

Research Article

VALIDATION OF THE MALEVOLENT CREATIVITY BEHAVIOR SCALE IN THE ARAB CONTEXT USING CONFIRMATORY FACTOR ANALYSIS WITH A SAMPLE COMPRISING UNIVERSITY STUDENTS IN SAUDI ARABIA AND SUDAN

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Abstract

This study aimed to verify Malevolent Creativity Behavior Scale (MCBS) in the Arab context, using descriptive correlational design. The study sample, which was drawn from the population of university students in the kingdom of Saudi Arabia and in the republic of Sudan, comprised 3,408 male and female undergraduate university students (n=1,789 Saudi; n=1,619 Sudanese). The MCBS scale comprises 13 items in three dimensions (i.e., hurting people, lying, and playing tricks), which fall under the general category of malevolent creativity. In this study, the sole alteration made was to translate the scale into Arabic. This research, which employed confirmatory factor analysis, confirmed the MCBS as a valid tool for measuring malevolent creativity in the Arab environment. While this supports the use of the scale with the population of university students in the two countries, there is a need to confirm our findings through application to additional and diverse populations in Sudan and Saudi Arabia as well as to populations in other Arab world countries. Findings restricted to the Sudanese sample of this study solely on the topic of gender and rates of malevolent creativity were previously presented. *ASEAN Journal of Psychiatry, Vol. 25 (8) September, 2024; 1-10.*

Keywords: Malevolent Creativity Behavior Scale (MCBS); Arab World Context; Saudi Arabia; Sudan; Psychology

Introduction

The human trait of creativity has long been the focus of investigation. While creativity has driven every innovation in history, the dual positive/negative nature of the characteristic cannot be ignored. It is behind all great works of art and literature, and also behind destructive advances such as the development of highly-technical weaponry and environmentally-damaging technology [1-8].

Renowned psychologist Carl Rogers discussed this dark side of creativity over 60 years ago [9]. In subsequent decades, other psychologists and scholars have investigated the idea of creativity that is not simply negative in nature but actively rooted in doing intentional harm [10]. Studies have also explored whether a relationship exists between creativity and a rise in unethical behaviors and found none [11]. Similarities and differences of negative creativity and Malevolent Creativity

(MC) have also been the focus of investigation [11-13].

Malevolent creativity

Components and characteristics: Although the terms “negative creativity” and “malevolent creativity” are sometimes used interchangeably, the literature generally differentiates between the two, indicating that while negative creative behavior or thoughts can result in negative effect on others, it does not involve the intentional goal of creating harm or damage to others [14-16]. In contrast, while sharing some aspects with the negative form, malevolent creativity is typically associated with the overt and conscious aim of harming others in a criminal fashion [3,4,10,11,17-24]. The link between the criminal mind including of those who commit large-scale atrocities, i.e., psychopathic tyrants and malevolent creativity has been the subject of a number of studies, as well [24,25]. Moreover, Perchtold-Stefan et al., linked the trait to differences in social-emotional processing in the brain [10]. Other research has asserted that external conditions or cues may impact an individual’s type of creativity response; and some have asserted that fair treatment results in positive creative behavior and unfair treatment results in creative behaviors or ideas that have malevolent characteristics [19,26]. Recently, Zhao et al., examined whether there is a correlation between moral reasoning and malevolent creative behavior [27].

Given that this trait can manifest in violent crimes of significant impact on society i.e., domestic violence, murder, terrorism substantial research has investigated the trait, its origins, and how it manifests in criminal activities of a sweeping, immoral and destructive nature [4,18,19,28]. Baas et al., noted the “ingenious” nature of manifestations of malevolent creativity, such as novel use of everyday objects as weapons, development of innovative and highly-destructive weaponry, and cunning methods of terrorist attack [12]. Throughout the research, certain primary traits of MC emerge, which can be summarized as: (a) An intentional and conscious aim to do harm, (b) deception/lying, and (c) elaborate tricks, such as would be termed crimes of fraud [1,29,30].

Research on this trait often involves exploration of the so-called “Big Five” personality traits, whose identification Goldberg examined in-depth [31]. These factors are “Neuroticism (N), Extraversion (E), Openness to experience (O), Agreeableness

(A), and Conscientiousness (C)” [32]. Another factor in creativity research is the examination of the concept of Alternative Uses Task (AUT), which was developed by Guilford [33]. The classification of certain spontaneous violent or negative AUT responses by subjects as indicators of malevolent creativity [27,34,35].

