

## The effect of shame in creativity: the serial mediation model of self-forgiveness and meaning in life

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### Abstract

Background and Objective: Shame, as a negative emotion, has unclear potential impacts on creativity and its underlying psychological mechanisms. Based on the cognitive adjustment model theory and the emotion regulation process model, this study explores the effect of shame on creativity and examines the serial mediation roles of self-forgiveness and sense of life meaning in this relationship. Methods: Using simple random sampling, this study randomly selected 419 participants from the population and conducted data collection and analysis. Results: (1) Shame was positively correlated with creativity ( $r = 0.14$ ,  $p < 0.01$ ); (2) Self-forgiveness mediated the effect of shame on creativity; (3) Shame influenced creativity through the serial mediation of self-forgiveness and meaning in life. Conclusion: This study reveals the positive impact of shame on creativity and its underlying psychological mechanisms, particularly the serial mediation roles of self-forgiveness and meaning in life. These findings provide referential intervention strategies for enhancing individual creativity.

### Full Text

#### Preamble

#### The Effect of Shame on Creativity: The Serial Mediation Model of Self-Forgiveness and Meaning in Life

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**Author Contribution Statement**

Tongtong YE: Conceptualization and research design; data acquisition and analysis; manuscript writing and revision.

Haodong SU: Data acquisition and analysis; manuscript writing and revision.

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**Methods:** Using simple random sampling, this study randomly selected 419 participants from the population and conducted data collection and analysis.

**Results:** (1) Shame was positively correlated with creativity ( $r = 0.14$ ,  $p < 0.01$ ); (2) Self-forgiveness mediated the effect of shame on creativity; (3) Shame influenced creativity through the serial mediation of self-forgiveness and meaning in life.

**Conclusion:** This study reveals the positive impact of shame on creativity and its underlying psychological mechanisms, particularly the serial mediation roles of self-forgiveness and meaning in life. These findings provide referential intervention strategies for enhancing individual creativity.

**Keywords:** shame; creativity; self-forgiveness; meaning in life

**Introduction**

Creativity refers to an individual's ability or trait to generate new ideas, discover, and create new things [?]. It has been widely recognized for its role in driving advancements in artistic creation and scientific technology [?]. As one of the essential human capabilities, creativity is both an innate trait and influenced by external factors. In the field of creativity research, previous scholars have proposed an emotional psychology orientation, which focuses on the impact of emotional states on individuals' creative behaviors.

It is noteworthy that prior research has predominantly focused on the impact of positive emotions on creativity [?]. Although some researchers have turned their attention to the potential influence of negative emotions on individual creativity, the results remain somewhat contentious [?, ?, ?]. The cognitive adjustment model theory, a cognitive-oriented approach, posits that emotions convey critical information about the nature of the current environment to the organism. Negative emotions indicate that there is a problem with the current situation (e.g., a threat or a need that must be addressed), and they trigger actions aimed at alleviating or resolving the issue, thereby enhancing individual

creativity [?, ?]. Similarly, the emotion regulation process model suggests that negative emotions can motivate individuals to restore their emotional state, which may foster creative behavior [?, ?]. Therefore, negative emotional states could potentially promote individual creativity. Moreover, a finer distinction between types of emotions is crucial for understanding the impact of negative emotions on creativity.

Shame, as a form of negative emotion, is commonly regarded as a distressing affect accompanied by self-scrutiny and self-evaluation, such as when individuals fail to meet their own important standards or the standards of significant others, such as family members, supervisors, colleagues, and other important figures [?]. Despite being a negative emotion eliciting distressing experiences, according to prior theories, shame may trigger constructive actions aimed at alleviating or eliminating the problem, thereby leading individuals to exhibit creativity. For instance, research suggests that shame may bring about creative potential in individuals; within organizational contexts, if exposed to environments fostering creativity, employees' experiences of shame may herald higher levels of creativity [?]. Another meta-analysis examining the relationship between shame and constructive behavior revealed that when the causes or consequences of failure are amendable, the intense discomfort brought about by shame can prompt individuals to rectify the failure, thereby enhancing the constructive orientation of their behavior [?].

Self-forgiveness is a method individuals employ to deal with self-condemnation upon recognizing errors or failures. It does not entail forgetting one's faults; rather, it involves self-acceptance following the experience of negative emotions stemming from wrongdoing. It entails confronting one's mistakes, taking responsibility, and acknowledging one's intrinsic worth [?, ?, ?]. This proactive self-acceptance and forgiveness amid errors have been demonstrated to foster individual creativity [?]. Behind shame lies a sentiment of self-loathing, potentially leading individuals to attribute the outcomes of their actions to internal and stable factors, thereby evading self-existence and fostering reduced self-forgiveness [?]. Based on this evidence, shame may influence creativity by affecting self-forgiveness. Therefore, we posit Hypothesis 1: self-forgiveness mediates the relationship between shame and creativity (H1).

