

# Revisiting the Dark Triad Dirty Dozen (DTDD) in Indonesian Population: Examining Factor Structure Using CFA and ESEM

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**Abstract.** This research aimed to investigate the structural validity of the Dark Triad Dirty Dozen (DTDD) within the Indonesian cultural context. At the preliminary stage, content validity and response process were assessed as part of a systematic translation verification to ensure item clarity and conceptual relevance. Even though satisfactory performance was reported, items 3 and 10 required further cultural refinement. Structural models were also tested using Confirmatory Factor Analysis (CFA) and Exploratory Structural Equation Modelling (ESEM). The results showed that the three-factor structures of Machiavellianism, Narcissism, and Psychopathy were supported as the most conceptually sound and statistically stable option. The bifactor solution reported interpretive limitations, such as low item loadings even though alternative models suggested acceptable fit. Subsequently, ESEM captured subtle cross-loadings, stating the psychological overlap between traits. These results supported the suitability of DTDD and offered an enhanced understanding of the structural complexity of dark traits to strengthen the relevance of cross-cultural personality assessment.

**Keywords:** Dark Triad, Dark Dyad, Bifactor, Exploratory Structural Equation Modelling

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## Introduction

Personality is a crucial determinant of human behavior in psychological research. In this context, a well-known personality concept is the Five Factor Model (FFM), consisting of Extraversion, Openness to Experience, Conscientiousness, Agreeableness, and Neuroticism (McCrae & John, 1992). This concept evolved into HEXACO- Honesty-Humility (H), Emotionality (E), eXtraversion (X), Aggreableness (A), Conscientiousness (C), and Openness to experience (O). The dimensions are not directly developed through modifications of the Big Five personality theory but represent the adaptations of B5/FFM personality model (Lee & Ashton, 2004). A unifying theme has been reported in research relating to the Big Five and HEXACO framework. This is in contrast to the relatively positive or neutral dimensions emphasized by the FFM and HEXACO models (Dinić et al., 2018). A concept proposed by Paulhus and Williams (2002) has also explored the "dark" side of human personality, known as the Dark Triad. Recent decades have witnessed high prominence of Dark Triad within personality research across organizational, social, and political contexts (Braun, 2017; Furnham et

al., 2013; Gøtzsche-Astrup, 2021; Nugraha et al., 2023; O'Boyle et al., 2012; Pavlović & Franc, 2021; Putri et al., 2021).

Dark triad personality includes three components, namely, Machiavellianism, Narcissism, and Psychopathy (Paulhus & Williams, 2002). These three traits share similarities in terms of manipulative tendencies, lack of empathy, and egoistic orientation. Machiavellianism refers to shrewd, self-centered, and manipulative people who use devious strategies to pursue personal goals (Christie & Geis, 1970; Muris et al., 2017; O'Boyle et al., 2012; Rizal & Handayani, 2021). The measurement of the MACH-IV scale was developed by Christie and Geis (1970). Psychologists refer to Machiavellianism as a two-faced interpersonal style, characterized by indifference to morality and a focus on self-interest and personal gain (Muris et al., 2017). The construct of Narcissism is based on a subclinical concept of Raskin and Hall (1979) to describe personality disorders diagnosed by the DSM. Therefore, Narcissism is based on the NPI (Narcissistic Personality Inventory) measure and clinical construct. The conceptualization of the construct as subclinical is extensively supported by substantial literature (Morf &

Rhodewalt, 2001). Psychopathy is characterized by high impulsivity and sensation seeking as well as low empathy and anxiety (Paulhus & Williams, 2002).

In the context of the Dark Triad, the assessment of Psychopathy often relies on self-report instruments such as the Self-Report Psychopathy (SRP) scale. These scales are designed to measure psychopathic traits in non-clinical populations, distinguishing individuals with and without Psychopathy (Hare & Neumann, 2008; Paulhus & Williams, 2002). Jonason and Webster (2010) developed a practical and concise instrument to measure the three components into an instrument called the Dark Triad Dirty Dozen (DTDD), which consists of 12 statement items. In addition, Jones and Paulhus (2014) also developed the Short Dark Triad (SD3) to measure the dark triad, consisting of 28 statement items.

Previous research supported the psychometric feasibility of the DTDD, including internal consistency, test-retest, and factor structure (Jonason & McCain, 2012; Jonason & Webster, 2010; Lee & Ashton, 2014). DTDD is an abbreviated and efficient measure, particularly advantageous when faced with constraints on time and resources (Jonason & Webster, 2010). The psychometric properties have been validated across numerous cultures, supporting the applicability in diverse research contexts. In addition, DTDD has been validated in Canada (Savard et al., 2017), Poland (Czarna et al., 2016), Spain (Pineda et al., 2020), Serbia (Dinić et al., 2018), Turkey (Özsoy et al., 2017), Swedish (Garcia et al., 2018), Portugal (Jonason et al., 2022), Iran (Yousefi & Piri, 2016), France (Gamache et al., 2018), Arab (El Keshky, 2022), Peru (Lingán-Huamán et al., 2023) and Bangladesh (Ahmed et al., 2020). In the Indonesian context, Hasanati (2019) and Arnietta et al. (2025) conducted validation research of Short Dark Triad (SD3) and Short Dark Tetrad (SD4), while Devi et al. (2024) and Ali & Prasetyawati (2025) examined the validity of DTDD.

In recent decades, the Dark Triad has evolved into new traits, such as everyday sadism (Buckels et al., 2013). However, some experts have proposed reducing the Dark Triad to a Dark Dyad by removing Narcissism (Denovan et al., 2024; Egan et al., 2014; Kowalski et al., 2016). The concept of the Dark Dyad assumes that Machiavellianism and Psychopathy are closely related and can be treated as two facets of a construct (Rogoza & Cieciuch, 2018). Empirically, the distinction between Machiavellianism and Psychopathy appears unclear (Miller et al., 2017, 2019; Vize et al., 2018). Few research have investigated the structure and samples of students in Indonesia even though Dark Triad has grown rapidly.

Several empirical results support the need to understand the measurement structure of dark traits

across different samples and cultures due to overlap (Muris et al., 2017; O'Boyle et al., 2012). Rogoza and Cieciuch (2017) differentiated Dark Triad traits into only two constructs, namely Narcissism and a "Dark Dyad" consisting of Machiavellianism and Psychopathy. Other experts have proposed the addition of sadism to Dark Triad to form "Dark Tetrad" (Book et al., 2016; Buckels et al., 2013). Pabian et al. (2015) also reported a high correlation between Machiavellianism and Psychopathy. However, some research reported only moderate correlations between the two constructs (Malesza et al., 2019). Kajonius et al. (2016) identified a bifactor model showing the presence of a general factor measuring dark traits beyond the Dark Triad.

In the Indonesian sample, Devi et al. (2024) found that three residual correlations were required to achieve adequate model fit, showing the possibility of inappropriate specifications in CFA. Ali & Prasetyawati (2025) also suggested a high correlation between Machiavellianism and Psychopathy. Therefore, a significant overlap between Machiavellianism and Psychopathy is potentially present. These results show methodological concerns since CFA postulates a single-factor loading for each item and imposes zero restrictions on cross-loadings. The method can introduce bias, particularly when used to measure constructs with conceptual and empirical interrelation (Kline, 2023). A potential for overlap exists between factors or items despite the practical advantages offered by the concise 12-item scale for measuring dark personality. Further investigation is needed using ESEM since personality traits often overlap and do not operate independently (Marsh et al., 2010).

ESEM combines the strengths of EFA and CFA, resulting in more accurate factor solutions, improved model fit, and reduced inflated inter-factor correlations (Asparouhov & Muthén, 2009; Marsh et al., 2014). The concise format of DTDD introduces the potential for conceptual overlap among Dark Triad traits since ESEM is a more suitable analytical method than CFA. Therefore, this research confirmed the basic structure of DTDD in the Indonesian population and contributed new methodological insights by applying a more flexible and realistic modeling framework to address previous inconsistencies.