Instruments for measurement

Several instruments have been developed to assess for the characteristics that comprise malevolent creativity or that the excess or lack of are considered to be related to incidences of MC. These include:

Big Five Inventory (BFI): Goldberg described five aspects of personality: “extroversion *vs* introversion, agreeableness *vs* antagonism, conscientiousness *vs* lack of direction, neuroticism *vs* emotional stability, openness *vs* closedness to experience” [33,36]. The BFI, which is a self-report scale, comprises 44 items to assess on these five traits using a 5-point scale that ranges from “Disagree strongly” (1 point) to “Agree strongly” (5 points).

Buss-Perry aggression questionnaire: This 29-item scale employs a 5-point rating scale to assess for a predilection toward hostile and aggressive behavior [37].

Connor-Davidson Resilience Scale (CD-RISC): This 25-item scale that employs a 0-4 rating system was developed for use in the assessment and treatment of individuals with Post-Traumatic Stress Disorder (PTSD) [38].

Revised NEO Personality Inventory (NEO-PI) and NEO Five-Factor Inventory (NEO-FFI): Developed and then revised by Costa and McCrae, the NEO-PI-R is of particular use in the context of MC [39,40]. It comprises “240 items that assess 30 specific traits” that are the basis of the big five personality traits [40]. The NEO-FFI is now in its third iteration (NEO-FFI-3) [41].

Runco Ideational Behavior Scale (RIBS): Citing a lack of “high-quality creativity assessments,” Runco et al., and Guilford developed the 23-item RIBS, which utilize a 5-point Likert scale to assess “creative ideation” [8,33]. The scale is rooted in part in the theories on divergent thinking.

Simple coping style scale: This scale was developed by Xie to examine an aspect of

childhood stressors and coping skills in middle school students in rural China [42].

In connection with the BFI, Abdel-Khalek investigated the requirements of validating a BFPI for the Arab context with two samples of college students (N=1,161; N=450) [43]. This study also utilized the NEO-FFI. The author here developed a 30-item scale that comprised six items for each of the five factors.

Malevolent creativity behavior scale

Although previous studies have examined the nature and consequences of malevolent creativity and introduced certain instruments to assess different characteristics associated with it, it was only 7 years ago that Hao et al. presented their Malevolent Creativity Behavior Scale (MCBS) to directly assess for the trait [29]. The MCBS has 13 items across three dimensions, which are (a) hurting people, (b) lying and (c) playing tricks. It was first developed in China and is designed to measure malevolent creativity through an individual's everyday behavior. The authors first surveyed the existing literature on MC and consulted with experts regarding the trait before first identifying 20 traits indicative of malevolent creativity and developing an item for each one. After a review, these 20 items were reduced to 13 that were deemed "unique and broadly understood", each of which is scored by the individual as: 0=never, 1=few times, 2=sometimes, 3=often, and 4=usually [29]. In addition to the MCBS, according to Hao et al., study to verify the validity of their tool also used the following: (a) RIBS (short form); (b) Buss-Perry aggression questionnaire; Openness and extroversion subscales of the NEO-PI-R; and (c) The malevolent creativity task [29]. The study sample comprised 908 college students, with the datasets of half of the group used for Exploratory Factor Analysis (EFA) and the datasets of the other 454 used for Confirmatory Factor Analysis (CFA).

Research employing the MCBS

Some studies have examined the relationship between MC and other traits, such as strength. For example, Wang et al. investigated strength and MC with a random sample of Chinese adolescents in middle school; the final subject pool comprised 185 male students and 181 female students [16]. To determine whether levels of strength correlate with MC, the researchers applied the CD-RISC, the MCBS, and the simple coping style scale in that order to the study sample. The findings

were that coping skills and resilience were negatively correlated with MC. Since this study was conducted in China, where the MCBS was first developed, there was no need to adapt the instrument.

Zhao et al., conducted with randomly-selected college students (undergraduate and graduate) in eastern China, the authors "explore whether moral reasoning moderates the relationship between creative potential and MC behaviors" [27]. There were 293 university students in the original sample but a total of 23 datasets were invalidated for different reasons, so the final sample was 270. The authors incorporated Alternate Uses Test (AUT) as well as the RIBS and the MCBS. Their findings indicated that, aside from AUT fluency "all other indicators of creative potential were positively associated with MC behavior" [27]. Again, since this study was conducted in China, there was no need to adapt or translate the MCBS.

