F. D., Bond, C. F., & Stokes-Zoota, J. J. (2003). One hundred years of social psychology quantitatively described. *Review of General Psychology, 7*(4), 331-363.

Richardson G. E. (2002). The metatheory of resilience and resiliency. *Journal of Clinical Psychology, 58*(3), 307-318.

Ritter, S. M., & Ferguson, S. (2017). Happy creativity: Listening to happy music facilitates divergent thinking. *PLoS One, 12*(9), e0182210.

Runco, M. A., Plucker, J. A., & Lim, W. (2001). Development and psychometric integrity of a measure of ideational behavior. *Creativity Research Journal, 13*(3-4), 393-400.

Runco, M., Noble, E., Reiter-Palmon, R., Acar, S., Ritchie, T., & Yurkovich, J.M. (2011). The genetic basis of creativity and ideational fluency. *Creativity Research Journal, 23*(4), 376-380.

Segerstrom, S., & Miller, G. (2004). Psychological stress and the human immune system: A meta-analytic study of 30 years of inquiry. *Psychological Bulletin, 130*(4), 601-630.

Segovia, F., Moore, J. L., Linnville, S. E., Hoyt, R. E., & Hain, R. E. (2012). Optimism predicts resilience in repatriated prisoners of war: A 37-year longitudinal study. *Journal of Traumatic Stress, 25*(3), 330-336.

Soltani, E., Shareh, H., Bahrainian, A., & Farmani, A. (2013). The mediating role of cognitive flexibility in correlation of coping styles and resilience with depression. *Pajoohandeh Journal, 18*(2), 88-96.

Starcke, K., Wiesen, C., Trotzke, P., & Brand, M. (2016). Effects of acute laboratory stress on executive functions. *Frontiers in Psychology, 7*, 461.

Tang, D., & Wen, Z. L. (2020). Statistical approaches for testing common method bias: Problems and suggestions. *Journal of Psychological Science, 43*(1), 215-223.

Teichner, W. H., Arees, E., & Reilly, R. (1963). Noise and human performances: A psychophysiological approach. *Ergonomics, 6*(1), 83-97.

Weidong, J., Guangyao, L., Hua, T., Ruohong, C., & Qian, Y. (2013). 403-Relationship between resilience and social support, coping style of children in middle school. *European Psychiatry, 28*(S1), 1-1.

Wo, J., Wang, Z., Liu, C., & Lin, C. (2009). Development of creativity: The evidence from Chinese adolescents. *Journal of Psychological Science, 32*(03), 535-539.

Xie, Y. N. (1998). Reliability and validity of the Simplified Coping Style Questionnaire. *Chinese Journal of Clinical Psychology, 6*(2), 114-115.

Xiong, H. X., Zhang, J., Ye, B. J., Zheng, X., & Sun, P. Z. (2012). Common method variance effects and the models of statistical approaches for controlling it. *Journal of Psychological Science, 20*(5), 757-769.

Xu, W. W., Yang, G., Zhu, M. R., Chen, J. T., & Li, W. F. (2019). Effect of psychological resilience on creativity: The mediating role of cognitive flexibility. *China Journal of Health Psychology, 27*(12), 1885-1890.

Yu, X. N., & Zhang, J. X. (2007). A comparison between the Chinese Version of Ego-Resiliency Scale and Connor-Davidson Resilience Scale. *Journal of Psychological Science, 30*(05), 1169-1171.

Zhang, F., Liu, Z., Ma, Z., & Hou, Q. (2016). Application of the short version of depression-anxiety-stress scale to stress assessment on students after earthquake. *Chinese Journal of Behavioral Medical Science, 25*(1), 82-85.

Zhu, L., Jenkins, A. C., Set, E., Scabini, D., Knight, R. T., Chiu, P. H., . . . Hsu, M. (2014). Damage to dorsolateral prefrontal cortex affects tradeoffs between honesty and self-interest. *Natural Neuroscience, 17*(10), 1319–1321.

Note: Figure translations are in progress. See original paper for figures.