Meaning in life refers to the perception of life goals and existential values formed by individuals based on their environment and cognitive level [?]. Self-forgiveness has been confirmed to be associated with individuals' meaning in life and may play a crucial role therein. It enables individuals to acknowledge their faults rather than choosing to ignore them, thereby facilitating meaning construction following interpersonal and moral lapses [?]. For instance, prior research suggests that self-forgiveness can alleviate inner turmoil caused by wrongdoing and potentially restore interpersonal relationships harmed by transgressions [?]. Thus, self-forgiveness exhibits a positive correlation with meaning in life, indicating that it can support the reconstruction of individuals' sense of purpose. On the other hand, meaning in life may serve as a potent driver, inspir-

ing individual creativity. This notion finds support in some studies; previous findings indicate a positive correlation between individuals' perceived meaning in life and their level of creativity [?, ?]. When individuals perceive life as meaningful, they are more likely to exhibit higher levels of creativity because they have greater motivation to seek new experiences and development [?]. Based on this current evidence, this study hypothesizes that self-forgiveness may influence creativity through meaning in life. In other words, self-forgiveness and meaning in life may serve as serial mediators between shame and creativity (H2).

It is worth noting that most of the samples in this study are current students from Chinese universities, and previous research has indicated a prominent prevalence of depressive symptoms within this population [?]. Additionally, shame is significantly correlated with depression, and they exhibit similar symptomatology [?]. Therefore, to ensure a more accurate assessment of the independent impact of shame on creativity, in this study, we will include depression as a covariate in the regression analysis to avoid potential confounding effects resulting from depression interference.

In summary, this study aims to explore the psychological mechanisms through which shame influences creativity. We hypothesize that shame may predict higher levels of creativity; however, concurrently, shame may lead to lower levels of self-forgiveness and diminish individuals' sense of meaning in life, ultimately resulting in lower levels of creativity. The research model is depicted in Figure 1 [Figure 1: see original paper].

## Materials and Methods

### Participants and Procedures

Data for this study were collected in March 2024. We successfully recruited 472 college students from a comprehensive university in China as participants. The questionnaire survey was conducted online using [www.wjx.cn](http://www.wjx.cn), with all participants completing the questionnaire in class under the guidance of the experimenter. After completing the survey, participants received a small gift as compensation, with the amount disclosed only after the survey's completion. All participants volunteered to take part in the survey and signed informed consent forms before filling out the questionnaire.

To ensure data quality, we implemented several criteria for data exclusion: (1) participants who failed deception detection questions in the survey; (2) participants with half or more of their responses identical throughout the entire questionnaire [?]; (3) participants whose completion time for the questionnaire fell outside the range of 10-20 minutes. After excluding samples that did not meet the data analysis criteria, a total of 419 participants aged 18-24 (258 males and 161 females) were included in the analysis (specific demographics are shown in Table 1 ). This study was approved by the Ethics Committee of Anhui University of Science and Technology.

## Measures

**Shame.** In this study, we utilized the Shame Scale revised by Chinese scholars in 2000 to assess participants' levels of shame (e.g., "Do you feel ashamed of certain personal behaviors or habits?") [?]. The scale consists of 25 items, encompassing three dimensions: personality shame, behavioral shame, and bodily shame. Specifically, the personality shame dimension comprises 12 items, the behavioral shame dimension contains 9 items, and the bodily shame dimension includes 4 items. Participants rated each item on a 4-point Likert scale (1 = Not at all consistent, 4 = Extremely consistent), with all items scored positively. The mean score across all items was calculated as the measure of participants' shame levels. In this study, we did not differentiate between different dimensions of shame but instead used the overall mean score to evaluate participants' shame levels, where higher scores indicate higher levels of shame. In the present study, Cronbach's alpha was 0.960.

**Self-Forgiveness.** Self-forgiveness was assessed using a Chinese version of the Self-Forgiveness Subscale from the Heartland Forgiveness Scale (HFS), revised by Chinese scholars in 2007 [?]. The revised self-forgiveness scale has demonstrated good reliability and validity among Chinese participants [?]. This scale employs a 7-point Likert rating system (1 = Strongly Disagree, 7 = Strongly Agree) and includes 12 items, with items 1-5 being reverse scored. The mean score of all items was used to evaluate the level of self-forgiveness, with higher scores indicating higher levels of self-forgiveness. In the current study, the Cronbach's alpha was 0.824.

