

## A Meta-Analysis of the Relationship Between the Dark Triad and Aggressive Behavior

**Authors:** Zhu Yalin, golden, golden

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### Abstract

Using meta-analytic methods, this study examined the overall relationship between the Dark Triad and aggressive behavior, incorporating 87 quantitative studies with 90 independent samples comprising 41,273 participants. The results indicated that all three Dark Triad traits showed positive correlations with aggressive behavior ( $r = 0.338$  to  $0.405$ ), with narcissism demonstrating a significantly weaker correlation with aggressive behavior compared to Machiavellianism and psychopathy. The relationship between the Dark Triad and aggressive behavior was influenced by multiple factors, including cultural background, gender, and type of aggression. The findings suggest that narcissism differs substantially from the other two dark personality traits, and future research should further investigate the Dark Triad within Eastern cultural contexts.

### Full Text

## A Meta-Analysis of the Relationship Between the Dark Triad and Aggressive Behaviors

**ZHU Yalin, JIN Cancan**

(Department of Psychology, College of Humanities, Beijing Forestry University, Beijing 100083, China)

### Abstract

Using meta-analysis, this study examined the overall relationship between the Dark Triad and aggressive behaviors. A total of 87 quantitative studies with 90 independent samples and 41,273 participants were included. The results revealed positive correlations between the Dark Triad and aggressive behaviors ( $r = 0.338-0.405$ ), with the correlation between narcissism and aggression significantly weaker than those for Machiavellianism and psychopathy. The relationship between the Dark Triad and aggression was influenced by multiple factors,

including cultural background, gender, and aggression type. The findings indicate that narcissism differs substantially from the other two dark personality traits, suggesting that future research should further investigate the Dark Triad in conjunction with Eastern cultural contexts.

**Keywords:** Dark Triad, Machiavellianism, Narcissism, Psychopathy, Aggressive Behaviors

In personality research, scholars have traditionally focused on common traits such as the Big Five personality dimensions or extreme psychopathological personalities. Recently, however, researchers have shifted their attention to personality traits that exist between normal and pathological extremes, such as narcissism, Machiavellianism, and psychopathy (Dinić & Wertag, 2018; Jambroes et al., 2018). These three traits deviate from normality but do not meet clinical diagnostic criteria. In 2002, Paulhus and Williams combined these three personality traits into a unified construct for study, termed the Dark Triad.

The Dark Triad is closely linked to aggressive behavior. As aggression represents a significant manifestation of mental health, examining its relationship with the Dark Triad can reflect the psychological health and adaptive functioning of individuals with these traits, thereby providing theoretical guidance for improving mental health outcomes in this population. The Dark Triad aligns more closely with Western cultural values that promote openness and boldness, while research in Eastern cultural contexts remains relatively scarce. This study comprehensively compares differences in the relationship between the Dark Triad and aggression across Chinese and international contexts, aiming to provide a reference for future research in China.

### 1.1.1 Dark Triad' s Overall Characteristics

Individuals with Dark Triad traits commonly exhibit aggression, lack of empathy, and disregard for traditional morality (Guo et al., 2013; Qin & Xu, 2013). They display emotional detachment and difficulty recognizing emotions (Harrison et al., 2016), adopting a “fast life history” strategy (Zhang, 2018). This strategy represents an evolutionary adaptation that enhances survival in harsh environments (Zhu, 2016), suggesting that Dark Triad traits confer certain adaptive advantages rather than representing purely pathological conditions (Geng et al., 2014; Zhang, 2018). Aggressive and antisocial behaviors thus function as adaptive strategies (Harrison et al., 2016). Despite numerous similarities among the three Dark Triad traits, each possesses distinct characteristics.

### 1.1.2 Machiavellianism' s Characteristics

Machiavellianism refers to a tendency to exploit others for personal gain (Southard & Zeigler-Hill, 2016). Initially described as immoral behavior, Machiavellians exhibit excessive self-interest (Deutchman & Sullivan, 2018; He et al., 2017; Rogoza & Cieciuch, 2018; Sehar & Fatima, 2016; Sabouri et al., 2016) and distrust of others (Rogoza & Cieciuch, 2018). Their lack of moral

sense enables manipulative behaviors toward others (Harrison et al., 2016; Klimstra et al., 2014; Zhang & Zhang, 2014) to shape self-image and pursue status and power, while assuming others would make similar choices (Harrison et al., 2016). However, Machiavellianism does not constitute a pathological condition, as it possesses adaptive qualities and strong mind-reading abilities (Geng et al., 2014; Rogoza & Ciecuch, 2018). Under certain conditions, women show greater willingness to interact with male Machiavellians, and Machiavellian children demonstrate better adaptive capacities (Geng et al., 2014).