## Study 1

### Methods

A comprehensive translation verification process was carried out to ensure the clarity and conceptual consistency of the items before conducting a structural investigation of the Indonesian DTDD. Subsequently, a forward-backward translation method including four independent translators was used. In each group, one

Table 1

*Translation Result*

No.	Original	Forward Translation 1	Forward Translation 2	Synthesis	Back Translation 1	Back Translation 2
1	I tend to want others to admire me.	Saya cenderung ingin orang lain mengagumi saya	Saya cenderung menginginkan orang lain mengagumi Saya	Saya cenderung ingin orang lain mengagumi saya	I tend to want others to admire me	I have a tendency, that I want others to adore me.
2	I tend to want others to pay attention to me.	Saya senang menjadi pusat perhatian.	Saya cenderung menginginkan orang lain untuk memperhatikan Saya	saya cenderung ingin orang lain untuk memperhatikan saya	I tend to want others to pay attention to me	I have a tendency, that I want others to pay their attention to me.
3	I tend to expect special favors from others.	Saya cenderung mengharapkan perlakuan khusus dari orang lain	Saya cenderung mengharapkan bantuan special dari orang lain	Saya cenderung mengharapkan perlakuan khusus dari orang lain.	I tend to expect special treatment from others	I tend to wish others would treat me as special as other people.
4	I tend to seek prestige or status.	Saya cenderung mengejar kehormatan atau status	Saya cenderung mencari prestise/kehormatan atau status	Saya cenderung mengejar kehormatan atau status	I tend to pursue honor or status	I tend to chase after honor or status.
5	I tend to lack remorse.	Saya jarang merasakan penyesalan	Saya cenderung tidak merasa bersalah	Saya jarang merasa menyesal atas perbuatan saya	I rarely feel regret for my actions	I rarely regret my actions.
6	I tend to be callous or insensitive.	Saya tidak sensitif terhadap perasaan orang lain	Saya cenderung tidak berperasaan atau tidak peka	Saya cenderung tidak berperasaan atau tidak peka.	I tend to be heartless or insensitive	I tend to be heartless or insensitive.
7	I tend not to be extremely concerned with morality or the morality of my actions.	Saya cenderung tidak menaruh perhatian pada moralitas perilaku saya	Saya cenderung tidak terlalu peduli pada moralitas ataupun moralitas dari tindakan Saya	Saya cenderung tidak peduli pada moralitas atas perilaku saya	I tend not to care about the morality of my behavior.	I tend not to put my attention on the morality of my actions.
8	I tend to be cynical.	Saya meragukan orang lain memiliki niat dan tujuan yang tulus	Saya cenderung sinis	Saya meragukan orang lain memiliki niat dan tujuan yang tulus	I doubt that others have sincere intentions and goals.	I doubt others have sincere intentions and goals.
9	I have used deceit or lied to get my way.	Saya rela berbohong untuk mendapatkan apa yang saya inginkan	Saya pernah menggunakan tipu daya atau berbohong untuk mendapatkan apa yang Saya inginkan	Saya pernah menipu atau berbohong untuk mendapatkan keinginan saya.	I have cheated or lied to achieve what I want.	I have cheated or lied to achieve what I want.
10	I tend to manipulate others to get my way.	Saya akan mempengaruhi orang lain untuk melakukan apa yang saya inginkan	Saya cenderung memanipulasi orang lain untuk mendapatkan apa yang Saya inginkan	Saya akan mempengaruhi orang lain untuk mencapai tujuan saya	I will influence others to achieve my goals.	I tend to influence others to achieve my purpose.
11	I have used flattery to get my way.	Saya menggunakan pujian untuk mendapatkan keinginan saya	Saya pernah menggunakan sanjungan untuk mendapatkan apa yang Saya inginkan	Saya pernah menggunakan sanjungan untuk mendapatkan apa yang saya inginkan	I have used compliments to get what i want.	I have used compliments to get what I want.
12	I tend to exploit others for my end.	Saya mengarahkan orang lain pada tujuan yang saya inginkan	Saya cenderung memanfaatkan orang lain demi tujuan Saya sendiri	Saya cenderung memanfaatkan orang lain demi kepentingan pribadi saya	I tend to "used" other peoples for my personal interests.	I tend to use" other people for my interests.

Table 2  
DTDD Blueprint Indonesian Version

No	Item	Dimensions
1	Saya cenderung ingin orang lain mengagumi saya	Narcissism
2	Saya cenderung ingin orang lain untuk memperhatikan saya	
3	Saya cenderung mengharapkan perlakuan istimewa dari orang lain	
4	Saya cenderung mengejar kehormatan dan status	
5	Saya jarang memiliki rasa penyesalan atas perbuatan saya	Psychopathy
6	Saya cenderung tidak berperasaan atau tidak peka	
7	Saya cenderung tidak peduli pada moralitas atas perilaku saya	
8	Saya meragukan orang lain memiliki niat dan tujuan yang tulus	
9	Saya pernah menipu atau berbohong untuk mendapatkan keinginan saya	Machiavellianism
10	Saya cenderung mempengaruhi orang lain untuk mencapai tujuan saya	
11	Saya pernah menggunakan sanjungan untuk mendapatkan apa yang saya inginkan	
12	Saya cenderung memanfaatkan orang lain demi kepentingan pribadi saya	

Table 3  
Validity Based on Content

	Relevancy					Clarity				
	Result Expert Assessments	CVR	I-CVI	Validity	Interpretation	Result Expert Assessments	CVR	I-CVI	Validity	Interpretation
Item 1	9	1	1	Valid	Used	9	1	1	Valid	Used
Item 2	9	1	1	Valid	Used	9	1	1	Valid	Used
Item 3	7	.56	.78	Invalid	Revised	8	.78	.89	Valid	Used
Item 4	9	1	1	Valid	Used	9	1	1	Valid	Used
Item 5	8	.78	.89	Valid	Used	8	.78	.89	Valid	Used
Item 6	9	1	1	Valid	Used	9	1	1	Valid	Used
Item 7	9	1	1	Valid	Used	9	1	1	Valid	Used
Item 8	9	1	1	Valid	Used	8	.78	.89	Valid	Used
Item 9	9	1	1	Valid	Used	9	1	1	Valid	Used
Item 10	7	.56	.78	Invalid	Revised	7	.56	.78	Invalid	Revised
Item 11	9	1	1	Valid	Used	9	1	1	Valid	Used
Item 12	9	1	1	Valid	Used	9	1	1	Valid	Used

**Relevancy:** S-CVI/UA = .75, S-CVI/Ave = .95; **Clarity:** S-CVI/UA: .75<sup>b</sup>, S-CVI/Ave = .95 Valid and Used

Table 4  
Model Fit Indices For Competing Models Dirty Dozen Indonesian Version (N=346)

Model	p-value	TLI	CFI	SRMR	RMSEA	p-value RMSEA
<b>CFA Results</b>						
Two Factor Correlation Model	.000	.940	.952	.057	.051	.420
Three Factor Correlation Model	.059	.978	.983	.050	.031	.961
Bifactor Model	.402	.997	.998	.031	.011	.966
<b>ESEM Results</b>						
Two Factor Correlation ESEM	.001	.949	.968	.046	.047	.588
Three Factor Correlation ESEM	.702	1.000	1.000	.021	.000	.999
Bifactor ESEM	.993	1.000	1.000	.010	.000	1.000

Note:  $\chi^2$  = chi-square, TLI = Tucker-Lewis index, CFI = Comparative Fit Index, GFI = Goodness of Fit Index, SRMR = Standardized Root Mean Square Residual, RMSEA = Root Mean Square Error of Approximation.

translator possessed a background in psychology and psychometric measurement, while the language experts remained unaware of the content to ensure neutrality.

Content and response process validities were performed in line with the translation review (American Educational Research Association et al.,

2014). Content validity was assessed by nine psychologists from diverse subfields, including social, clinical, developmental, and psychometrics. The review included an analysis of DTDD content against the criteria of relevance and item clarity. The experts are to evaluate the content of each item by answering questions, considering a rating scale with values

ranging from 1 to 4. A rating of 1 signified "not relevant at all" or "not clear at all," while a rating of 4 showed "very relevant" or "very clear". The results were calculated using the Content Validity Index (CVI) for each item based on the responses of the experts. Students representative of the target sample reviewed the item clarity and interpretability to evaluate response process validity (Almanasreh et al., 2019; Lawshe, 1975).

### Results and Discussion

Table 1 shows that the translation verification process comprises two forward translators, a reconciled version, and backward translation into English by two independent translators. The content validity of each

item was evaluated after the completion of the translation stage. This was carried out by asking nine expert judges to evaluate the items for relevance and clarity. Furthermore, the Content Validity Ratio (CVR) and Item-Level Content Validity Index (I-CVI) were calculated for each item, as shown in Table 2. For the relevance aspect, DTDD items exceeded the minimum required thresholds. This showed that the items were considered appropriate for measuring the core components of the dark triad personality (Machiavellianism, Narcissism, and Psychopathy). The lowest CVR values were observed in items 3 and 10 at .56. Lawshe (1975) stated that the minimum criteria for accepting CVR value was based on the number of experts. For example, the minimum number of CVRs considered acceptable was .78 when experts were 9.