Szabó et al., research involved a study sample of 130 convicted Romanian criminals that identified certain personality traits and, with consideration of substantial demographic data, attempted to quantify the degree to which each is a predictor of MC [44]. The study presented eight hypotheses regarding both positive and negative traits, such as self-efficacy, narcissism, and Machiavellianism. The researchers utilized a Romanian translation of the MCBS, as well as a survey to obtain demographic information from the inmates, a 12-item scale for three traits (i.e., psychopathy, Machiavellianism, narcissism), and a 10-item self-efficacy scale.

Al-Mahdawi et al., presented some of the data just the current study's Sudanese sample to discuss gender and the incidence of malevolent creativity [45]. Only small differences were found, and "females rated themselves higher" [45]. Kapoor et al., also examined gender-related differences in regard to MC [46]. In that study, which was conducted in India, the author found little variation correlated with gender in the area of being negatively creative, although some gender-related variations were found related to task type. Kapoor et al., research involved 641 participants of whom 45.71% were women [46]. Additionally, Perchtold-Stefan et al., found small variations related to gender in their study that investigated whether there is a link between socio-emotional processing and MC [10]. Dumas and Strickland utilized the previously-described

AUT, which is considered a useful measure for evaluating divergent thinking, to see if there were observable differences related to gender regarding the use of ordinary (non-weapon) objects for violence and therefore quantify gender-related variations in malevolent creativity [34]. Their findings indicated that the two factors of fluency the ease with which alternate uses were generated and originality did not vary substantially based on gender. The authors also noted “participant originality significantly predicted malevolence” and that “male participants generated significantly more malevolent responses to the AUT than did women” [34]. Zhao et al., also noted that on MC behavior, the males in their study scored “significantly higher” than did the females [27]. One very recent work in this area of study is Manis, which examined whether there is a gender-based neurophysiological variation regarding how MC manifests in males and females [47].

Research validating the MCBS for other contexts

Although Hao et al., indicated the need for investigations of their scale in the contexts of populations in other countries as noted, they developed their scale in China we could find few instances of the scale being validated or employed outside of that country [29]. Meshkova et al., validated the MCBS for the Russian context using a translated instrument with a 458-person sample drawn from diverse populations (e.g., convicted violent criminals, law enforcement, students) [48]. It does not appear that Meshkova et al., made any adjustments to the scale aside from translating it into Russian. The researcher found the instrument to be valid for use in Russia.

Materials and Methods

This study employed descriptive analytical method to test the validity of the MCBS in the Arab context. This method was chosen as it is considered to be appropriate for research of this type in which the authors are attempting to obtain deep and accurate insights into a phenomenon. We determined that the statistical technique most appropriate for use in this study was Confirmatory Factor Analysis (CFA), which was also conducted by Hao et al., and which is recommended when the goal is to “verify the factor structure of a set of observed variables” as it “allows the researcher to test the hypothesis that a relationship between observed variables and their underlying latent constructs exists” [29]. In this case, the observed

variables were hurting people, lying, and playing tricks and the underlying latent construct was malevolent creativity. Different time constraints and issues related to the requirements of the COVID-19 pandemic required that the term for the application of the MCBS to the two university samples lasted longer than had originally been planned. As a result, the full timeframe during which the scales were completed was 7 January, 2021 to 19 May, 2021.

Study population and sample

The study drew participants from two locations, the University of Tabuk in Tabuk, Saudi Arabia and the University of Neelain in Khartoum, Sudan. These populations were chosen based on ease of access for the researchers, availability of students during the period of application that had been established for the study, and existing cooperative relationships the researchers have with the universities. The principal researcher on the project, who is an associate professor of mental health in the department of education and psychology, led the application of the instrument at University of Tabuk with the assistance of 10 graduate students in that same department. The research in Sudan was directed by an assistant professor in international media in the department of social and economic studies at the University of Neelain with the assistance of six graduate students from the university’s department of psychology.