**Meaning in Life.** This study assessed individuals' meaning in life using the Chinese version of the Meaning in Life Questionnaire (MLQ), revised by Chinese scholars in 2010 [?]. This scale is based on the original MLQ developed by Steger et al. It employs a 7-point Likert rating system (1 = Strongly Disagree, 7 = Strongly Agree) and includes one reverse-scored item (Item 2). The scale comprises two dimensions: "Search for Meaning" (MLQ-Search) and "Presence of Meaning" (MLQ-Presence). The total score of all items was used to evaluate the individual's sense of meaning in life, with higher scores indicating a higher sense of meaning. In this study, the Cronbach's alpha was 0.802.

**Creativity.** The Runco Ideational Behavior Scale (RIBS) was used to measure participants' tendencies toward creative behavior in daily life [?]. The RIBS is a self-report scale that accurately reflects individuals' use of innovative ideas or thoughts, and its translated version has demonstrated good reliability and validity in China [?, ?]. The scale consists of 24 items, rated on a 5-point Likert scale (1 = Never, 5 = Very Frequently), with no reverse-scored items. The mean score of all items was calculated to reflect the individual's creativity, with higher scores indicating higher levels of creativity. In our study, the Cronbach's alpha was 0.924.

**Depression.** In this study, the 13-item version of the Beck Depression Inventory (BDI-13), translated and revised by Chinese scholars, was used to assess

individuals' levels of depression [?, ?]. This scale consists of 13 items, each measuring the following symptoms: (1) depression; (2) pessimism; (3) sense of failure; (4) lack of satisfaction; (5) guilt; (6) self-disappointment; (7) negative tendencies; (8) social withdrawal; (9) indecisiveness; (10) changes in self-image; (11) work difficulties; (12) fatigue; and (13) loss of appetite. Each item is rated on a 4-point scale (0-3), and the total score is calculated to assess the individual's level of depression. In this study, the Cronbach's alpha was 0.929.

### Statistical Analysis

Descriptive statistics and Pearson correlation analyses were conducted for the sample data and all variables using SPSS version 26.0. According to Hayes' methodology [?], Model 4 in PROCESS v3.4 was used to test the mediating role of self-forgiveness between shame and creativity. Additionally, Model 6 was used to examine the serial mediation effect of self-forgiveness and meaning in life between shame and creativity.

## Results

### Testing for Common Method Bias

To rule out the potential confounding effects of common method bias in the data, Harman's single-factor test was employed. All items from the scales were included in an exploratory factor analysis. The results indicated that the first common factor accounted for 19.63% of the variance, which is below the critical value of 40% [?]. Thus, there is no significant common method bias present in this study.

### Descriptive Statistics and Correlation Analyses

Table 2 presents the descriptive statistics and correlation analysis of variables in the current study. The results indicate a positive correlation between shame and creativity ( $r = 0.14$ ,  $p < 0.01$ ), suggesting that individuals with higher shame scores also tend to score higher on creativity. Additionally, the data show negative correlations between shame and self-forgiveness ( $r = -0.51$ ,  $p < 0.01$ ), as well as shame and meaning in life ( $r = -0.19$ ,  $p < 0.01$ ), indicating that individuals with higher shame scores tend to have lower scores on self-forgiveness and meaning in life. Furthermore, self-forgiveness is positively correlated with meaning in life ( $r = 0.24$ ,  $p < 0.01$ ) and creativity ( $r = 0.10$ ,  $p < 0.05$ ). Finally, there is a positive correlation between meaning in life and creativity ( $r = 0.31$ ,  $p < 0.01$ ).

### Testing for Mediation Effect

In our sample, undergraduate students constitute the vast majority. Previous studies have indicated that during the university stage in China, undergraduate

students experience a rapid development of independent social and psychological maturity due to reduced supervision from both schools and families [?]. Consequently, students from different academic years may exhibit differences in psychological and behavioral characteristics. Prior research has also revealed a higher prevalence of depressive symptoms among Chinese university students, with depression potentially exhibiting similar behavioral response patterns to shame, such as lower levels of self-forgiveness [?, ?, ?]. Moreover, the distribution of participants' ages in our study is not uniform. Hence, we opted to include gender, age, and depression as covariates in our data analysis, as these factors might indeed influence the variables of interest in the current study. Indeed, we found that these factors could indeed influence the variables of interest in the current study. We conducted independent samples t-tests or analysis of variance (ANOVA) to analyze the effects of these three potential confounding factors on other variables. The results revealed significant differences in creativity scores across different age groups ( $F = 2.93$ ,  $p < 0.01$ ), indicating that age significantly affects creativity. Additionally, depression significantly influenced shame ( $F = 41.61$ ,  $p < 0.001$ ), meaning in life ( $F = 13.88$ ,  $p < 0.001$ ), and self-forgiveness ( $F = 27.82$ ,  $p < 0.001$ ).