Table 5  
DTDD Reliability Results Indonesian Version (N=346)

No.	Dimensions	Cronbach's $\alpha$	McDonald's $\omega$	Items	CR	AVE
1.	Narcissism	.841	.846	4	.849	.591
2.	Psychopathy	.615	.640	4	.664	.343
3.	Machiavellianism	.792	.791	4	.795	.494

Table 6  
Validity Related to Other Variables

	Nars	Psiko	Mach	Greed	Sincerity	Fairness	Modesty
Nars	—						
Psiko	.374 ***	—					
Mach	.586 ***	.690***	—				
Greed	-.422***	-.210***	-.336***	—			
Sincerity	-.439***	-.400***	-.568***	.386***	—		
Fairness	-.154**	-.351***	-.305***	.149**	.279***	—	
Modesty	-.038	-.086	-.030	.058	.011	.351***	—

Note. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

Table 7  
Standardized Factor Loadings CFA and ESEM Models of DTDD

Item	CFA Models									ESEM Models								
	2F		3F			Bifactor				2F		3F			Bifactor			
	Narc.	Dark Dyad	Narc.	Psyc	Mach	Narc.	Psyc	Mach	Core	Narc.	Dark Dyad	Narc	Psyc	Mach	Narc.	Psyc	Mach	Core
Nars1	.82	-	.82	-	-	.70	-	-	.44	.85	-.05	.86	.00	-.05	.69	-.01	.00	.44
Nars2	.83	-	.83	-	-	.72	-	-	.42	.87	-.06	.87	-.04	-.04	.76	-.01	.07	.38
Nars3	.80	-	.80	-	-	.61	-	-	.50	.77	.04	.77	.03	.00	.61	.00	.00	.49
Nars4	.58	-	.58	-	-	.35	-	-	.50	.48	.19	.48	.03	.16	.31	-.06	.09	.57
Psyc1	-	.31	-	.48	-	-	.37	-	.31	-.02	.33	-.00	.46	.02	.11	.31	.15	.42
Psyc2	-	.43	-	.70	-	-	.51	-	.42	.00	.42	.01	.62	.04	.00	.54	.09	.38
Psyc3	-	.38	-	.69	-	-	.66	-	.37	-.05	.42	-.04	.82	-.07	.06	.65	.02	.37
Psyc4	-	.35	-	.39	-	-	.19	-	.35	.12	.28	.13	.27	.09	.15	.27	.18	.24
Mach1	-	.58	-	-	.59	-	-	.53	.42	-.06	.61	-.07	-.03	.65	.01	.05	.55	.36
Mach2	-	.75	-	-	.76	-	-	.25	.72	.12	.67	.12	.04	.65	.10	.05	.36	.63
Mach3	-	.69	-	-	.70	-	-	.32	.63	.03	.68	.01	-.09	.77	.04	-.13	.32	.69
Mach4	-	.74	-	-	.74	-	-	.33	.66	-.05	.79	-.05	.12	.70	.01	.13	.43	.59

Note: 2F= two factor correlation, 3F = three factor correlation

Several other items received the highest ratings and were categorized as valid by nine experts, based on CVR and I-CVI calculations. At the scale level, the content validity for the relevance aspect was .75, as measured by the Universal Agreement Index (S-CVI/UA). Based on the Average Content Validity Index (S-CVI/AVE), the score was .95, and the scale was valid overall. However, previous research argued that this item could be included in the measurement for several reasons. First, the concept of "expecting special treatment" is one of the important aspects of Narcissism, which is often reflected in the daily behavior of individuals with the trait (Raskin & Hall, 1979). In the context of Narcissism, the expectation of special treatment reflects a sense of superiority and a need for attention (Krizan & Herlache, 2017; Morf & Rhodewalt, 2001; Muris et al., 2017).

Previous research suggested that the behavior of expecting special treatment could be expressed in different ways across cultures. In collectivist cultures, narcissistic behaviors such as expectations of special treatment can be carried out prosocially as a strategy for achieving social status. Therefore, the expectation of special treatment in hierarchical or social relationships can be considered normal and does not necessarily show a personality disorder (An et al., 2024). Collectivist culture can also alter the manifestation and evaluation of Narcissism. Certain aspects, such as superiority and self-entitlement, may be consistent with social role expectations within group or family relationships. (Fatfouta et al., 2021). Even though this item may seem less explicitly relevant, the expectation of special treatment remains in narcissistic behavior across cultures. Items such as "saya mengharapkan perlakuan istimewa" are relevant as indicators of Narcissism and part of collective social norms, such as reciprocity, hierarchy, or privileges based on relational closeness.

The observed low CVR suggests the limited relevance, potentially from an inadequate representation of the Narcissism construct within the specific local cultural context. However, the item was included based on research by Jonason et al. (2013). In this research, items related to expectations of special treatment statistically showed significant correlations with dimensions of Narcissism across cultural contexts. This construct retained significance in the assessment of Narcissism despite the variation between the articulation of expectations for special treatment.

The validity assessment for the clarity aspect showed only 1 invalid item (item 10) with a CVR value of .56. In the clarity aspect, these items reported quite good clarity since only 1 was invalid. At the scale level, the validity of the clarity aspect based on the content validity index universal agreement (S-CVI/UA) was .75. Therefore, the overall clarity of this scale lacked

full validity due to insufficient inter-expert agreement. A value of .95 was reported as valid when viewed from the average scale content validity index (S-CVI/AVE).

Item 10 was consistently invalid because the translation result selected was not near the original. This affected the assessment of experts related to Item 10. In the original version, "I tend to manipulate others to get my way" was interpreted as "I tend to manipulate others to get what I want". However, the translation result using the word "mempengaruhi", "influence" rather than "manipulate" was preferred. From a psycholinguistic perspective, this substitution carried the risk of diluting the antisocial connotation central to the original conceptualization by Paulhus and Williams (2002), who reported manipulation as a core trait within Machiavellianism. The selected wording altered the interpretation, diverging from the intended manipulative behavior even though the translation aimed to mitigate the risk of "faking good" responses (Monaro et al., 2021; Williams et al., 2019). Gudmundsson (2009) stated that semantic drift in item translation led to systematic distortions in item functioning and lower expert agreement. Most items were considered sufficiently clear by experts. However, items 3 and 10 required special attention to improve relevance and clarity.

All participants in this stage showed a clear comprehension of the instructions, assessment responses, and the statements' auditory presentation. Consequently, the entire instrument proved to be readily understandable in measuring a negative behavior. Among the 10 students, a single comment was provided by one participant during the readability test. The suggestions and comments were directed to item 11, "I have used flattery to get what I want".

According to the participant, the term "flattery" was not commonly used in Indonesia. Alternative suggestions showed a preference for "praise," a word frequently encountered across various demographic groups. Johnson et al. (2004) found that flattery and praise were processed differently. Flattery was often perceived as insincere and manipulative in line with Machiavellian behavior, while praise was interpreted as sincere and pro-social. In this context, the suggestion was important in the decision to use the word "flattery" or "praise". This research showed that all items were included in the model testing.