Once the population from which the study sample would be drawn was established (i.e., undergraduate university students at the University of Tabuk and at the University of Neelain), stratified random sampling method was applied [49]. This first involved dividing the population into groups based on major and then further dividing each of these groups by gender. Following this division, students were chosen from each of the strata and then pooled to form the study sample. This resulted in a final sample size of 3,408, which comprised (a) Saudi: 1,789 (52.49% of the total) of whom 36.39% (n=651) were male and 64.17% (n=1,138) were female; and (b) Sudanese: 1,619 (47.51% of the total) of whom 44.35% (n=718) were male and 55.65% (n=901) were female.

Instrument

The original version of the MCBS was used without any modification, adaptation, or addition except that it was translated into Arabic for the

specific application of the study. This Arabic translation was developed by an expert in the field who is an associate professor of translation at Tabuk University. Therefore, like Hao et al., scale, the instrument employed in this study contains 13 items in the three dimensions of: (a) hurting people (6 items), (b) lying (4 items), and (c) playing tricks (3 items) [29].

Data collection and analysis

The scale was applied in the field at the University of Tabuk and the University of Neelain, as previously stated, from 7 January, 2021 to 19 May, 2021. Students completed the scale individually and in groups. The answer sheets were collected, checked and reviewed; empty, incomplete, or damaged answer sheets were excluded. Specifically, a total of 5,000 questionnaires were distributed of which 1,592 were excluded for some reason. Next, confirmatory factor analysis was performed using the statistical program Linear Structural Relations (LISREL) (version 8.8) to verify the existence of the three-factor model i.e., hurting people, lying and playing tricks as proposed by Hao et al., [29]. The main objective of the CFA was to verify the

goodness of fit of the three-factor model.

Results

As shown in Table 1, we present the data for the Sudanese and Saudi samples separately and then in combination. Chi-square (χ^2) and its value are small and not statistically significant. Due to its high sensitivity to the sample size, in addition to its assumption of the normal distribution of the model variables, it is possible to use alternative statistical indicators, such as adjusting the ratio between the χ^2 and degrees of freedom (df) so that it is less than three. In this study, the Comparative Fit Index (CFI) was >0.90; the Goodness of Fit Index (GFI) was >0.80; and the Adjusted Goodness of Fit Index (AGFI) was >0.80. The RMSEA value was <0.05, which indicates an exact fit of the assumed model with the sample data, as a value between 0.05-0.08 indicates a high fit, whereas a value greater than 0.09 indicates no congruence and rejection of the model. Figure 1 also presents information on the findings of the CFA. The data on the internal consistency of the instrument is presented on Tables 2 and 3.

Table 1. Results of the CFA of the three-factor model of the MCBS Adapted for the Arab context.

| Sample type | χ^2 | df | χ^2 & df | GFI | AGFI | CFI | RMSEA |
|-----------------|-----------|----|---------------|------|------|------|-------|
| Sudan sample | 791.40** | 62 | 12.96 | 0.93 | 0.9 | 0.9 | 0.085 |
| Saudi sample | 2370.87** | 62 | 38.24 | 0.83 | 0.75 | 0.6 | 0.14 |
| Combined sample | 3182.27** | 62 | 51.33 | 0.87 | 0.82 | 0.68 | 0.12 |

Note: GFI=Goodness of Fit; AGFI=Adjusted Goodness of Fit Index; CFI=Comparative Fit Index; RMSEA=Root-Mean-Square Error of Approximation; **p=0.001.

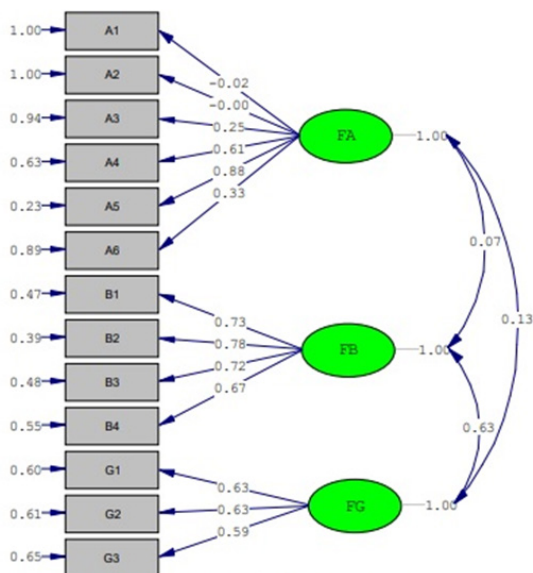


Figure 1. The three factor model for measuring malevolent creativity in the Sudanese sample (Part 1).