### 1.1.3 Psychopathy' s Characteristics

Psychopathy was initially regarded as a pathological personality disorder. As research progressed, however, scholars discovered that normal individuals could exhibit similar psychological and behavioral patterns, leading to its conceptualization as a subclinical personality trait existing between normality and pathology (Yan, 2019)—hereafter referred to as subclinical psychopathy. This trait does not meet diagnostic criteria for psychosis but is characterized by high impulsivity (Guo, 2017), thrill-seeking, low empathy, dishonesty (Sehar & Fatima, 2016), and antisocial tendencies (Huang, 2015; Lau & Marsee, 2013). Additionally, individuals with psychopathic traits struggle to learn from mistakes (Klimstra et al., 2014).

### 1.1.4 Narcissism' s Characteristics

Narcissism represents a relatively distinctive trait within the Dark Triad, characterized primarily by grandiosity, self-centeredness, and superiority (Zhu, 2016). Narcissists typically exhibit low self-esteem and vulnerability (Harrison et al., 2016) while seeking admiration and vanity (Sabouri et al., 2016). Highly narcissistic individuals are further described as hostile and hypersensitive to criticism (Lau & Marsee, 2013). In fact, narcissism can be considered the relatively “positive” trait within the Dark Triad, as narcissists appear brave, open, and charismatic, capable of self-motivation and self-actualization (Guo, 2017), with stronger social adaptability (Sai, 2019) and higher emotional intelligence (Scavone, 2017).

## 1.2 Relevant Theories on the Relationship Between Dark Triad and Aggression

Currently, three primary theoretical frameworks address the relationship between the Dark Triad and aggressive behaviors: Anderson and Bushman' s (2002) General Aggression Model (GAM), Mischel and Shoda' s (1995) Cognitive-Affective System Theory of Personality (CAPS), and Gammon et al.' s (2011) aggression model. The General Aggression Model posits that aggressive behavior results from interactions between personal factors (including personality traits) and environmental factors (such as culture), which influence an individual' s internal state comprising cognition, affect, and arousal, ultimately affecting

aggressive expression. Aggressive behaviors subsequently feed back to influence personality traits. CAPS theory emphasizes that individual differences across situations reflect internal personality structures known as cognitive-affective units, which include five components: encoding, beliefs and expectations, affective responses, goals and values, and competencies and self-regulatory plans. These factors collectively generate behavior. Gammon et al.'s (2011) aggression model integrates and refines GAM and CAPS, highlighting the importance of the Dark Triad in aggression. It proposes that the Dark Triad interacts with specific environmental triggers to produce changes in the internal cognitive-affective system, ultimately generating aggressive behavior that reciprocally influences the cognitive-affective system.

These theoretical perspectives demonstrate that the Dark Triad represents stable personality characteristics that, in conjunction with other factors, readily precipitate aggressive behavior. However, the specific relationships between each Dark Triad trait and aggression remain unclear, and the particular (environmental) factors influencing these relationships require further investigation.

### 1.3 Main Effects of the Dark Triad-Aggression Relationship

Aggressive behavior constitutes a prominent feature of the Dark Triad (Guo, 2017). Machiavellian aggression is typically considered a calculated outcome (Williams et al., 2010), with individuals adept at using manipulative tactics (Southard & Zeigler-Hill, 2016). Psychopathy represents the only trait capable of independently predicting aggression (Sehar & Fatima, 2016). Meta-analytic evidence also indicates a strong association between psychopathy and aggressive behavior (Van et al., 2017). Psychopathy consistently correlates with high levels of aggression, violence, and delinquency (Lau & Marsee, 2013). In contrast, narcissists engage in aggression primarily to protect self-esteem and self-image (Qin & Xu, 2013). Although also direct, narcissistic aggression appears relatively more “passive” (Guo, 2017; Huang, 2015). These findings reveal that all three traits relate to aggression, yet psychopathy appears more impulsive and strongly associated with aggression, while narcissism appears more passive and weakly linked. This leads to our first research question: Do the three personality traits differ in their relationships with aggressive behavior?

### 1.4 Moderating Effects on the Dark Triad-Aggression Relationship

The three dark traits differ in their underlying motivations for aggression and its behavioral manifestations. Current aggression research emphasizes various aspects, and the Dark Triad-aggression relationship is subject to multiple influencing factors.

**1.4.1 Moderating Role of Aggression Type** Aggression can be categorized into physical and verbal aggression, proactive and reactive aggression, direct and indirect aggression, and relational aggression. These classifications overlap to some extent, prompting researchers to develop finer distinctions such

as proactive physical aggression, reactive physical aggression, proactive verbal aggression, and reactive verbal aggression.