## Study 2

### Methods

#### Participants

A total of 470 undergraduate students were recruited for participation. Distractor items were incorporated to monitor participant concentration, and 124 participants failed to maintain concentration. The minimum sample

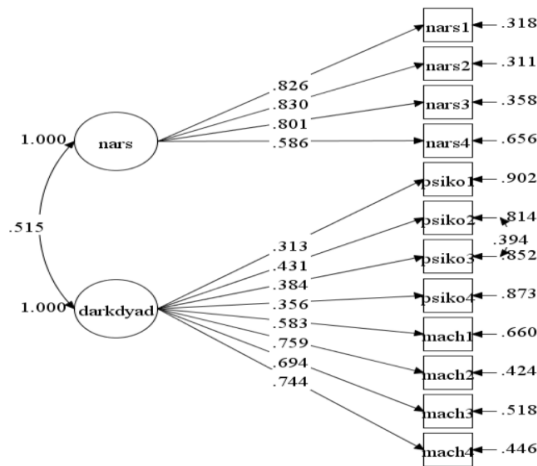


Figure 1. Two-factor correlation model

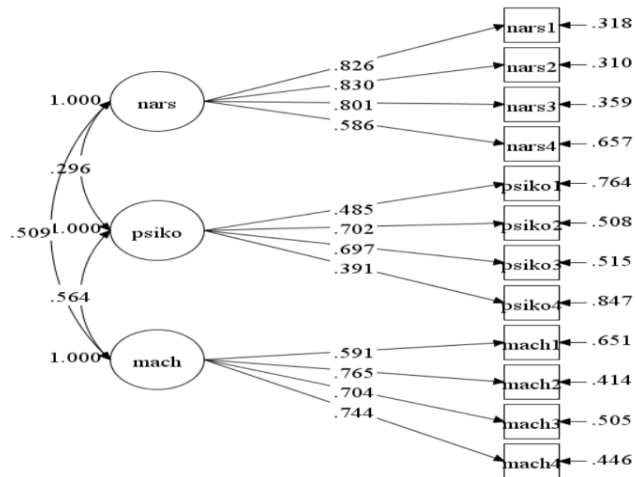


Figure 2. Three-factor correlation model

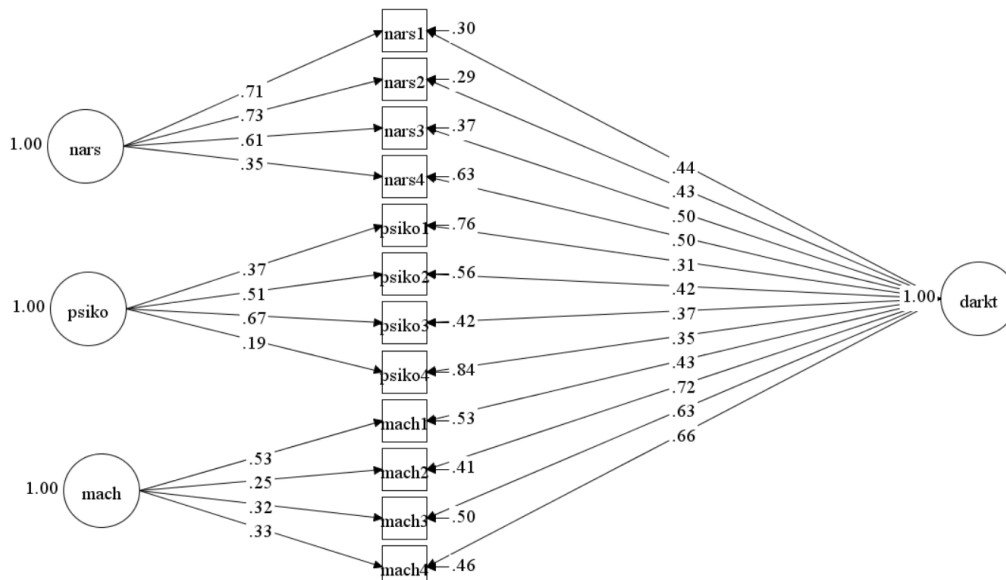


Figure 3. Bi-factor Model

size was 200 participants based on [MacCallum et al. \(1996\)](#) using a power of .80 with df close to 55. This research obtained a sample exceeding the minimum target of 346 college students. The age range of the participants was 17-31 years ( $M = 19.5$ ,  $SD = 1.53$ ), consisting of 70 males (20.2%) and 276 females (79.8%). Evidence was gathered in research 2 through the inclusion of diverse sources.

**Instruments**

The DTDD scale used consisted of 12 items with 4 in each dimension ([Jonason & Webster, 2010](#)). Machiavellianism, Psychopathy, and Narcissism contain items such as “I tend to manipulate others to

get what I want”, “I tend to have no remorse”, and “I tend to want others to admire me”, respectively. This scale was assessed on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

The HEXACO scale was used for validity related to other variables, specifically on honesty-humility facets adapted in Indonesian by [Sugiarto et al. \(2022\)](#). This variable consisted of 16 statements from Sincerity, Fairness, Greed-Avoidance, and Modesty dimensions. Sincerity, Fairness, Greed-Avoidance, and Modesty Dimensions comprised of items such as "I will treat people I don't like very well if I want something from it", "If I know I will never be caught, I will be willing to steal billions of rupiah", "Having a lot of money is not too important for me", and "I am an ordinary person who is no better than others," respectively. The

response scale used was 5 points, starting from 1 (very inappropriate) up to 5 (very appropriate).

## Results and Discussion

### Results

CFA and ESEM used the Robust Maximum Likelihood (MLR) estimator computed through Mplus 8.6. This statistical software was robust concerning the non-normality of observations with standard errors and goodness-of-fit tests (Brown, 2015; Muthén & Muthén, 2015; Wang & Wang, 2020). The cut-off criteria for selecting an appropriate fit model were defined as follows 1) a Chi-square ( $\chi^2$ [df]) p-value showing non-significance ( $p > .05$ ), 2) Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) values of .90 or greater, 3) Root Mean Square Error of Approximation (RMSEA) values of .06 or less, with a "close" fit (CFit) RMSEA probability value showing non-significance ( $p > .05$ ), and 4) Standardized Root Mean Square Residual (SRMR) values of .08 or less (Brown, 2015; Hu & Bentler, 1999).

The two-factor correlational CFA model showed adequate fit as reported by the Psiko2 and Psiko3 modification indices. In contrast, the three-factor correlational model based on Jonason and Webster's (2010) original framework reported highly adequate results requiring no index modifications. Therefore, an alternative model was explored based on Kajonius et al. (2016) by implementing a bifactor CFA model. The bifactor model showed good fit indices even though there was no appropriate theory. The model assumed that each item contained general and specific factors. These factors empirically accommodated the data but did not reflect the actual psychological structure. The presence of factor loadings  $< .2$  showed that the indicators did not contribute sufficiently to explaining the dark triad component. This analysis was extended using ESEM to address CFA limitations and gain an in-depth understanding of DTDD. Furthermore, ESEM was adopted to allow for cross-loadings and test two-factor, three-factor, and bifactor models within a more flexible framework. The fit indices presented in Table 4 were found to be acceptable across models. However, item-level analysis reported meaningful differences in the loading of items on the respective factors to provide critical insight into the multidimensional nature of the dark triad traits.

ESEM comprised of narcissism and a combined Dark Dyad correlated factors with a commendable fit. However, a residual correlation between Item Psych2 and Psych3 was important, showing shared item content. An examination of cross-loading patterns showed conceptual blending, with Item Mach2 indicating a statistically significant loading on the Narcissism factor. A weak magnitude (factor loading  $< .20$ ) was reported, and Item Nars4 was cross-loaded on

the Dark Dyad factor. These results suggested a structural overlap between narcissistic and manipulative content within the item pool, while the model maintained statistical adequacy. Model ESEM three-factors, which retained Narcissism, Psychopathy, and Machiavellianism, suggested strong model fit and required no residual modifications. In this context, item loadings were consistent with the intended constructs. However, minor cross-loadings were observed as follows (1) Psych4 and Mach2 weakly loaded on the Narcissism factor, Mach4 on the Psychopathy factor, and (2) Nars4 on the Machiavellianism factor. All cross-loadings were below .20, showing minimal contamination between factors. These results supported the distinctiveness of the three constructs, while the flexibility of ESEM allowed the detection of subtle item-level multidimensionality.

A bifactor ESEM framework was used, conceptualizing a general "dark trait" factor (Dark Core) with three orthogonal specific factors. This model reported a robust fit to the data and was distinctly segregated from trait-specific variance. The specific Narcissism factor showed modest and statistically significant cross-loadings from Psych4 and Mach2. Conversely, the specific Psychopathy factor suggested cross-loadings from Mach3 and Mach4. Machiavellianism factor did not report significant cross-loadings, suggesting a clearer construct independence. The entire items showed acceptable loadings on the general factor, except for Psych4 possessing factor loading below .30. The three-factor model provided the strongest theoretical and empirical consistency with the original DTDD framework, while effectively minimizing cross-loadings. The bifactor model added insight by stating the separation between general and specific trait variance. The two-factor model reported that Machiavellianism and Psychopathy empirically converged in certain contexts.

The results of the reliability test of 346 participants showed that DTDD items had good internal consistency with a Cronbach's alpha value above .7 ( $= .828$ ). However, Psychopathy had low internal consistency with a Cronbach's alpha value below .7 ( $= .615$ ) when evaluated separately. Convergent validity found that only Psychopathy had Composite Reliability ( $CR < .7$ ) and Average Variance Extracted ( $AVE < .5$ ) (Hair et al., 2019).