We utilized gender, age, and depression scores as covariates and employed Model 4 in PROCESS v3.4 to test Hypothesis 1 [?]. The SPSS output of the model results is displayed in Table 3. Age ( $\beta = 0.11$ ,  $p < 0.01$ , Model 1) and depression ( $\beta = -0.23$ ,  $p < 0.001$ , Model 1) emerged as significant predictors of self-forgiveness, while shame significantly negatively predicted self-forgiveness ( $\beta = -0.40$ ,  $p < 0.001$ , Model 1). Furthermore, as shown in Table 3 Model 2, shame ( $\beta = 0.26$ ,  $p < 0.001$ ) and self-forgiveness ( $\beta = 0.21$ ,  $p < 0.001$ ) jointly significantly predicted creativity. The indirect effect (self-forgiveness  $\rightarrow$  creativity) reached a significance level, since the CI of the above indirect effect did not include the zero value (as shown in Table 3). Therefore, Hypothesis 1 was supported in this study, suggesting that shame may influence individual creativity through self-forgiveness.

### Testing for Serial Mediation Effect

Gender, age, and depression scores were used as covariates, and Model 6 in PROCESS v3.4 for SPSS 26.0, developed by Hayes [?], was employed to analyze the mediating roles of self-forgiveness and meaning in life in the relationship between shame and creativity. Our results showed that shame was a significant predictor of self-forgiveness ( $\beta = -0.40$ ,  $p < 0.001$ ). In Model 2, when meaning in life was included as a predictor variable, self-forgiveness emerged as a significant predictor ( $\beta = 0.13$ ,  $p < 0.05$ ), while shame did not significantly predict meaning in life ( $\beta = 0.01$ ,  $p > 0.05$ ). Finally, shame, self-forgiveness, and meaning in life significantly predicted creativity ( $\beta = 0.25$ ,  $p < 0.001$ ;  $\beta = 0.16$ ,  $p < 0.01$ ;  $\beta = 0.34$ ,  $p < 0.001$ ). Therefore, Hypothesis 2 was supported in our study. Detailed results of the path coefficients in the model are illustrated in Figure 2 [Figure 2: see original paper].

We further used Model 6 in PROCESS v3.4 for SPSS, developed by Hayes, to examine how shame influences creativity through self-forgiveness and meaning in life. The bias-corrected percentile Bootstrap method, with 5000 bootstrap samples and a 95% bias-corrected confidence interval (CI), was used to test the mediation effects. If the CI did not include 0, the effect was considered statistically significant. The results are shown in Table 5. We analyzed the mediating role of self-forgiveness in the relationship between shame and creativity, the mediating role of meaning in life in the relationship between shame and creativity, and the serial mediation effect of self-forgiveness and meaning in life in the relationship between shame and creativity. The data indicate that the total effect of shame on creativity was 0.14 (0.05–0.22), with a direct effect of 0.20 (0.11–0.29) and a total indirect effect of -0.06 (-0.13–0.01). Since the 95% CI did not include zero, the total effect, direct effect, and total indirect effect were all significant. More specifically, the total indirect effect comprised three mediation pathways: (1) Path 1: Shame → Self-Forgiveness → Creativity, with a mediation effect value of -0.05 (-0.11–0.01); (2) Path 2: Shame → Meaning in Life → Creativity, with a mediation effect value of 0.00 (-0.03–0.03); (3) Path 3: Shame → Self-Forgiveness → Meaning in Life → Creativity, with a mediation effect value of -0.01 (-0.03–0.00). Since the 95% CI for Path 2 included zero, the indirect effect for this pathway was not significant. However, the 95% CIs for Paths 1 and 3 did not include zero, indicating that the indirect effects of these two pathways were significant.

## Discussion

Shame has been shown to be associated with individual creativity, yet the findings in the literature have been inconsistent [?, ?, ?]. More critically, the psychological mechanisms through which shame affects creativity remain unclear. In light of this, our study aims to delve deeper into these issues. Specifically, we explored the mediating role of self-forgiveness in the relationship between shame and creativity. Additionally, we examined the serial mediating effects of self-forgiveness and meaning in life on the relationship between shame and creativity. Our current study yields the following conclusions: (1) Individuals with higher levels of shame tend to exhibit greater creativity; however, this positive effect of shame on creativity may be attenuated when considering the factor of self-forgiveness. In other words, self-forgiveness mediates the relationship between shame and creativity. (2) Shame may negatively impact creativity by reducing self-forgiveness and meaning in life, thus influencing an individual's creativity.