Machiavellians may employ indirect relational aggression (Qin & Xu, 2013), using manipulation as a means to attain status and resorting to indirect relational attacks when their status is threatened (Parker, 2019). Compared to direct aggression, Machiavellianism shows stronger associations with relational aggression (Lau & Marsee, 2013).

Psychopathic aggression is impulsive, direct, harmful, and unplanned (Baughman et al., 2012; Derefinko, 2015; Harrison et al., 2016), with individuals more likely to engage in direct (Goodboy & Martin, 2015) and reactive aggression (Noser et al., 2014). However, evidence also indicates that while psychopathy positively correlates with all forms of aggression, its association with physical aggression is particularly strong (Coyne & Thomas, 2008; Muris et al., 2013).

Narcissists exhibit direct aggression when their self-esteem is threatened or their self-image is damaged (Guo, 2017; Huang, 2015). Some scholars have examined connections between narcissism subtypes and aggression types, finding that adaptive narcissism strongly correlates with relational aggression, while higher maladaptive narcissism predicts lower proactive aggression (Lau & Marsee, 2013). The relationship between narcissism and relational aggression may also be moderated by Machiavellianism (Klimstra et al., 2014).

Thus, we propose our second research question: Do different types of aggression exhibit varying relationships with the Dark Triad?

#### **1.4.2 Moderating Role of Measurement Methods and Instruments**

Two primary measurement approaches exist for the Dark Triad. The first involves global measurement using a single instrument to assess all three traits, while the second employs separate scales for each trait. Global measurement demonstrates superior internal consistency compared to separate measurement (Klimstra et al., 2014) but contains fewer items and provides less detailed characterization of each trait (Li, 2014).

Two main instruments exist for global Dark Triad measurement: the Dirty Dozen (DD) and the Short Dark Triad (SD3). Research indicates that using the SD3 may produce cultural differences requiring cautious application (Sun, 2015).

For separate measurement of the Dark Triad, the Machiavellianism Scale (Mach IV) is most commonly used for Machiavellianism, and the Narcissistic Personality Inventory (NPI) for narcissism. Psychopathy is primarily assessed using the Levenson Self-Report Psychopathic Scale (LSRP) and the Psychopathic Personality Inventory (PPI). However, these scales are not Likert-type instruments, and their scores cannot be directly summed for comparison (Li, 2014). Separate measurement nonetheless offers richer item content and more detailed assessment.

In summary, both measurement approaches have advantages and disadvantages, and the relationship between the Dark Triad and aggression may be influenced by measurement method differences. No comprehensive comparative study currently exists. Therefore, we propose our third research question: Do different measurement methods and instruments affect the relationship between the Dark Triad and aggressive behavior?

**1.4.3 Moderating Role of Cultural Factors** With globalization, cultural factors have gained increasing attention. Among existing cultural dimension theories, Hofstede's national cultural values theory is prominent. Eastern cultures, represented by China, exhibit high power distance, emphasize collectivism and masculine authority, show high uncertainty avoidance, and pursue long-term interests, whereas Western cultures, represented by the United States, display opposite patterns (Liao, 2014).

Most Dark Triad research has been conducted in Western cultural contexts, where these traits are generally considered more compatible. As aggression represents a characteristic feature of the Dark Triad, it may be culturally encouraged, yielding stronger correlations in Western cultures. Some researchers argue that the Dark Triad deviates from Eastern collectivist cultures that encourage cooperation and promote dedication, yet represents an extreme development of Western materialistic, competitive individualism (Qin & Xu, 2013).

However, Dark Triad traits such as emphasis on short-term gains, self-centeredness, and thrill-seeking align more closely with Western culture, while the power-emphasizing characteristic resembles masculine-oriented Eastern culture. Moreover, Eastern culture emphasizes the "doctrine of the mean" and demonstrates greater inclusivity compared to Western culture (Huang, 2020). Dark Triad research remains scarce in Eastern cultural contexts. Consequently, it remains uncertain whether the Dark Triad-aggression relationship is stronger in Western versus Eastern contexts. We therefore propose our fourth research question: Do different cultural backgrounds influence the relationship between the Dark Triad and aggressive behavior?

#### **1.4.4 Moderating Role of Participant Characteristics (1) Gender Factor**

Overall, males exhibit higher levels of Dark Triad traits than females (Klann, 2017). Throughout evolution, males have tended to adopt direct approaches to meet survival needs (Hu, 2018) and are more prone to aggressive behavior, whereas females are more inclined toward relational aggression (Inançsi et al., 2018; Sehar & Fatima, 2016). Therefore, gender may moderate the Dark Triad-aggression relationship. We propose our fifth research question: Does gender influence the relationship between the Dark Triad and aggressive behavior?