Internal consistency reliability measured through Cronbach's alpha showed adequate values for DTDD scale, while Psychopathy had a lower value ( $\alpha = 0.615$ ). Table 6 shows the relationship between Dark Triad Personality (Narcissism, Psychopathy, Machiavellianism) and Honesty-Humility (Greed, Sincerity, Fairness, Moderation). Narcissism was negatively correlated with Greed ( $r = -.422$ ,  $p < .001$ ), Sincerity ( $r = -.439$ ,  $p < .001$ ), and Fairness ( $r = -.154$ ,



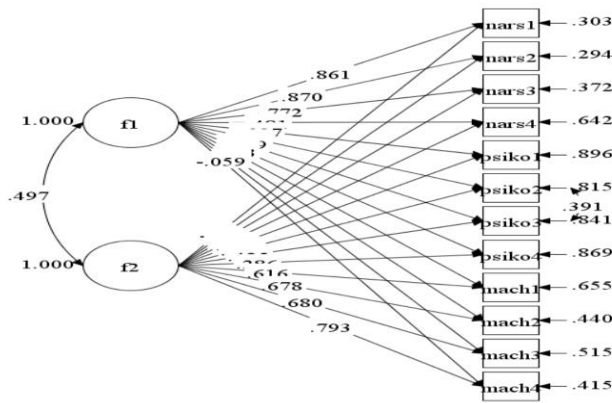


Figure 4. Two-factor correlated ESEM

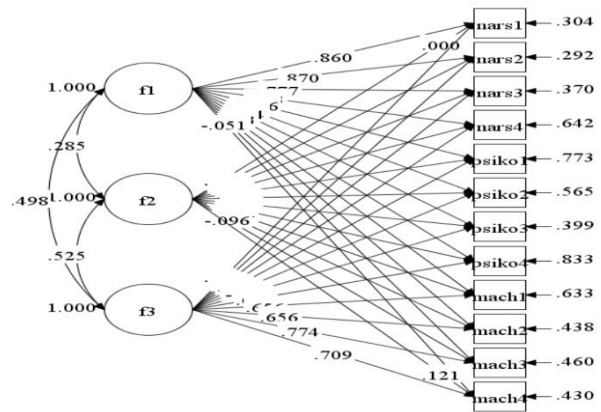


Figure 5. Three-factor correlated ESEM

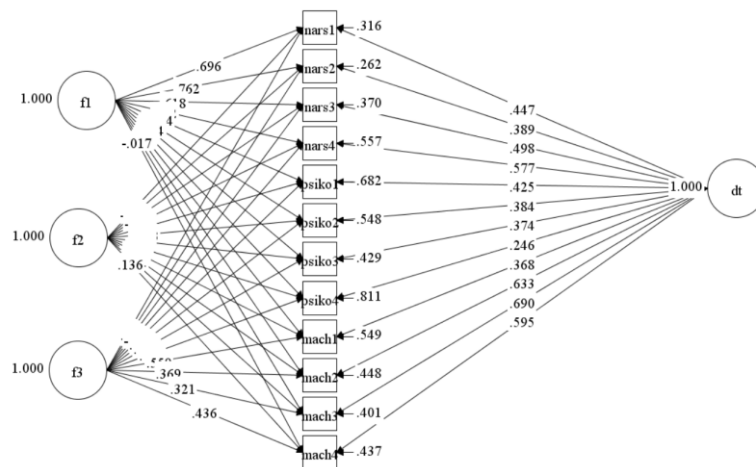


Figure 6. Bi-factor ESEM Model

$p < .05$ ). Psychopathy was also negatively correlated with Greed ( $r = -.210, p < .01$ ), Sincerity ( $r = -.400, p < .001$ ), and Fairness ( $r = -.351, p < .001$ ). Similarly, Machiavellianism was negatively correlated with Greed ( $r = -.336, p < .001$ ), Sincerity ( $r = -.566, p < .001$ ), and Fairness ( $r = -.305, p < .001$ ). The correlation results showed that Dark Triad had a negative relationship with several dimensions of Honesty-Humility. This test used T-score to standardize data from different measurement instruments, facilitating multivariate analysis such as correlation (McDonald & Ho, 2002).

### Discussion

The results of the structural investigation of the Indonesian version of DTDD scale provide important contributions to the ongoing debate regarding the most appropriate structural representation of the construct. The competing frameworks evaluated through a series of confirmatory and exploratory structural models are (1) two-factor, (2) three-factor, and (3) bifactor.

The two-factor CFA model combines Machiavellianism and Psychopathy into a single latent dimension and separates Narcissism. This result is consistent with research suggesting that respondents do not differentiate between Machiavellianism and Psychopathy (Pabian et al., 2015; Rogoza & Ciecuch, 2017, 2018). The two factors comprising the CFA model possess statistical validity. From a theoretical perspective, the Dark Triad's simplification of the construct proves insufficient in capturing the differences between Machiavellianism and Psychopathy as separate entities. This is consistent with the criticism by Miller et al. (2017, 2019), where the overlap between the constructs is often reinforced by the limitations of measurement tools rather than psychological reality.

CFA Model 2, which is a version of (Jonason & Webster, 2010), shows the consistent adequacy of a three-correlated-factor structure. This model has also reported superior conceptual coherence and cross-cultural stability in line with DTDD validation research conducted across various international populations (e.g. Czarna et al., 2016; Gamache et al., 2018; Garcia

et al., 2018). Despite the limited number of items per construct, the underlying three-factor structure remains both conceptually coherent and structurally strong. This model is consistent with the initial theoretical structure proposed by the developers of the Dark Triad theory (Paulhus & Williams, 2002). Even though three dimensions share dark characteristics such as manipulation and lack of empathy, each has a unique psychological profile (Miller et al., 2017; Muris et al., 2017). The co-occurrence of the three traits in behavior theoretically originates from distinct psychological processes. For instance, Narcissism, Machiavellianism, and Psychopathy are associated with fragile self-regulation, deliberate social exploitation, and emotional dysregulation, respectively (Muris et al., 2017; O'Boyle et al., 2012). In this context, the three factors share a common "Dark Core" factor.

The third CFA model (bifactor) obtains results in line with Kajonius et al. (2016). This model provides further insights by identifying a general factor used to explain the common variance across all Dark Triad items. The Dark Triad shares a common psychological core known as "Dark Core", underlying manipulative, egocentric, and amoral tendencies (Denovan et al., 2024; Kowalski et al., 2016). This general factor accounts for the tendency of individuals with high scores on one dimension to show elevated scores on others. The bifactor model necessitates a more cautious interpretation despite the statistical fit. In short measurement contexts, the contribution of common factor variance to the total score can be dominant. This reduces the practical utility of DTDD in research requiring the separation of effects between traits, such as predicting more specific types of behavior.

Structural analysis is extended through ESEM to evaluate the dimensional structure of DTDD. ESEM is particularly well-suited for modeling multidimensional psychological constructs like the Dark Triad because the model combines the flexibility of EFA with the statistical rigor of CFA (Asparouhov & Muthén, 2009; Marsh et al., 2014). This model accommodates cross-loadings among factors, facilitating a more realistic representation of trait overlap. The feature is important when constructs share conceptual space, as exemplified by Machiavellianism, Narcissism, and Psychopathy. Therefore, ESEM is useful when factor correlations between Machiavellianism and Psychopathy are very high, as reported by Ali & Prasetyawati (2025). Devi et al. (2024) proposed the inclusion of three pairs of residual correlations to achieve an adequate fit for the Dark Triad model within the Indonesian population.

In the first ESEM model, a two-factor solution separates Narcissism from a combined dark dyad of Machiavellianism and Psychopathy. This model reports acceptable fit and a residual correlation between Psychopathy items 2 and 3 in line with CFA

two-factor model. Significant but weak cross-loadings are observed, specifically with Machiavellianism item 2 and Narcissism item 4 loading onto the Narcissism and dark dyad factors, respectively. Machiavellianism item 2 and Narcissism item 4 assess manipulative and status-seeking behaviors. These cross-loadings suggest that the manipulation or influence of others for goal attainment may incorporate elements of agentic motivation and self-enhancement (Miller et al., 2017). Furthermore, narcissistic individuals often perceive the self as a central figure, deserving of an elevated status. This perspective enables the use of social influence as a tool for self-validation. The conceptual overlap between Narcissism and the Dark Dyad renders instances of cross-loading, where traits from one construct are consistent with another (Miller et al., 2019). Even though the item is structurally placed under the dark dyad (Machiavellianism and Psychopathy), the spirit of "influence for personal gain" resonates with the motives of status and control in Narcissism (Szabó, 2020). These results suggest a lack of clear item independence when Psychopathy and Machiavellianism are collapsed into dark dyad, echoing concerns from previous research.