Table 2. Establishing internal consistency of the MCBS for the Arab context.

| Item | Factor | Paragraphs are related to dimension | Correlation of paragraphs with the total score of the scale |
|-------|--------------------------------|-------------------------------------|---|
| 1-6 | Items on hurting people | | MC |
| 1 | Hurting people-1 | 0.368** | 0.209** |
| 2 | Hurting people-2 | 0.525** | 0.403** |
| 3 | Hurting people-3 | 0.626** | 0.339** |
| 4 | Hurting people-4 | 0.462** | 0.421** |
| 5 | Hurting people-5 | 0.557** | 0.276** |
| 6 | Hurting people-6 | 0.477** | 0.216** |
| 7-10 | Items on lying | | |
| 7 | Lie-1 | 0.621** | 0.579** |
| 8 | Lie-2 | 0.830** | 0.674** |
| 9 | Lie-3 | 0.749** | 0.611** |
| 10 | Lie-4 | 0.812** | 0.678** |
| 11-13 | Items on playing tricks | | |
| 11 | Playing tricks-1 | 0.755** | 0.490** |
| 12 | Playing tricks-2 | 0.693** | 0.232** |
| 13 | Playing tricks-3 | 0.733** | 0.292** |

Note: **p<0.001.

Table 3. Relationship of the dimensions of the scale to each other and to the total score of malevolent creativity.

| Factor | Hurting people | lying | Playing tricks |
|-----------------------------|----------------|---------|----------------|
| Hurting people | - | - | - |
| Lying | 0.251** | - | - |
| Playing tricks | 0.018 | 0.223** | - |
| Malevolent creativity scale | 0.634** | 0.840** | 0.483** |

Note: **p<0.001.

As shown in Table 4, presents the data on the reliability of the instrument for the Arab context. Tuckman asserts that a Cronbach's alpha coefficient of 0.75 is acceptable. The levels of Cronbach are α are as follows: (a) 0.5 indicates low stability, (b) 0.5-0.8 indicates medium stability, and (c) 0.8 and higher indicates high stability. Herein, we found the values to be medium and high for the Sudanese sample and medium and low for the Saudi sample (Figure 2).

They were differences in MC related to gender

(male/female) with a p value of 0.046, although this does not reach the level of significance required (p=0.050).

In favor of males, the mean was 50.05 and the standard deviation was 6.616. In addition, they were differences in MC related to the country variable (Sudan/Saudi Arabia), of p=0.0001, although again this does not reach the level of significance of p=0.050. In favor of Sudan, the mean was 53.01 and the standard deviation was 7.34 (Table 5).

Table 4. Cronbach’s alpha of the MCBS for the Arab context.

| Factor | No. of items | Sudanese sample | Saudi sample | Total sample |
|-----------------------|--------------|-----------------|--------------|--------------|
| Hurting people | 6 | 0.525 | 0.609 | 0.592 |
| Lying | 4 | 0.817 | 0.627 | 0.75 |
| Playing tricks | 3 | 0.631 | 0.251 | 0.544 |
| Malevolent creativity | 13 | 0.738 | 0.377 | 0.648 |

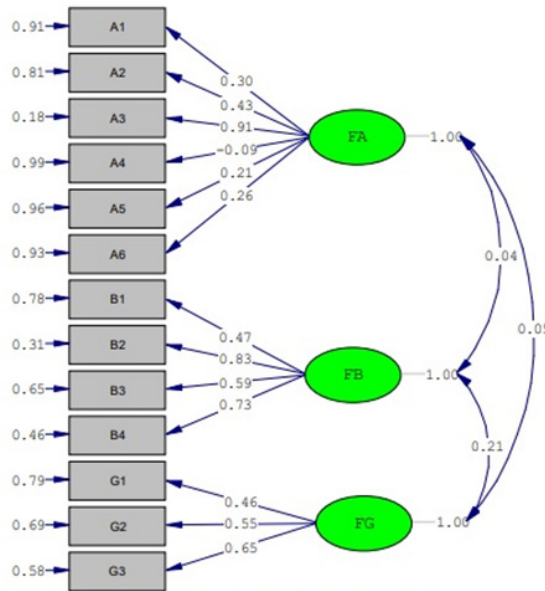


Figure 2. The three-factor model for measuring malevolent creativity in the Arab context (Part 2).