#### **(2) Participant Age**

According to Erikson's theory, individuals face different developmental challenges at various life stages, with increasing numbers of factors influencing aggressive behavior. As age increases and environments become more complex, the Dark Triad-aggression relationship may also change. Our sixth research question therefore asks: Does the relationship between the Dark Triad and aggressive behavior differ among children, adolescents, and adults?

#### **1.4.5 Moderating Role of Literature Characteristics (1) Publication Type**

Generally, significant results are more likely to be published, yet unpublished literature remains meaningful, while published studies may be more methodologically rigorous. Meta-analyses should therefore include both published and unpublished literature to avoid bias from selective reporting. We propose our seventh research question: Does the relationship between the Dark Triad and aggressive behavior differ significantly across publication types?

#### **(2) Publication Year**

Modern culture shows increasing tolerance toward the Dark Triad, potentially reducing aggressive behavior. Meanwhile, as social factors influencing aggression continue to multiply, the Dark Triad-aggression relationship may progressively weaken. We therefore propose our eighth research question: Does the relationship between the Dark Triad and aggressive behavior diminish over time?

## **2.1 Literature Search**

This study followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines and the Preferred Reporting Items for Open and Reproducible Meta-Analysis (PRIOR-MAMA) checklist (Moher et al., 2009).

Chinese literature searches used keywords including "dark personality," "Dark Triad," "Machiavellianism," "psychopathy," "narcissism," "aggression," and "violence," yielding 2,264 relevant articles: 1,508 from CNKI, 376 from VIP, and 380 from Wanfang databases.

[Figure 1: see original paper] Literature Search and Screening Flowchart

English literature searches used keywords including "dark triad personality," "Dark Triad trait," "Machiavellianism," "narcissism," "psychopathy," and "Aggressive" across multiple databases, yielding 5,145 articles: 591 from Web of Science, 4,043 from ScienceDirect, 82 from PsycNet, 75 from Engineering Village, 124 from Wiley, 74 from SAGE, 113 from Google Scholar, and 43 from ProQuest.

Searches covered literature from 2002 to 2020, initiated on January 28, 2020, concluded at the end of March 2020, with a secondary update on May 19, 2020. The detailed flowchart is presented in Figure 1.

### 2.2.1 Literature Inclusion and Exclusion Criteria

**Inclusion criteria:** (1) reported r-values, t-values, or univariate regression coefficients for the Dark Triad-aggression relationship; (2) self-report measures; (3) cross-sectional design; (4) published and unpublished articles; (5) questionnaire-based assessment.

**Exclusion criteria:** (1) non-Chinese/English literature; (2) psychiatric patient samples; (3) unclassifiable or novel aggression forms such as “cyberbullying” and “intimate partner aggression” were excluded as this study focuses on general aggression.

### 2.2.2 Literature Coding Standards

Four key coding considerations: (1) Each independent sample received one code; studies with multiple independent samples were coded separately. If a single sample used different instruments to measure the same variable, each was coded separately as a moderating variable. (2) This study examined overall correlations between Dark Triad traits and mental health; for studies not reporting overall correlations, the average of dimensional correlations served as the overall effect size. (3) Moderator variable coding:

- **Aggression type:** Recorded according to the types reported in each study.
  - **Measurement instrument:** Dark Triad instruments were coded based on frequency of use; multiple versions of the same scale were coded as one type, while rarely used scales were coded as “other.” Since aggression measurement instruments largely overlapped with aggression types and aggression type coding was more detailed, only aggression type coding was retained.
  - **Measurement method:** Categorized as global or separate measurement based on assessment characteristics.
  - **Gender:** Since most studies did not report separate correlation coefficients for males and females, studies were classified based on participant gender ratios: male-majority (>50% male) or female-majority (>50% female).
  - **Participant age:** Classified as children (0-12 years), adolescents (13-17 years), and adults (18+ years).
  - **Cultural background:** Since Dark Triad traits carry different positive and negative connotations across cultures, and culture is closely linked to geographic region, countries were categorized into geographic subregions following United Nations classifications.
  - **Publication type:** Classified as published (journal articles) or unpublished (dissertations/theses).
  - **Publication year:** Recorded as reported.
- (4) Effect size coding: Based on the Dark Triad classification in this study, four outcome categories were established: narcissism, Machiavellianism,

psychopathy, and overall Dark Triad. (See Appendix 2 for coding table.)