In this study, we treated shame as a significant positive factor and examined its impact on creativity, with our findings supporting this perspective. This aligns with some previous research, such as the functionalist viewpoint that the behaviors elicited by the emotions underlying shame may serve as beneficial conditions for the individual [?, ?]. Furthermore, our study identified the mediating variable of self-forgiveness as a suppressive factor in the relationship

between shame and creativity; that is, self-forgiveness attenuates the positive effect of shame on creativity, a relatively unique situation in mediation analysis [?, ?]. Given that our sample was predominantly composed of students from Chinese higher education institutions, we considered the cultural context of China in interpreting the significance of these findings. Confucianism conceptualizes shame not only as an emotion but also as a human capability that prompts introspection and motivates individuals towards socially and morally desirable changes. This is encapsulated in the concept of “Having a Feeling of Shame Gives Rise to Courage” [?, ?]. Therefore, our results, which show that shame positively predicts creativity, may reflect the emphasis in Chinese culture on positive correction and improvement in response to feelings of shame, with individuals engaging in creative behaviors to restore a positive self-perception.

The current findings indicate a negative correlation between shame and self-forgiveness, consistent with previous research [?]. More importantly, while individuals experiencing shame may have a tendency to restore their self-image through creative behavior, our results suggest that lower levels of self-forgiveness associated with shame could suppress high levels of creativity following experiences of shame. According to Brown’s Shame Resilience Theory, the power of shame stems from its unspeakable nature, which, if ignored and avoided, can foster negative behaviors and thoughts [?]. Self-forgiveness, on the other hand, involves confronting and accepting the emotions underlying shame [?]. Thus, self-forgiveness may play a critical role in the impact of shame on creativity. Our data support this hypothesis, demonstrating that self-forgiveness mediates the relationship between shame and creativity.

Previous research has shown that self-forgiveness can enhance individual psychological resilience, making it easier to cope with life’s challenges and setbacks, and enhancing the sense of meaning in life [?]. This is consistent with our findings, which indicate a positive correlation between self-forgiveness and meaning in life. Additionally, Amabile and Pratt’s revised componential model of creativity in 2016 proposed the progress principle: creativity itself can foster a sense of meaning in life, which in turn promotes creativity. This suggests that when individuals perceive their lives as meaningful, they are more likely to exhibit higher levels of creativity, seeking new experiences and growth [?]. Therefore, shame may influence creativity through its impact on self-forgiveness and meaning in life. Our data support this hypothesis, demonstrating that self-forgiveness and meaning in life serve as serial mediators in the relationship between shame and creativity.

Our study makes several significant contributions to this field. Firstly, at the theoretical level, it proposes an explanatory pathway for the relationship between shame and creativity, offering valuable insights into the psychological mechanisms through which shame influences creativity. Secondly, on a practical level, our current findings suggest that interventions targeting self-forgiveness and meaning in life may be effective methods for enhancing individual creativity. However, further experimental validation is required to confirm these findings.

Our study has several limitations. First, the cross-sectional study design precludes establishing a causal relationship. Therefore, the significant differences observed in the current data may require further longitudinal research to validate these conclusions. Secondly, the assessment of shame, self-forgiveness, meaning in life, and creativity through self-report questionnaires underscores the importance of cautiously interpreting the research findings due to potential biases in data analysis. Lastly, the convenience sampling method used in this study, primarily involving undergraduate students and exhibiting a gender imbalance with 61.58% male participants, highlights the necessity for future research to expand the sample size and address gender ratio disparities.

## Conclusion

Shame can positively predict individual creativity, and individuals with higher levels of shame tend to have lower levels of self-forgiveness and meaning in life. Moreover, self-forgiveness and meaning in life serve as serial mediators in the relationship between shame and creativity. This mediating effect may function as a suppressor, weakening the positive predictive effect of shame on creativity.