Table 5. Test for effects and interactions between the variables of country and gender.

| Source | Type III sum of squares | df | Mean square | F |
|-----------------|-------------------------|------|-------------|-----------|
| Corrected model | 27803.308a | 3 | 9267.769 | 249.817 |
| Intercept | 8178572 | 1 | 8178572 | 220457.1 |
| Country | 26106.83 | 1 | 26106.83 | 703.721** |
| Gender | 148.343 | 1 | 148.343 | 3.999** |
| Country/Gender | 90.399 | 1 | 90.399 | 2.437 |
| Error | 126282.4 | 3404 | 37.098 | - |
| Total | 8681515 | 3408 | - | - |
| Corrected total | 154085.7 | 3407 | - | - |

Note: a=Adjusted R squared; (R2)=0.180; **p<0.001.

Discussion

As previously described, the current study administered Hao et al., MCBS to a sample of university students in the Saudi Arabia and Sudan [29]. The results showed satisfactory reliability and structural credibility for the assessment of MC. There have been very few applications

of the MCBS in different contexts (e.g., Arab World, Asian countries outside of China) and the applications of the MCBS that we located involved substantially different populations from that selected for our research. For example, Wang et al., used the MCBS, among other scales, to study MC in teenagers [16]. Moreover, other research that examined the overall trait of malevolent creativity

involved either different scale entirely or used different scales in conjunction with the MCBS in their studies, such as the CD-RISC [50-54]. It is also important to note that some researchers have taken issue with the use of the MCBS itself for the measurement of MC, noting among other criticisms that the scale involves far fewer items than other measurement tools [55-59].

Conclusion

In this study assessing the validity of the MCBS for the Arab context, we obtained acceptable degrees of stability and honesty with our sample of 3,408 university students in Saudi Arabia (n=1,789) and Sudan (n=1,619). The confirmatory factor analysis confirmed the validity of the scale in the Sudanese environment. However, it is clear from the analysis of the application of the scale in the Saudi environment that it is necessary to apply the MCBS to larger samples in Saudi. It might also be constructive to add the standard aspect related to tasks and situations.

The CFA results confirmed the scale's reliability and validity across the sampled populations, indicating that the MCBS is a suitable tool for assessing malevolent creativity behaviors in Arab university students. This finding supports the scale's cross-cultural applicability and underscores the importance of considering cultural contexts when evaluating psychological constructs.

Limitations

This study examined the MCBS in the context of Sudan and Saudi Arabia. The Arab world comprises 22 countries, where each nation's population has certain unique characteristics. The findings of this study are therefore not generalizable to the 20 countries from which we did not recruit participants. In addition, our research was limited to the population of university students; therefore our findings are not generalizable to individuals of different age groups in either Sudan or Saudi Arabia. They are also not necessarily generalizable to individuals in the same age group who are not university students.

Future Scope

One future goal would be to design a cross-cultural measure of malevolent creativity that employs self-report. In addition, future investigations should examine the MCBS as well as the overall concept

of malevolent creativity in the Arab context in a variety of other settings and with a variety of other populations. For example, our participants were all in the age range of 18 to 35 years, so future research could focus on adolescents, individuals older than the young adults in our sample, and older adults. Further research should be conducted to determine the validity of the scale in each of the 20 other countries of the Arab world. Another area of interest would be applying the instrument to segments of the Arab population where it might be assumed that levels of MC could be higher than in the general population (e.g., individuals incarcerated for serious crimes).

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References

1. Cropley AJ. Moral issues in creativity. *Encyclopedia of creativity*. 2011;2:140-146.
2. Cropley A, Cropley D. Creativity and lawbreaking. *Creat Res J*. 2011;23(4):313-320.
3. Cropley DH. *The dark side of creativity*. Edward Elgar Publishing. 2017:307-324.
4. Cropley DH, Kaufman JC, Cropley AJ. Malevolent creativity: A functional model of creativity in terrorism and crime. *Creat Res J*. 2008;20(2):105-115.
5. Cropley DH, Kaufman JC, White AE, Chiera BA. Layperson perceptions of malevolent creativity: The good, the bad, and the ambiguous. *Psychol Aesthet Creat Arts*. 2014;8(4):400.
6. Gino F, Wiltermuth SS. Evil genius? How dishonesty can lead to greater creativity. *Psychol Sci*. 2014;25(4):973-981.
7. McLaren RB. The dark side of creativity. *Creat Res J*. 1993;6(1-2):137-144.
8. Runco MA, Plucker JA, Lim W. Development and psychometric integrity of a measure of ideational behavior. *Creat Res J*. 2001;13(3-4):393-400.
9. Rogers CR. *Toward a theory of creativity*. ETC: A review of general semantics. 1954:249-260.
10. Perchtold-Stefan CM, Fink A, Rominger C, Szabó E, Papousek I. Enjoying others' distress