## 2.3 Literature Quality Assessment

To ensure credible results, literature quality assessment was essential. Given the non-experimental, cross-sectional nature of source literature, the JBI Critical Appraisal Checklist for Analytical Cross Sectional Studies (JBI PACES) was selected. Studies scoring above 70% of the total possible score were considered high quality; two articles failing to meet quality standards were excluded (see Appendix 3 for coding table).

A final sample of 87 studies met meta-analysis criteria, including 10 Chinese and 77 English articles, comprising 9 dissertations/theses and 78 journal articles. These studies included 90 independent samples with 41,273 participants from diverse populations (children, adolescents, offenders, university students) across multiple countries (China, United States, United Kingdom, etc.).

## 2.4 Analysis

This study used Comprehensive Meta-Analysis 3.0 (CMA 3.0). Assuming heterogeneity across studies, we employed homogeneity tests: random-effects models were used when  $p \leq 0.05$ , and fixed-effects models when  $p > 0.05$ . Effect sizes were converted to Fisher's Z scores, weighted by sample size for statistical analysis, and then transformed back to mean correlation coefficients.

## 3.1 Publication Bias Analysis

Funnel plot analysis was used to detect publication bias. Effect size distributions for the Dark Triad-aggression relationship were examined across four sections, with funnel plots shown in Figures 2 [Figure 2: see original paper] through 5 [Figure 5: see original paper], revealing relatively symmetrical distributions around the mean. Egger's test (regression intercept method) for Machiavellianism-aggression showed  $t = 0.06$ ,  $p > 0.05$ , with fail-safe N results of  $Z = 53.1$ ,  $p < 0.001$ ,  $N = 41,116$ , indicating minimal publication bias. For psychopathy-aggression:  $t = 1.85$ ,  $p > 0.05$ ,  $Z = 83.5$ ,  $p < 0.001$ ,  $N = 201,539$ . For narcissism-aggression:  $t = 0.35$ ,  $p > 0.05$ ,  $Z = 57.6$ ,  $p < 0.001$ ,  $N = 104,388$ . For overall Dark Triad-aggression:  $t = 1.55$ ,  $p > 0.05$ ,  $Z = 44.19$ ,  $p < 0.001$ ,  $N = 9,786$ . These results indicate low likelihood of publication bias in this study.

## 3.2 Overall Effect Analysis

Homogeneity tests revealed heterogeneity in the Dark Triad-aggression relationship (see final column of Table 1), warranting random-effects model analysis. Overall effect analysis (see Table 1) showed positive correlations between Dark Triad traits and aggression. Following Lipsey and Wilson's (2001) guidelines ( $r \leq 0.1$  = small effect;  $r = 0.25$  = medium effect;  $r \geq 0.5$  = large effect), the relationships represented medium effect sizes. Further tests revealed that the

narcissism-aggression correlation was significantly weaker than those for Machiavellianism ( $Q(1) = 17.00, p < 0.001$ ), psychopathy ( $Q(1) = 45.01, p < 0.001$ ), and overall Dark Triad ( $Q(1) = 18.25, p < 0.001$ ).

**Table 1** Summary of Meta-Analytic Results for Dark Triad-Aggression Relationships

Effect Size	k	Point Estimate	95% CI Lower	95% CI Upper	Homogeneity Analysis
Machiavellianism	16	0.338	0.312	0.363	$Q(55) = 675.71, p < 0.001$
Psychopathy	111	0.405	0.387	0.422	$Q(110) = 1268.30, p < 0.001$
Narcissism	121	0.338	0.321	0.355	$Q(120) = 1273.57, p < 0.001$
Overall Dark Triad	39	0.338	0.307	0.368	$Q(38) = 198.13, p < 0.001$

### 3.3 Moderating Effect Analysis

Moderating effect analysis for the Machiavellianism-aggression relationship is presented in Table 2 .

- (1) Machiavellianism measurement instruments significantly moderated the relationship. Specifically, correlations from other Machiavellianism scales were significantly higher than those from the Dirty Dozen (DD;  $Q(1) = 4.49, p < 0.05$ ), Short Dark Triad (SD;  $Q(1) = 7.15, p < 0.01$ ), and Mach scales ( $Q(1) = 6.13, p < 0.05$ ). DD correlations were significantly higher than SD correlations ( $Q(1) = 4.78, p < 0.05$ ).
- (2) Aggression type significantly moderated the relationship, with indirect aggression correlations marginally stronger than direct aggression ( $Q(1) = 3.31, p < 0.1$ ).
- (3) Age significantly moderated the relationship, with adolescent correlations significantly stronger than adult ( $Q(1) = 4.67, p < 0.05$ ) and child correlations ( $Q(1) = 10.59, p < 0.01$ ). Adult correlations were significantly stronger than child correlations ( $Q(1) = 4.59, p < 0.05$ ), following the pattern: adolescents > adults > children.