The second ESEM model, structured around the three-factor DTDD framework, shows good fit without requiring residual correlations or post-hoc adjustments. A total of three factors constitute a stable model for identifying dark traits in line with the original (Jonason & Webster, 2010). In the result using ESEM, factor loadings for Machiavellianism items are maximized while allowing free cross-loadings on the Narcissism and Psychopathy factors. Since ESEM shows better model fit, there are significant cross-loading items such as Psych4, Mach4, and Nars4 on Narcissism, Psychopathy, and Machiavellianism factors, respectively. The conceptual similarities can lead to item variance where a particular item measures the aspects intended for other factors. Despite the overlap, these traits remain distinguishable at behavioral and psychological levels (Miller et al., 2017; Muris et al., 2017; Rogoza & Cieciuch, 2017, 2018; Vize et al., 2018).

Based on the results of bifactor ESEM, the model fit is similar to other models. However, the model shows superior fit in line with McLarnon and Tarraf (2017). Bifactor ESEM shows the best model-data fit and identifies a strong common factor with statistically significant factor loadings for every item. This complex model shows a better fit, as previously explained by Kajonius et al. (2016). Even though bifactor ESEM shows a superior global fit when compared to other structural models of DTDD, the presence of items with factor loadings below .30 on the general and specific factors raises significant concerns. Denovan et al. (2024) argued that the interpretive cost of bifactor

ESEM was high when item-specific information was lost or suppressed in instruments with limited item coverage per trait. The presence of items with factor loadings below .30 on both the general and specific factors raises significant concerns, even though bifactor ESEM shows a superior global fit when compared to other structural models of DTDD.

Correlations between Dark Triad and honesty-humility components are reported to establish convergent validity. Previous research found that all components of honesty-humility were correlated with the dark triad components (Hodson et al., 2018; Kaufman et al., 2019; Templer, 2018). However, modesty does not have any correlation with the other Dark Triad traits. These results are consistent with Jonason and McCain (2012), where a negative relationship existed between dark triad personality and honesty-humility components. Factors of these components have been categorized as indicators of an antagonistic social style since the correlation is expected (Jonason & McCain, 2012). In this convergent validity test, Dark Triad measures a negative personality construct. The traits reflect a negative personality, representing the conceptual opposite of honesty-humility. However, this negative personality construct remains within the same measurement domain. The overlap does not show that honesty-humility is similar to Dark Triad since the majority of the variance is distinct from the three traits. The relationship necessitates careful consideration when interpreting and understanding honesty-humility dimension. The absence of a significant relationship between modesty and the Dark Triad can be explained by a combination of developmental factors related to age, the influence of social norms in the campus context, and the limited variance in the expression of the trait.

The reliability shows that DTDD is a concise and reliable measure for assessing dark personality dimensions (Jonason & McCain, 2012; Jonason & Webster, 2010; Savard et al., 2017). Previous research showed that Psychopathy had lower internal consistency compared to Narcissism and Machiavellianism (Muris et al., 2017; O'Boyle et al., 2012). The three-factor ESEM is the most theoretically coherent and psychometrically balanced solution among the tested models. This is because the model is consistent with the original theoretical distinctions proposed by Paulhus and Williams (2002). Furthermore, the three-factor ESEM integrates the empirical flexibility necessary for valid modeling of multidimensional constructs. In culturally diverse settings such as Indonesia, a structurally valid and culturally sensitive model is offered to facilitate more investigations into the manifestation and consequences of dark personality traits.

## Conclusion

In conclusion, the first research confirmed content and response process validity, even though items 3 and 10 required further cultural and linguistic refinement. In the second research, structural analysis using CFA and ESEM supported three-factor model as the most conceptually sound and psychometrically stable option. Interpretive limitations were also presented due to low factor loadings and reduced trait specificity, even though the two-factor and bifactor models were statistically significant. An additional result showed that modesty did not significantly correlate with the Dark Triad because of age and social conformity among participants. The results reported the cultural relevance of DTDD and utility in psychological research, offering a valid and efficient tool for academic and applied settings.

## References

- Ahmed, O., Naher, L., Islam, R., Akter, M., & Deb, S. (2020). Psychometric analyses of the Bangla version of the Dark Triad Dirty Dozen. *Heliyon*, 6(11), e05341. <https://doi.org/10.1016/j.heliyon.2020.e05341>
- Ali, A. N., & Prasetyawati, W. (2025). Adapting the Dirty Dozen in the Indonesian context: psychometric evaluation of the dark triad traits for educational and psychological. *EDUCATION: Journal of Education Research and Review*, 170–183. <https://scholar.ui.ac.id/en/publications/adapting-the-dirty-dozen-in-the-indonesian-context-psychometric-e>
- Almanasreh, E., Moles, R., & Chen, T. F. (2019). Evaluation of methods used for estimating content validity. *Research in Social and Administrative Pharmacy*, 15(2), 214–221. <https://doi.org/10.1016/j.sapharm.2018.03.066>
- American Educational Research Association, American Psychological Association, & National Council on Measurement in Education. (2014). *Standards for educational and psychological testing*. Washington, DC: American Educational Research Association.
- An, Z., Zou, Y., Wu, S., Tong, S., & Peng, K. (2024). Cross-cultural dynamics of narcissism and prosocial behavior: Unveiling the role of social status pursuit and collectivism. *Social and Personality Psychology Compass*, 18(10). <https://doi.org/10.1111/spc3.70010>
- Arnietta, S. N., Natalya, L., & Siaputra, I. B. (2025). *Exploring the Shadows : Validasi the Short Dark Tetrad ( SD4 ) dalam Bahasa Indonesia*. 13(2), 218–225. <http://doi.org/10.30872/psikoborneo.v13i2.19167>