- and indifferent to threat? Changes in prefrontal-posterior coupling during social-emotional processing are linked to malevolent creativity. *Brain Cogn.* 2022;163:105913.
11. Niepel C, Mustafić M, Greiff S, Roberts RD. The dark side of creativity revisited: Is students' creativity associated with subsequent decreases in their ethical decision making? *Thinking Skills and Creativity.* 2015;18:43-52.
 12. Baas M, Roskes M, Koch S, Cheng Y, De Dreu CK. Why social threat motivates malevolent creativity. *Pers Soc Psychol Bull.* 2019;45(11):1590-1602.
 13. Dou X, Dou X, Jia L. Interactive association of negative creative thinking and malevolent creative thinking. *Front Psychol.* 2022;13:939672.
 14. Kapoor H. Misbehaving: Being clever and wicked is a form of creativity. *Aeon Magazine.* 2019.
 15. Kapoor H. Sex differences and similarities in negative creativity. *Pers Individ Differ.* 2019;142:238-241.
 16. Wang D, Wang D, Chen W. The relationship between adolescents' resilience and their malevolent creative behaviors. *Acta Psychol Sin.* 2022;54(2):154.
 17. Clark K, James K. Justice and positive and negative creativity. *Creat Res J.* 1999;12(4):311-320.
 18. Harris DJ, Reiter-Palmon R. Fast and furious: The influence of implicit aggression, premeditation, and provoking situations on malevolent creativity. *Psychol Aesthet Creat Arts.* 2015;9(1):54.
 19. Harris DJ, Reiter-Palmon R, Kaufman JC. The effect of emotional intelligence and task type on malevolent creativity. *Psychol Aesthet Creat Arts.* 2013;7(3):237.
 20. Kaufman JC. Creativity is more than silly, more than art, more than good: The diverse career of Arthur Cropley. *Creat Res J.* 2015;27(3):249-253.
 21. Walczyk JJ, Griffith-Ross DA. Commentary on the functional creativity model: Its application to understanding innovative deception. *Creat Res J.* 2008;20(2):130-133.
 22. Walczyk JJ, Runco MA, Tripp SM, Smith CE. The creativity of lying: Divergent thinking and ideational correlates of the resolution of social dilemmas. *Creat Res J.* 2008;20(3):328-342.
 23. Wang MZ. Malevolent creativity: A cross-cultural study. 2018.
 24. Eisenman R. Malevolent creativity in criminals. *Creat Res J.* 2008;20(2):116-119.
 25. Haslam SA, Reicher S. Beyond the banality of evil: Three dynamics of an interactionist social psychology of tyranny. *Pers Soc Psychol Bull.* 2007;33(5):615-622.
 26. Gutworth MB, Cushenbery L, Hunter ST. Creativity for deliberate harm: Malevolent creativity and social information processing theory. *The Journal of Creative Behavior.* 2018;52(4):305-322.
 27. Zhao J, Xu X, Pang W. When do creative people engage in malevolent behaviors? The moderating role of moral reasoning. *Pers Individ Differ.* 2022;186:111386.
 28. Kashuk JL, Halperin P, Caspi G, Colwell C, Moore EE. Bomb explosions in acts of terrorism: Evil creativity challenges our trauma systems. *J Am Coll Surg.* 2009;209(1):134-140.
 29. Hao N, Tang M, Yang J, Wang Q, Runco MA. A new tool to measure malevolent creativity: The malevolent creativity behavior scale. *Front Psychol.* 2016;7:682.
 30. Jia X, Wang Q, Lin L. The relationship between childhood neglect and malevolent creativity: The mediating effect of the dark triad personality. *Front Psychol.* 2020;11:613695.
 31. Goldberg LR. The structure of phenotypic personality traits. *Am Psychol.* 1993;48(1):26.
 32. Costa PT, McCrae RR. The revised neo personality inventory (neo-pi-r). *The SAGE handbook of personality theory and assessment.* 2008;2(2):179-198.
 33. Guilford JP. Creativity: Yesterday, today and tomorrow. *J Creative Behav.* 1967;1(1):3-14.
 34. Dumas DG, Strickland AL. From book to bludgeon: A closer look at unsolicited malevolent responses on the alternate uses task. *Creat Res J.* 2018;30(4):439-450.
 35. Kapoor H, Khan A. The measurement of negative creativity: Metrics and relationships. *Creat Res J.* 2016;28(4):407-416.
 36. John OP, Srivastava S. The big-five trait