## References

(2022). “KEY CONCEPTS CHINESE THOUGHT AND CULTURE.” Having a Feeling of Shame Gives Rise to Courage, from [https://www.chinesethought.cn/EN/shuyu\\_{show}.aspx?shuyu\\_](https://www.chinesethought.cn/EN/shuyu_{show}.aspx?shuyu_)

Amabile, T. M. and M. G. Pratt (2016). “The dynamic componential model of creativity and innovation in organizations: Making progress, making meaning.” *Research in Organizational Behavior* 36: 157-183. <https://doi.org/10.1016/j.riob.2016.10.001>

Anderson, S. and V. Clarke (2019). “Disgust, shame and the psychosocial impact of skin picking: Evidence from an online support forum.” *J Health Psychol* 24(13): 1773-1784. <https://doi.org/10.1177/1359105317700254>

Ashby, F. G., A. M. Isen and A. U. Turken (1999). “A neuropsychological theory of positive affect and its influence on cognition.” *Psychol Rev* 106(3): 529-550. <https://doi.org/10.1037/0033-295x.106.3.529>

Baas, M., C. K. De Dreu and B. A. Nijstad (2008). “A meta-analysis of 25 years of mood-creativity research: hedonic tone, activation, or regulatory focus?” *Psychol Bull* 134(6): 779-806. <https://doi.org/10.1037/a0012815>

Bagozzi, R. P., W. Verbeke and J. C. Gavino, Jr. (2003). “Culture moderates the self-regulation of shame and its effects on performance: the case of salespersons in The Netherlands and the Philippines.” *J Appl Psychol* 88(2): 219-233. <https://doi.org/10.1037/0021-9010.88.2.219>

Brown, B. (2018). “Shame Resilience Theory: A Grounded Theory Study on Women and Shame.” *Families in Society: The Journal of Contemporary Social Services* 87(1): 43-52. <https://doi.org/10.1606/1044-3894.3483>

- Chen, Y., Y. Zhang and G. Yu (2022). “Prevalence of mental health problems among college students in mainland China from 2010 to 2020: A meta-analysis.” *Advances in Psychological Science* 30(5): 991-1004. <https://doi.org/10.3724/sp.J.1042.2022.00991>
- Cleare, S., A. Gumley and R. C. O’Connor (2019). “Self-compassion, self-forgiveness, suicidal ideation, and self-harm: A systematic review.” *Clin Psychol Psychother* 26(5): 511-530. <https://doi.org/10.1002/cpp.2372>
- Curran, P. G. (2016). “Methods for the detection of carelessly invalid responses in survey data.” *Journal of Experimental Social Psychology* 66: 4-19. <https://doi.org/https://doi.org/10.1016/j.jesp.2015.07.006>
- de Hooge, I. E., M. Zeelenberg and S. M. Breugelmans (2011). “A functionalist account of shame-induced behaviour.” *Cogn Emot* 25(5): 939-946. <https://doi.org/10.1080/02699931.2010.516920>
- Du, Y., Y. Yang, X. Wang, C. Xie, C. Liu, W. Hu and Y. Li (2020). “A Positive Role of Negative Mood on Creativity: The Opportunity in the Crisis of the COVID-19 Epidemic.” *Front Psychol* 11: 600837. <https://doi.org/10.3389/fpsyg.2020.600837>
- Fisher, M. L. and J. J. Exline (2010). “Moving Toward Self-Forgiveness: Removing Barriers Related to Shame, Guilt, and Regret.” *Social and Personality Psychology Compass* 4(8): 548-558. <https://doi.org/10.1111/j.1751-9004.2010.00276.x>
- Geng, J., L. Han, F. Gao, M. Jou and C.-C. Huang (2018). “Internet addiction and procrastination among Chinese young adults: A moderated mediation model.” *Computers in Human Behavior* 84: 320-333. <https://doi.org/10.1016/j.chb.2018.03.013>
- George, J. M. and J. Zhou (2002). “Understanding when bad moods foster creativity and good ones don’t: the role of context and clarity of feelings.” *J Appl Psychol* 87(4): 687-697. <https://doi.org/10.1037/0021-9010.87.4.687>
- Gilbert, P. (2000). “The relationship of shame, social anxiety and depression: the role of the evaluation of social rank.” *Clinical Psychology & Psychotherapy* 7(3): 174-189. [https://doi.org/10.1002/1099-0879\(200007\)7:3<174::Aid-cpp236>3.0.Co;2-u](https://doi.org/10.1002/1099-0879(200007)7:3<174::Aid-cpp236>3.0.Co;2-u)
- González-Gómez, H. V. and A. W. Richter (2015). “Turning shame into creativity: The importance of exposure to creative team environments.” *Organizational Behavior and Human Decision Processes* 126: 142-161. <https://doi.org/10.1016/j.obhdp.2014.09.004>
- Graham, K. L., J. L. Morse, M. B. O’Donnell and M. F. Steger (2017). Repairing Meaning, Resolving Rumination, and Moving toward Self-Forgiveness. *Handbook of the Psychology of Self-Forgiveness*, Springer Nature: 59-72. [https://doi.org/10.1007/978-3-319-60573-9\\_5](https://doi.org/10.1007/978-3-319-60573-9_5)