Moderating effect analysis for the psychopathy-aggression relationship (see Table 3 ) revealed:

- (1) Publication type significantly moderated the relationship, with unpublished studies showing significantly higher correlations than published

studies ( $Q(1) = 7.80, p < 0.01$ ).

- (2) Cultural background significantly moderated the relationship, with Southeast Asian correlations significantly higher than North American ( $Q(1) = 3.67, p < 0.1$ ) and West African correlations ( $Q(1) = 30.04, p < 0.001$ ). North American correlations were significantly stronger than West African ( $Q(1) = 32.97, p < 0.01$ ), following the pattern: Southeast Asia > North America > West Africa.
- (3) Gender significantly moderated the relationship, with male-majority samples showing significantly weaker correlations than female-majority samples ( $Q(1) = 5.26, p < 0.05$ ).
- (4) Psychopathy measurement instruments significantly moderated the relationship, with Short Dark Triad (SD) correlations significantly stronger than Dirty Dozen (DD) correlations ( $Q(1) = 5.08, p < 0.05$ ).
- (5) Aggression type significantly moderated the relationship, with physical aggression correlations significantly higher than verbal aggression ( $Q(1) = 3.43, p < 0.1$ ).

Moderating effects on the narcissism-aggression relationship are presented in Table 4 . Findings indicate:

- (1) Measurement method moderated the relationship, with separate measurement correlations significantly stronger than global measurement ( $Q(1) = 21.29, p < 0.001$ ).
- (2) Cultural background moderated the relationship, with North American correlations significantly stronger than East Asian correlations ( $Q(1) = 17.85, p < 0.001$ ).
- (3) Gender moderated the relationship, with male correlations significantly stronger than female correlations ( $Q(1) = 14.15, p < 0.001$ ).
- (4) Narcissism measurement instruments moderated the relationship, with DD correlations significantly weaker than APSD ( $Q(1) = 46.92, p < 0.001$ ), NPI ( $Q(1) = 3.86, p < 0.05$ ), and Zheng Yong version scales ( $Q(1) = 10.29, p < 0.01$ ). NPI correlations were significantly weaker than Zheng Yong version ( $Q(1) = 4.65, p < 0.05$ ) and APSD ( $Q(1) = 46.58, p < 0.001$ ) correlations. Zheng Yong version correlations were significantly weaker than APSD correlations ( $Q(1) = 18.38, p < 0.001$ ), following the pattern: APSD > Zheng Yong version > NPI > DD.
- (5) Age moderated the relationship, with child correlations significantly stronger than adult ( $Q(1) = 199.62, p < 0.001$ ) and adolescent correlations ( $Q(1) = 164.01, p < 0.001$ ). Adolescent correlations were marginally stronger than adult correlations ( $Q(1) = 3.43, p < 0.1$ ), following the pattern: children > adolescents > adults.

Meta-regression analysis examined publication year effects on Dark Triad-aggression relationships. Results indicated that only narcissism and overall Dark Triad relationships were affected by publication year. As publication year increased, both narcissism-aggression ( $Q(1) = 4.22, p < 0.05$ ) and overall Dark Triad-aggression ( $Q(1) = 30.55, p < 0.001$ ) relationships became progressively weaker (see Table 5).

Factors influencing the overall Dark Triad-aggression relationship are presented in Table 6. Results showed that measurement method significantly moderated the relationship, with separate measurement correlations significantly stronger than global measurement correlations ( $Q(1) = 12.63, p < 0.001$ ). Cultural background also significantly moderated the relationship, with North American correlations significantly stronger than East Asian ( $Q(1) = 7.34, p < 0.01$ ) and Western European correlations ( $Q(1) = 5.94, p < 0.05$ ).

#### 4.1 Main Effects of the Dark Triad-Aggression Relationship

Consistent with previous research (Van et al., 2017), this study found significant positive correlations between the Dark Triad and aggressive behavior. Importantly, we further demonstrated that narcissism's correlation with aggression was significantly weaker than the other two dark traits. This suggests that narcissism represents a relatively "positive" trait within the Dark Triad (Zhang, 2018), while Machiavellianism and psychopathy are "darker." Although the three traits share a common core, their differences are substantial, possibly due to simplistic measurement approaches that warrant further theoretical and empirical investigation.