- taxonomy: History, measurement, and theoretical perspectives. 1999.
37. Buss AH, Perry M. The aggression questionnaire. *J Pers Soc Psychol.* 1992;63(3):452.
38. Connor KM, Davidson JR. Development of a new resilience scale: The Connor-Davidson resilience scale (CD-RISC). *Depress Anxiety.* 2003;18(2):76-82.
39. Costa, PT, McCrae, RR. Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI) professional manual. *Psychol Assess.* 1992.
40. Costa PT, McCrae RR. Neo personality inventory. *Am Psychol Assoc.* 2000.
41. Costa PT, McCrae RR. NEO five factor inventory. *Psychol Assess Resources.* 2006.†
42. Xie YN. A preliminary study on the reliability and validity of the simple coping style scale. *Chinese Journal of Clinical Psychology.* 1998;6(2):114-115.
43. Abdel-Khalek AM. The Arabic Big Five Personality Inventory (ABFPI): Setting the stage. *Psychol Behavioral Sc: Int J.* 2018;9(4):555766.
44. Szabó E, Körmendi A, Kurucz G, Croy D, Olajos T, et al. Personality traits as predictors of malevolent creative ideation in offenders. *Behav Sci.* 2022;12(7):242.
45. Al-Mahdawi AM, Dutton E, Osman HA, Bakhiet SF, Mohammad NA, et al. Sex differences in malevolent creativity among Sudanese students. *Pers Individ Differ.* 2022;196:111724.
46. Kapoor H, Khan A. Creativity in context: Presses and task effects in negative creativity. *Psychol Aesthet Creat Arts.* 2019;13(3):314.
47. Manis E. The neurophysiological underpinnings of malevolent creativity might vary by gender. *PsyPost.* 2023.
48. Meshkova NV, Enikolopov SN, Mitina OV, Meshkov IA. Adaptation of the malevolent creativity behavior scale. *Psychol Sci Educ.* 2018;23:25-40.
49. Hayes A, James M, Beer K. How stratified random sampling works, with examples. 2023.
50. Waldie CW, Gillespie VJ, Coleman CL, Croy DH, Oppert ML, et al. An Exploration of the Validity of the Malevolent Creativity Behavior Scale (MCBS). 2021.
51. Baumgartner H, Homburg C. Applications of structural equation modeling in marketing and consumer research: A review. *Int J Mark Res.* 1996;13(2):139-161.
52. Xiaoyang D, Shuqiao Y, Taisheng C. Reliability and validity of the NEO--PI--R in mainland China. *Chin Ment Health J.* 2004: 171-174.
53. DePaulo BM, Kashy DA, Kirkendol SE, Wyer MM, Epstein JA. Lying in everyday life. *J Pers Soc Psychol.* 1996;70(5):979.
54. Doll WJ, Xia W, Torkzadeh G. A confirmatory factor analysis of the end-user computing satisfaction instrument. *MIS quarterly.* 1994:453-461.
55. Gao Z, Qiao X, Xu X, Hao N. Darkness within: The internal mechanism between dark triad and malevolent creativity. *J Intell.* 2022;10(4):119.
56. Hao N, Qiao X, Cheng R, Lu K, Tang M, et al. Approach motivational orientation enhances malevolent creativity. *Acta Psychol.* 2020:203:102985.
57. Kapoor H, Khan A. Creators and presses: The person-situation interaction in negative creativity. *J Creative Behav.* 2020;54(1):75-89.
58. Silvia PJ, Kaufman JC, Reiter-Palmon R, Wigert B. Cantankerous creativity: Honesty-humility, agreeableness, and the HEXACO structure of creative achievement. *Pers Individ Differ.* 2011;51(5):687-689.
59. Suhr DD. Exploratory or confirmatory factor analysis? 2006.

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