- Asparouhov, T., & Muthén, B. (2009). Exploratory structural equation modeling. *Structural Equation Modeling*, 16(3), 397–438. <https://doi.org/10.1080/10705510903008204>
- Book, A., Visser, B. A., Blais, J., Hosker-Field, A., Methot-Jones, T., Gauthier, N. Y., Volk, A., Holden, R. R., & D'Agata, M. T. (2016). Unpacking more “evil”: What is at the core of the dark tetrad? *Personality and Individual Differences*, 90, 269–272. <https://doi.org/10.1016/j.paid.2015.11.009>
- Braun, S. (2017). Leader narcissism and outcomes in organizations: A review at multiple levels of analysis and implications for future research. *Frontiers in Psychology*, 8(MAY), 1–22. <https://doi.org/10.3389/fpsyg.2017.00773>
- Brown, T. A. (2015). Confirmatory factor analysis for applied research. In *Basic Statistics and Epidemiology* (Second Ed). The GUILFORD PRESS. <https://doi.org/10.1201/9781315383286-21>
- Buckels, E. E., Jones, D. N., & Paulhus, D. L. (2013). Behavioral confirmation of everyday sadism. *Psychological Science*, 24(11), 2201–2209. <https://doi.org/10.1177/0956797613490749>
- Christie, R., & Geis, F. L. (1970). *Studies in Machiavellianism*. Elsevier. <https://doi.org/10.1016/C2013-0-10497-7>
- Czarna, A. Z., Jonason, P. K., Dufner, M., & Kossowska, M. (2016). The Dirty Dozen scale: Validation of a polish version and extension of the nomological net. *Frontiers in Psychology*, 7(MAR), 1–12. <https://doi.org/10.3389/fpsyg.2016.00445>
- Denovan, A., Plouffe, R. A., Dagnall, N., Artamonova, E., Kowalski, C. M., & Saklofske, D. H. (2024). Dark Triad, Dyad, or Core? A Psychometric Evaluation of the Short Dark Triad (SD3) Across Three Countries. *Current Psychology*, 36086–36103. <https://doi.org/10.1007/s12144-024-07030-0>
- Devi, L., Natalya, L., Siaputra, I. B. ., & Jonason, P. K. (2024). Validity of the Dark Triad Dirty Dozen (DTDD) test-Indonesian version. *Humanitas: Indonesian Psychological Journal*, 21(2), 118–133. <https://doi.org/10.26555/humanitas.v21i2.666>
- Dinić, B. M., Petrović, B., & Jonason, P. K. (2018). Serbian adaptations of the Dark Triad Dirty Dozen (DTDD) and Short Dark Triad (SD3). *Personality and Individual Differences*, 134, 321–328. <https://doi.org/10.1016/j.paid.2018.06.018>
- Egan, V., Chan, S., & Shorter, G. W. (2014). The Dark Triad, happiness and subjective well-being. *Personality and Individual Differences*, 67(January), 17–22. <https://doi.org/10.1016/j.paid.2014.01.004>
- El Keshky, M. E. S. (2022). Psychometric properties of an Arabic Version of the Dark Triad Dirty Dozen Scale. *Australian Journal of Psychology*, 74(1). <https://doi.org/10.1080/00049530.2022.2138543>
- Fatfouta, R., Sawicki, A., & Žemojtel-Piotrowska, M. (2021). Are individualistic societies really more narcissistic than collectivistic ones? A five-world region cross-cultural re-examination of narcissism and its facets. *Personality and Individual Differences*, 183(April). <https://doi.org/10.1016/j.paid.2021.111163>
- Furnham, A., Richards, S. C., & Paulhus, D. L. (2013). The dark triad of personality: A 10 year review. *Social and Personality Psychology Compass*, 7(3), 199–216. <https://doi.org/10.1111/spc3.12018>
- Gamache, D., Savard, C., & Maheux-Caron, V. (2018). French adaptation of the Short Dark Triad: Psychometric properties and a head-to-head comparison with the Dirty Dozen. *Personality and Individual Differences*, 122, 164–170. <https://doi.org/10.1016/j.paid.2017.10.027>
- Garcia, D., Persson, B. N., Al Nima, A., Brulin, J. G., Rapp-Ricciardi, M., & Kajonius, P. J. (2018). IRT analyses of the Swedish Dark Triad Dirty Dozen. *Heliyon*, 4(3), e00569. <https://doi.org/10.1016/j.heliyon.2018.e00569>
- Gøtzsche-Astrup, O. (2021). Dark triad, partisanship and violent intentions in the United States. *Personality and Individual Differences*, 173. <https://doi.org/10.1016/j.paid.2021.110633>
- Gudmundsson, E. (2009). Guidelines for translating and adapting psychological instruments. *Nordic Psychology*, 61(2), 29–45. <https://doi.org/10.1027/1901-2276.61.2.29>
- Hair, J., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate Data Analysis*. In *Gedrag & Organisatie* (8th Editio, Vol. 19, Issue 3). Cengage Learning. <https://doi.org/10.5117/2006.019.003.007>
- Hare, R. D., & Neumann, C. S. (2008). Psychopathy as a clinical and empirical construct. *Annual Review of Clinical Psychology*, 4, 217–246. <https://doi.org/10.1146/annurev.clinpsy.3.02280.6.091452>
- Hasanati, N. (2019). Validation of Dark Triad Personality Scale. *Proceeding of the 4th ASEAN Conference on Psychology, Counselling, and Humanities*, 304(Acpch 2018), 395–398. <https://doi.org/10.2991/acpch-18.2019.94>
- Hodson, G., Book, A., Visser, B. A., Volk, A. A., Ashton, M. C., & Lee, K. (2018). Is the Dark Triad common factor distinct from low Honesty-Humility? *Journal of Research in Personality*, 73,

- 123–129.  
<https://doi.org/10.1016/j.jrp.2017.11.012>
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), 1–55.  
<https://doi.org/10.1080/10705519909540118>
- Johnson, D., Gardner, J., & Wiles, J. (2004). Experience as a moderator of the media equation: The impact of flattery and praise. *International Journal of Human Computer Studies*, 61(3), 237–258. <https://doi.org/10.1016/j.ijhcs.2003.12.008>
- Jonason, P. K., Lyons, M., Bethell, E. J., & Ross, R. (2013). Different routes to limited empathy in the sexes: Examining the links between the Dark Triad and empathy. *Personality and Individual Differences*, 54(5), 572–576.  
<https://doi.org/10.1016/j.paid.2012.11.009>
- Jonason, P. K., & McCain, J. (2012). Using the HEXACO model to test the validity of the Dirty Dozen measure of the Dark Triad. *Personality and Individual Differences*, 53(7), 935–938.  
<https://doi.org/10.1016/j.paid.2012.07.010>
- Jonason, P. K., Tosi, M., Silva, S., Antunes, R., & Brito-Costa, S. (2022). An Initial Comparison of the Psychometric Properties of the Dark Triad Dirty Dozen in Spanish and Portuguese. *Psychological Test Adaptation and Development*, 3(1), 125–133. <https://doi.org/10.1027/2698-1866/a000028>
- Jonason, P. K., & Webster, G. D. (2010). The dirty dozen: A concise measure of the dark triad. *Psychological Assessment*, 22(2), 420–432.  
<https://doi.org/10.1037/a0019265>
- Jones, D. N., & Paulhus, D. L. (2014). Introducing the short dark triad (SD3): A brief measure of dark personality traits. *Assessment*, 21(1), 28–41.  
<https://doi.org/10.1177/1073191113514105>
- Kajonius, P. J., Persson, B. N., Rosenberg, P., & Garcia, D. (2016). The (mis)measurement of the Dark Triad Dirty Dozen: Exploitation at the core of the scale. *PeerJ*, 2016(3), 1–21.  
<https://doi.org/10.7717/peerj.1748>
- Kaufman, S. B., Yaden, D. B., Hyde, E., & Tsukayama, E. (2019). The light vs. dark triad of personality: Contrasting two very different profiles of human nature. *Frontiers in Psychology*, 10, 1–26.  
<https://doi.org/10.3389/fpsyg.2019.00467>
- Kline, R. B. (2023). *Principles and Practice of Structural Equation Modeling* (5th ed.). The Guilford Press.
- Kowalski, C. M., Vernon, P. A., & Schermer, J. A. (2016). The general factor of personality: The relationship between the Big One and the Dark Triad. *Personality and Individual Differences*, 88, 256–266.  
<https://doi.org/10.1016/j.paid.2015.09.028>
- Krizan, Z., & Herlache, A. D. (2017). The Narcissism Spectrum Model: A Synthetic View of Narcissistic Personality. *Personality and Social Psychology Review*, 22(1), 3–31.  
<https://doi.org/10.1177/1088868316685018>
- Lawshe, C. H. (1975). A quantitative approach to content validity. *Personnel Psychology*, 28(4), 563–575. <https://doi.org/10.1111/j.1744-6570.1975.tb01393.x>
- Lee, K., & Ashton, M. C. (2004). Psychometric properties of the HEXACO personality inventory. *Multivariate Behavioral Research*, 39(2), 329–358. [https://doi.org/10.1207/s15327906mbr3902\\_8](https://doi.org/10.1207/s15327906mbr3902_8)
- Lee, K., & Ashton, M. C. (2014). The Dark Triad, the Big Five, and the HEXACO model. *Personality and Individual Differences*, 67, 2–5. <https://doi.org/10.1016/j.paid.2014.01.048>
- Lingán-Huamán, S. K., Charún-Puémape, D., Pajuelo-Almirón, M., & Castillo-Blanco, R. (2023). Dark Triad dirty dozen: psychometric properties and measurement invariance in Peruvian adolescents. *International Journal of Adolescence and Youth*, 28(1).  
<https://doi.org/10.1080/02673843.2023.2255019>
- MacCallum, R. C., Browne, M. W., & Sugawara, H. M. (1996). Power analysis and determination of sample size for covariance structure modeling. *Psychological Methods*, 1(2), 130–149.  
<https://doi.org/10.1037/1082-989X.1.2.130>
- Malesza, M., Ostaszewski, P., Büchner, S., & Kaczmarek, M. C. (2019). The adaptation of the Short Dark Triad Personality Measure – Psychometric Properties of a German Sample. *Current Psychology*, 38(3), 855–864.  
<https://doi.org/10.1007/s12144-017-9662-0>
- Marsh, H. W., Lüdtke, O., Muthén, B., Asparouhov, T., Morin, A. J. S., Trautwein, U., & Nagengast, B. (2010). A new look at the Big Five Factor Structure Through Exploratory Structural Equation Modeling. *Psychological Assessment*, 22(3), 471–491.  
<https://doi.org/10.1037/a0019227>
- Marsh, H. W., Morin, A. J. S., Parker, P. D., & Kaur, G. (2014). Exploratory structural equation modeling: An integration of the best features of exploratory and confirmatory factor analysis. *Annual Review of Clinical Psychology*, 10(Mimic), 85–111.  
<https://doi.org/10.1146/annurev-clinpsy-032813-153700>
- McCrae, R. R., & John, O. P. (1992). *An introduction to the Five-Factor Model and its applications*.