Addressing measurement limitations of the Dark Triad, researchers have added an Honesty-Humility dimension to the Big Five, proposing the HEXACO model, which correlates significantly negatively with Dark Triad traits (Klann, 2017). This incorporates the opposite of Dark Triad traits within the Big Five framework, though the "bright" Big Five and the Dark Triad appear less like two sides of the same coin and more like distinct personality constructs.

#### 4.2 Moderating Effects on the Dark Triad-Aggression Relationship

Dark Triad-aggression relationships were moderated by aggression type. Machiavellianism showed stronger correlations with indirect than direct aggression, consistent with its manipulative and strategic nature. Physical aggression demonstrated stronger associations with psychopathy than verbal aggression, as psychopathic individuals are more impulsive and prone to violence and delinquency (Lau & Marsee, 2013), confirming previous findings (Coyne & Thomas, 2008).

Cultural background also influenced Dark Triad-aggression relationships. Except for Machiavellianism, narcissism, psychopathy, and overall Dark Triad re-

relationships were moderated by culture. North American narcissism-aggression correlations were significantly stronger than East Asian correlations, likely because narcissistic grandiosity and self-centeredness align better with Western cultural values in Hofstede's framework. Additionally, Eastern collectivist culture and the doctrine of the mean may weaken the narcissism-aggression relationship, while Western individualism encourages aggressive behavior.

Psychopathy-aggression correlation strength followed the pattern: Southeast Asia > North America. Southeast Asian samples in this study primarily comprised Singaporean adolescents. In Hofstede's framework, Singapore ranks lower on long-term orientation compared to other Eastern cultures and, influenced by Western culture, exhibits low uncertainty avoidance that aligns with psychopathic characteristics. Additionally, adolescent samples are characterized by vigor and achievement striving, and according to Erikson, face the psychosocial crisis of identity versus role confusion, intensifying Dark Triad traits. These dual cultural and participant characteristics contributed to the strongest psychopathy-aggression correlations in Southeast Asia.

North American overall Dark Triad-aggression correlations were significantly stronger than Western European correlations. Although Western Europe belongs to Western culture, it exhibits lower power distance than North America, with societal values emphasizing cooperation, mutual assistance, equality, and high democracy. Consequently, North American culture aligns more closely with Dark Triad characteristics and more strongly encourages aggressive behavior.

Furthermore, gender moderated narcissism- and psychopathy-aggression relationships. Male-majority samples showed stronger narcissism-aggression correlations than female-majority samples, possibly due to evolutionary factors. Social role theory suggests males face greater survival pressures, leading to higher aggression and consequently stronger narcissism-aggression relationships in males (Hu, 2018; Inancsi et al., 2018). Meta-analytic evidence also indicates gender differences in narcissism, with males exhibiting higher and more stable narcissism across ages (Grijalva et al., 2015), which may explain stronger male narcissism-aggression relationships.

### 4.3 Limitations and Future Directions

Since the Dark Triad's introduction in 2002, substantial research has accumulated, yet no study has systematically summarized its relationship with aggressive behavior. This study provides a stage-wise synthesis of domestic and international research since 2002, offering reference for future studies while acknowledging several limitations.

- (1) **Construct relationships.** This study found differences in narcissism-aggression relationships compared to the other two Dark Triad traits. Further investigation is needed to clarify interrelationships among the three

constructs, particularly regarding narcissism' s independence versus the unity of dark personality.

- (2) **Mechanisms linking Dark Triad to aggression.** Gammon et al.' s (2011) aggression model proposes that the Dark Triad influences aggression through internal cognitive processes (e.g., self-esteem). This study confirmed strong associations between Dark Triad dimensions and different aggression types. Future research should examine how Dark Triad dimensions influence specific aggression types through internal cognitive mechanisms.
- (3) **Literature sources.** This meta-analysis included only cross-sectional studies, limiting causal inferences. Longitudinal research on Dark Triad-aggression relationships remains scarce; future studies should employ longitudinal designs to establish clearer causality. Additionally, this study used only self-report measures, which may involve reporting bias. Future research should incorporate other-report methods and compare different rater perspectives.
- (4) **Analytical issues.** Some categories included relatively few studies (e.g., certain cultural backgrounds, measurement instruments), requiring cautious interpretation. Although random-effects models were used to minimize bias, future studies should balance sample sizes. Additionally, post-hoc pairwise comparisons for moderators with three or more levels may increase Type I error rates, representing an area for methodological improvement.

## Conclusion

This meta-analytic investigation of Dark Triad-aggression relationships yielded several key findings: (1) Overall, aggressive behavior positively correlated with the Dark Triad, with narcissism-aggression relationships significantly weaker than those for Machiavellianism and psychopathy. (2) Dark Triad-aggression relationships were influenced by multiple factors including aggression type, cultural background, gender, measurement instruments, participant age, and publication type, with different factors affecting different dark trait-aggression relationships.