- Gross, J. J. (2002). "Emotion regulation: affective, cognitive, and social consequences." *Psychophysiology* 39(3): 281-291. <https://doi.org/10.1017/s0048577201393198>
- Guy, W., N. I. o. M. H. P. R. B. D. o. E. R. Programs, N. I. o. M. H. P. R. Branch and E. C. D. E. Program (1976). *ECDEU Assessment Manual for Psychopharmacology*, Rockville, Md, <https://books.google.com.hk/books?id=6hjYtgEACAAJ>
- Han, J., Y. Wang, J. Qian and M. Shi (2023). "Delving into the role of creativity on meaning in life: A multiple mediation model." *Heliyon* 9(6): e16566. <https://doi.org/10.1016/j.heliyon.2023.e16566>
- Hayes, A. F. (2013). *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*, Guilford Press.
- Higgins, E. T. (1997). "Beyond pleasure and pain." *Am Psychol* 52(12): 1280-1300. <https://doi.org/10.1037//0003-066x.52.12.1280>
- Hirt, E. R., E. E. Devers and S. M. McCrea (2008). "I want to be creative: exploring the role of hedonic contingency theory in the positive mood-cognitive flexibility link." *J Pers Soc Psychol* 94(2): 214-230. <https://doi.org/10.1037/0022-3514.94.2.214>
- Holmgren, M. R. (1998). "Self-Forgiveness and Responsible Moral Agency." *The Journal of Value Inquiry* 32(1): 75-91. <https://doi.org/10.1023/a:1004260824156>
- Jung, M., Y. Park, S. Y. Baik, C. L. Kim, H. S. Kim and S. H. Lee (2019). "Self-Forgiveness Moderates the Effects of Depression on Suicidality." *Psychiatry Investig* 16(2): 121-129. <https://doi.org/10.30773/pi.2018.11.12.1>
- Kim, S., R. Thibodeau and R. S. Jorgensen (2011). "Shame, guilt, and depressive symptoms: a meta-analytic review." *Psychol Bull* 137(1): 68-96. <https://doi.org/10.1037/a0021466>
- Kwong, M.-K., R. T.-H. Ho and Y.-T. Huang (2019). "A creative pathway to a meaningful life: An existential expressive arts group therapy for people living with HIV in Hong Kong." *The Arts in Psychotherapy* 63: 9-17. <https://doi.org/10.1016/j.aip.2019.05.004>
- Leach, C. W. and A. Cidam (2015). "When is shame linked to constructive approach orientation? A meta-analysis." *J Pers Soc Psychol* 109(6): 983-1002. <https://doi.org/10.1037/pspa0000037>
- Lickel, B., K. Kushlev, V. Savalei, S. Matta and T. Schmader (2014). "Shame and the motivation to change the self." *Emotion* 14(6): 1049-1061. <https://doi.org/10.1037/a0038235>
- Liu, S. and Q. Gan (2010). "Reliability and validity of the Chinese version of the Meaning in Life Questionnaire." *Chinese Mental Health Journal* 24(006): 478-482.
- Lu, J., X. Xu, Y. Huang, T. Li, C. Ma, G. Xu, H. Yin, X. Xu, Y. Ma, L. Wang, Z. Huang, Y. Yan, B. Wang, S. Xiao, L. Zhou, L. Li, Y. Zhang, H. Chen, T.