- 175–215. <https://doi.org/10.1111/j.1467-6494.1992.tb00970.x>
- McDonald, R. P., & Ho, M. H. R. (2002). Principles and practice in reporting structural equation analyses. *Psychological Methods*, 7(1), 64–82. <https://doi.org/10.1037/1082-989X.7.1.64>
- McLarnon, M. J. W., & Tarraf, R. C. (2017). The Dark Triad: Specific or general sources of variance? A bifactor exploratory structural equation modeling approach. *Personality and Individual Differences*, 112, 67–73. <https://doi.org/10.1016/j.paid.2017.02.049>
- Miller, J. D., Hyatt, C. S., Maples-Keller, J. L., Carter, N. T., & Lynam, D. R. (2017). Psychopathy and Machiavellianism: A Distinction Without a Difference? *Journal of Personality*, 85(4), 439–453. <https://doi.org/10.1111/jopy.12251>
- Miller, J. D., Vize, C., Crowe, M. L., & Lynam, D. R. (2019). A critical appraisal of the Dark-Triad literature and suggestions for moving forward. *Current Directions in Psychological Science*, 28(4), 353–36. <https://doi.org/10.1177/0963721419838233>
- Monaro, M., Mazza, C., Colasanti, M., Ferracuti, S., Orrù, G., di Domenico, A., Sartori, G., & Roma, P. (2021). Detecting faking-good response style in personality questionnaires with four choice alternatives. *Psychological Research*, 85(8), 3094–3107. <https://doi.org/10.1007/s00426-020-01473-3>
- Morf, C. C., & Rhodewalt, F. (2001). Unraveling the paradoxes of narcissism: A dynamic self-regulatory processing model. *Psychological Inquiry*, 12(4), 177–196. [https://doi.org/10.1207/S15327965PLI1204\\_1](https://doi.org/10.1207/S15327965PLI1204_1)
- Muris, P., Merckelbach, H., Otgaar, H., & Meijer, E. (2017). The malevolent side of human nature: A meta-analysis and critical review of the literature on the dark triad (narcissism, machiavellianism, and psychopathy). *Perspectives on Psychological Science*, 12(2), 183–204. <https://doi.org/10.1177/1745691616666070>
- Muthén, L. K., & Muthén, B. O. (2015). *Mplus User's Guide* (7th ed.). Los Angeles, CA: Muthén & Muthén.
- Nugraha, A. H., Julian, R. K., Adiguna, R., Hartono, V. L., Kusuma, D., Shadiqi, M. A., & Rusli, R. (2023). The Dark Triad and Non-Normative Collective Action in the Save KPK Movement in Indonesia: The mediation effect of contempt. *Changing Societies and Personalities*, 7(1), 130–148. <https://doi.org/10.15826/csp.2023.7.1.222>
- O'Boyle, E. H., Forsyth, D. R., Banks, G. C., & McDaniel, M. A. (2012). A meta-analysis of the Dark Triad and work behavior: A social exchange perspective. *Journal of Applied Psychology*, 97(3), 557–579. <https://doi.org/10.1037/a0025679>
- Özsoy, E., Rauthmann, J. F., Jonason, P. K., & Ardiç, K. (2017). Reliability and validity of the Turkish versions of Dark Triad Dirty Dozen (DTDD-T), Short Dark Triad (SD3-T), and Single Item Narcissism Scale (SINS-T). *Personality and Individual Differences*, 117, 11–14. <https://doi.org/10.1016/j.paid.2017.05.019>
- Pabian, S., De Backer, C. J. S., & Vandebosch, H. (2015). Dark Triad personality traits and adolescent cyber-aggression. *Personality and Individual Differences*, 75, 41–46. <https://doi.org/10.1016/j.paid.2014.11.015>
- Paulhus, D. L., & Williams, K. M. (2002). The dark triad of personality: Narcissism, machiavellianism, and psychopathy. *Journal of Research in Personality*, 556–563. [https://doi.org/10.1007/978-3-319-98446-9\\_43](https://doi.org/10.1007/978-3-319-98446-9_43)
- Pavlović, T., & Franc, R. (2021). Antiheroes fueled by injustice: dark personality traits and perceived group relative deprivation in the prediction of violent extremism. *Behavioral Sciences of Terrorism and Political Aggression*, 0(0), 1–26. <https://doi.org/10.1080/19434472.2021.1930100>
- Pineda, D., Sandín, B., & Muris, P. (2020). Psychometrics properties of the Spanish version of two Dark Triad scales: The Dirty Dozen and the Short Dark Triad. *Current Psychology*, 39(5), 1873–1881. <https://doi.org/10.1007/s12144-018-9888-5>
- Putri, W. W. K., Rahayu, Y. P., & Arunima, A. (2021). Dark Triad Personality as Predictor of Corrupt Intention on the State Civil Apparatus. *Journal of Educational, Health and Community Psychology*, 10(2), 376–383. <https://doi.org/10.12928/jehcp.v10i2.20649>
- Raskin, R. N., & Hall, C. S. (1979). A narcissistic personality inventory. *Psychological Reports*, 45(2), 59. <https://doi.org/10.2466/pr.1979.45.2.590>
- Rizal, I., & Handayani, B. (2021). Gambaran kepribadian gelap (dark triad personality) pada pengguna media sosial. *Al-Hikmah: Jurnal Agama Dan Ilmu Pengetahuan*, 18(1), 44–53. [https://doi.org/10.25299/al-hikmah:jaip.2021.vol18\(1\).5564](https://doi.org/10.25299/al-hikmah:jaip.2021.vol18(1).5564)
- Rogoza, R., & Cieciuch, J. (2017). Structural investigation of the Short Dark Triad Questionnaire in Polish population. *Current Psychology*, 38(3), 756–763. <https://doi.org/10.1007/s12144-017-9653-1>
- Rogoza, R., & Cieciuch, J. (2018). Dark Triad traits and their structure: An empirical approach. *Current Psychology*, 39(4), 1287–1302. <https://doi.org/10.1007/s12144-018-9834-6>

- Savard, C., Simard, C., & Jonason, P. K. (2017). Psychometric properties of the French-Canadian version of the Dark Triad Dirty Dozen. *Personality and Individual Differences, 74*(1), 122–128.  
<https://doi.org/10.1080/0004953.2022.2138543>
- Sugiarto, A. P., Sahrah, A., & Anwar, A. (2022). Psychometric Properties of Indonesian HEXACO-100: A Facet Level Analysis. *Jurnal Psikologi, 49*(1), 21. <https://doi.org/10.22146/jpsi.61198>
- Szabó. (2020). *Behind the mask of manipulation : Unique features underlying manipulation among the Dark Triad*. University Of Pécs.
- Templer, K. J. (2018). Dark personality, job performance ratings, and the role of political skill: An indication of why toxic people may get ahead at work. *Personality and Individual Differences, 124*(May 2017), 209–214.  
<https://doi.org/10.1016/j.paid.2017.11.030>
- Vize, C. E., Lynam, D. R., Collison, K. L., & Miller, J. D. (2018). Differences among dark triad components: A meta-analytic investigation. *Personality disorders, 9*(2), 101–111. <https://doi.org/10.1037/per0000222>
- Wang, J., & Wang, X. (2020). *Structural equation modeling: Applications using Mplus* (2nd ed.). John Wiley & Sons.
- Williams, M. M., Rogers, R., Sharf, A. J., & Ross, C. A. (2019). Faking Good: An Investigation of Social Desirability and Defensiveness in an Inpatient Sample With Personality Disorder Traits. *Journal of Personality Assessment, 101*(3), 253–263.  
<https://doi.org/10.1080/00223891.2018.1455691>
- Yousefi, R., & Piri, F. (2016). Psychometric properties of Persian version of Dirty Dozen Scale. *Iranian Journal of Psychiatry and Clinical Psychology, 22*(1), 67–76.  
<https://psycnet.apa.org/record/2017-12087-007>

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