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## Appendix 1: Specific Search Terms

**Search period:** February 23, 2020 - May 21, 2020

**Literature period:** 2002-2020

### English Databases:

1. **Web of Science (SCI):** (TS=(dark triad personalit\* AND Aggressive)) OR (TS=(Machiavellianism AND Aggressive)) OR (TS=(narcissism AND Aggressive)) OR (TS=(psychopathy AND Aggressive)) -591 results
2. **Science Direct:** (TS=(dark triad personalit\* AND Aggressive)) OR (TS=(Machiavellianism AND Aggressive)) OR (TS=(narcissism AND Aggressive)) OR (TS=(psychopathy AND Aggressive)) -4,043 results
3. **PsycNet:** (TS=(dark triad personalit\* AND Aggressive)) OR (TS=(Machiavellianism AND Aggressive)) OR (TS=(narcissism AND Aggressive)) OR (TS=(psychopathy AND Aggressive)) -82 results
4. **Engineering Village:** (dark triad personalit\* AND Aggressive) OR (Machiavellianism AND Aggressive) OR (narcissism AND Aggressive) OR (psychopathy AND Aggressive) -75 results

5. **Wiley:** (dark triad personalit\* AND Aggressive) OR (Machiavellianism AND Aggressive) OR (narcissism AND Aggressive) OR (psychopathy AND Aggressive) –124 results
6. **SAGE:** (dark triad personalit\* AND Aggressive) OR (Machiavellianism AND Aggressive) OR (narcissism AND Aggressive) OR (psychopathy AND Aggressive) –74 results
7. **Google Scholar:** (dark triad personalit\* AND Aggressive) OR (Machiavellianism AND Aggressive) OR (narcissism AND Aggressive) OR (psychopathy AND Aggressive) –113 results
8. **ProQuest:** –43 results
  - dark triad personalit\* AND Aggressive
  - Machiavellianism AND Aggressive
  - narcissism AND Aggressive
  - psychopathy AND Aggressive

#### Chinese Databases:

- **CNKI:** Keywords: 黑暗人格; 马基雅维利主义; 精神病态; 自恋; 侵犯—1,508 results
- **Wanfang:** Keywords: 黑暗人格; 马基雅维利主义; 精神病态; 自恋; 侵犯—380 results
- **VIP:** Keywords: 黑暗人格; 马基雅维利主义; 精神病态; 自恋; 侵犯—376 results

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### Appendix 3: Literature Quality Assessment Tool (JBI PAGES)

1. **Are the inclusion criteria for study participants clearly defined?** (The paper should clearly describe inclusion and exclusion criteria for participants, which should be specific.)
2. **Are participants and study settings described in detail?** (The paper should describe the source and characteristics of participants in detail, including demographic data, setting, and sampling time.)
3. **Are exposure factors measured using valid and reliable methods?** (The paper should clearly describe measurement methods for exposure factors. Validity should be judged against a gold standard; reliability typically includes internal consistency and inter-rater reliability.)
4. **Are health problems measured using objective and standardized methods?** (Judge whether included patients are diagnosed according to recognized diagnostic criteria or definitions. If no recognized criteria are

used, the paper should explain what key features were used to match participants.)

5. **Are outcome measures assessed using valid and reliable methods?** (Read the methods section. If outcome measures (e.g., lung cancer) are determined according to recognized standards or clear definitions, rate as “yes.” If based on observer reports, self-report questionnaires, or scales, risk of over/under-reporting increases and objectivity is questionable. Determine whether assessment tools have undergone reliability and validity testing, which affects outcome validity. Also examine how assessments were implemented, whether outcome assessors received training, and if multiple assessors were used, whether their education, clinical experience, research experience, and responsibilities were similar.)
6. **Are confounding factors controlled?** (Measures should be taken in study design and data analysis to control confounding effects. For example, matching or stratified sampling in design; multivariate regression analysis in data analysis.)
7. **Are outcome measures assessed using valid and reliable methods?** (Same as item 5 - appears to be a duplicate in the original)
8. **Are data analysis methods appropriate?** (Determine whether more appropriate statistical analysis methods exist. The methods section should detail which statistical analyses were used, how confounders were assessed and controlled. If regression analysis was used, independent variables should be clearly stated. If stratified analysis was used, variables used for stratification should be explained. Also determine whether statistical methods align with research hypotheses.)

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**Note:** References marked with \* indicate studies included in the meta-analysis.

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

*Source: ChinaXiv – Machine translation. Verify with original.*