- Zhang, J. Yan, H. Ding, Y. Yu, C. Kou, Z. Shen, L. Jiang, Z. Wang, X. Sun, Y. Xu, Y. He, W. Guo, L. Jiang, S. Li, W. Pan, Y. Wu, G. Li, F. Jia, J. Shi, Z. Shen and N. Zhang (2021). “Prevalence of depressive disorders and treatment in China: a cross-sectional epidemiological study.” *Lancet Psychiatry* 8(11): 981-990. [https://doi.org/10.1016/S2215-0366\(21\)00251-0](https://doi.org/10.1016/S2215-0366(21)00251-0)
- MacKinnon, D. P., J. L. Krull and C. M. Lockwood (2000). “Equivalence of the mediation, confounding and suppression effect.” *Prev Sci* 1(4): 173-181. <https://doi.org/10.1023/a:1026595011371>
- Madjar, N., G. R. Oldham and M. G. Pratt (2002). “There’s No Place Like Home? The Contributions of Work and Nonwork Creativity Support to Employees’ Creative Performance.” *Academy of Management Journal* 45(4): 757-767. <https://doi.org/10.2307/3069309>
- Mills, J. K. (1995). “On self-forgiveness and moral self-representation.” *The Journal of Value Inquiry* 29(3): 405-406. <https://doi.org/10.1007/bf01206993>
- Murphy, J. G. (2005). Forgiveness, self-respect, and the value of resentment. *Handbook of Forgiveness*. J. Everett L. Worthington. New York. <https://doi.org/https://doi.org/10.4324/9780203954588>
- Podsakoff, P. M., S. B. MacKenzie, J. Y. Lee and N. P. Podsakoff (2003). “Common method biases in behavioral research: a critical review of the literature and recommended remedies.” *J Appl Psychol* 88(5): 879-903. <https://doi.org/10.1037/0021-9010.88.5.879>
- Qian, M., Bernice Andrews, R. Zhu and A. Wang (2000). “The Development of Shame Scale of Chinese College Students.” *Chinese Mental Health Journal*(04): 217-221.
- Rucker, D. D., K. J. Preacher, Z. L. Tormala and R. E. Petty (2011). “Mediation Analysis in Social Psychology: Current Practices and New Recommendations.” *Social and Personality Psychology Compass* 5(6): 359-371. <https://doi.org/10.1111/j.1751-9004.2011.00355.x>
- Runco, M. A. and G. J. Jaeger (2012). “The Standard Definition of Creativity.” *Creativity Research Journal* 24(1): 92-96. <https://doi.org/10.1080/10400419.2012.650092>
- Runco, M. A., E. P. Noble, R. Reiter-Palmon, S. Acar, T. Ritchie and J. M. Yurkovich (2011). “The Genetic Basis of Creativity and Ideational Fluency.” *Creativity Research Journal* 23(4): 376-380. <https://doi.org/10.1080/10400419.2011.621859>
- Runco, M. A., J. A. Plucker and W. Lim (2001). “Development and Psychometric Integrity of a Measure of Ideational Behavior.” *Creativity Research Journal* 13(3-4): 393-400. [https://doi.org/10.1207/s15326934crj1334\\_{16}](https://doi.org/10.1207/s15326934crj1334_{16})
- Sorrentino, R. M., E. T. Higgins and G. Press (1986). *Handbook of motivation and cognition: Foundations of social behavior*, Vol. 2. Motivation and Cognition, The Guilford Press. 20: 1-9.

Steger, M. F., S. Oishi and T. B. Kashdan (2009). “Meaning in life across the life span: Levels and correlates of meaning in life from emerging adulthood to older adulthood.” *The Journal of Positive Psychology* 4(1): 43-52. <https://doi.org/10.1080/17439760802303127>

Tangney, J. P. (2016). “Recent Advances in the Empirical Study of Shame and Guilt.” *American Behavioral Scientist* 38(8): 1132-1145. <https://doi.org/10.1177/0002764295038008008>

Thompson, L. Y., C. R. Snyder, L. Hoffman, S. T. Michael, H. N. Rasmussen, L. S. Billings, L. Heinze, J. E. Neufeld, H. S. Shorey, J. C. Roberts and D. E. Roberts (2005). “Dispositional forgiveness of self, others, and situations.” *J Pers* 73(2): 313-359. <https://doi.org/10.1111/j.1467-6494.2005.00311.x>

Wang, D., D. Wang and W. Chen (2022). “The relationship between adolescents’ resilience and their malevolent creative behaviors.” *Acta Psychologica Sinica* 54(2): 154-167. <https://doi.org/10.3724/sp.J.1041.2022.00154>

Wang, J. (2007). *The Empirical Study on Forgiveness Mind and Its Influencing Factors of the College Students*. Master Thesis, Northwest Normal University.

Woodyatt, L. and M. Wenzel (2013). “Self-Forgiveness and Restoration of an Offender Following an Interpersonal Transgression.” *Journal of Social and Clinical Psychology* 32(2): 225-259. <https://doi.org/10.1521/jscp.2013.32.2.225>

Zhang, J. (2015). *Understanding the Concept of Shame in the Chinese Culture*. U. t. C. o. S. i. t. C. Culture. New York, Child Welfare/Child Protective Services Training Institute. 4.

Zheng, H. and Y. Zheng (1987). “Application of Self-rating Depression Inventory (BDI) in patients with depression.” *Chinese Journal of Nervous and Mental Diseases*(4): 236-237.

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

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