Factorial Structure of Dark Personality Traits among University Students

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Abstract
This study aimed to identify the factorial structure of the dark personality traits among university students. The study sample consisted of 500 male and female fourth-year university students, with chronological ages ranging between 21 and 22 years, a mean age of 20.24 years, and a standard deviation of 2.80. The researcher utilized the Life Orientation Scale (the three-dimensional Dark Personality Scale) developed by Johnson and Pauls (2014), translated into Arabic by El-Shafie (2020). The results revealed the following: There is a single general factor that links the three dimensions of the dark personality traits among university students. No significant correlation was found between Machiavellianism and psychopathy among university students. A statistically significant positive correlation was observed between narcissism and both Machiavellianism and psychopathy among university students, indicating that narcissism serves as a connecting factor among the three dimensions of the dark personality traits. There were no statistically significant differences attributed to gender, academic specialization, or the interaction between them regarding the three-dimensional dark personality traits among university students.

Keywords: *Personality, Dark Personality, Machiavellianism, Psychopathy, Narcissism*

Introduction

Human personality is inherently unique, differing from one individual to another, much like fingerprints, which God Almighty has made distinct for every human being. The temperaments of individuals vary due to biological factors, internal compositions, and, at times, environmental influences and their disparities. It is upon this foundation of diversity that the multiplicity of individual personalities is established. Personality has occupied a significant position in psychological studies, a prominence reinforced by several factors, including the examination of behavior and the classification of humans into groups sharing specific traits and characteristics that distinguish them from others. The temperaments of individuals diverge due to biological factors, internal compositions, or environmental influences and their variations. Consequently, this diversity gives rise to the multifaceted nature of an individual's personality (Albert, 2014, p. 5).

The Dark Triad

The term "Dark Triad" originates from the work of Williams and Paulhus (2002), who sought to describe three socially aversive personality traits: Machiavellianism, characterized by manipulation and exploitation of others, a cynical disregard for morality, and a focus on self-interest; narcissism, which involves an inflated self-view and egocentricity; and psychopathy, which is primarily associated with callousness and a lack of empathy. Studies, such as that by Jonason et al. (2020), have focused on exploring the relationships between these traits. Williams and Paulhus (2002) coined the term "Dark Triad" to refer to three socially undesirable personalities that share commonalities—each describing a "socially malevolent personality with behavioral tendencies toward self-promotion, emotional coldness, and duplicity" (Glenn & Sellbom, 2015, p. 360).

The emergence of the Dark Triad in personality is often attributed to experiences of childhood abuse, including parental rejection and cruelty, which negatively shape an individual's worldview. These factors lead individuals to perceive the world as an unsafe place, prompting them to adopt maladaptive behaviors to achieve their goals without regard for others (Qasim, 2020, p. 12).

The term "Dark Triad" refers to the convergence of these traits, which often overlap and form a destructive and complex personality profile (Jouni, 2016, p. 159). These traits share a core of manipulation, callousness, and egocentricity, and all three are marked by a disregard for social norms, often leading to social transgressions (Lyons, 2019, p. 2).

The Dark Triad represents a cluster of subclinical and socially aversive traits, reflecting distinctive elements of antisocial personality (Petrides et al., 2011, p. 35). According to Paulhus and Williams (2002), the traits of the Dark Triad were not selected based on strict criteria but because they share commonalities such as social antagonism, self-promotion, emotional coldness, and aggression (Rogoza & Cieciuch, 2020, p. 1287). Studies by Wai and Tiliopoulos (2012), Routhmann and Kolar (2012), Glenn and Sellbom (2015), Szabó and Jones (2019), and Thamboo (2021) have demonstrated that all Dark Triad personalities are associated with deficits in emotional empathy, self-centeredness, manipulation, and exploitation.

The University Stage and Personality Development

The university stage is a critical period of growth that shapes personality in cognitive, behavioral, and social dimensions. This is supported by the study of O'Boyle et al. (2012), which found that job performance is associated with Machiavellianism and psychopathy. Similarly, Vedel and Thomsen (2017) indicated that Dark Triad traits (narcissism, psychopathy, and Machiavellianism) are linked to desires for power, status, and social dominance in the workplace. Schumacher (2019) reported that individuals choose professions aligned with their personalities, and dark personality traits drive people toward specific environments with harmful effects in the workplace. Kalinnikova (2018) found a statistically significant correlation between self-monitoring and dark personality traits, as well as significant associations between Machiavellianism and self-monitoring, and between narcissism, psychopathy, and self-monitoring. The results also revealed high levels of Dark Triad traits, suggesting that school teachers should be able to display attractive aspects of their personalities, demonstrate success, and create a positive self-impression. Lenkov (2018) focused on examining the Dark Triad traits (Machiavellianism, narcissism, and psychopathy) among professional educators across three levels of the education system, revealing significant differences in the expression of these traits among professional groups. Additionally, the study highlighted variations in the structure of Dark Triad traits. Čopková (2020) emphasized the need to develop strategies for dealing with Machiavellian individuals in the educational system, as they can influence the personal and professional development of their students. Despite a surge in research on the impact of dark personality in the workplace, the field remains in its early stages, and most workplace behaviors are a result of personality traits (Al-Shafi'i, 2021, p. 154).

Narcissistic Personality

The term "narcissism" first appeared in psychological literature through Ellis in 1898, who used it to denote a tendency toward sexual emotions. However, its meaning shifted entirely to refer to self-admiration. Nacke (1899) linked narcissism to sexual deviance (Jouda & Abujrad, 2014, p. 51).

Narcissistic Personality Disorder (NPD) is defined as a pervasive pattern of grandiosity (in fantasy or behavior), a need for admiration, and a lack of empathy. Primary diagnostic criteria include an exaggerated sense of self-importance; preoccupation with success, power, brilliance, or beauty; a belief in being special and unique; a demand for excessive admiration; a sense of entitlement; exploitation of others; and a lack of empathy (John & Robins, 2021, p. 758).

In this context, Green and Charles (2019) noted that the reactions of grandiose and vulnerable narcissists to narcissistic injury are likely to be covertly and overtly

aggressive. Narcissism provides a more comprehensive dissatisfaction with traits related to integrity/honesty and humility compared to other similar personality models (Hermann et al., 2018, p. 4). Estimates of the prevalence of Narcissistic Personality Disorder, based on DSM-IV definitions, range from 6.2% in community samples, with 50%-75% of those affected being male (American Psychiatric Association, 2013, p. 671).

Psychopathic Personality

Psychopathy is a personality disorder describing individuals with a specific set of interpersonal traits. These individuals are characterized as grandiose and egocentric, with an exaggerated sense of self-importance and a tendency to blame others for their failures and shortcomings. They exhibit a marked lack of empathy, disregard for social norms, and often engage in immoral behavior (Glenn & Raine, 2014, p. 3).

Psychopathic personalities are distinguished by several patterns:

1. **Dysphoric Psychopathy:** Individuals with this pattern are prone to intense anger and agitation, resembling epileptic episodes. They do not hesitate to satisfy their desires through forbidden or illegal actions.
2. **Charismatic Psychopathy**: These individuals are deceptive yet impressive, possessing a degree of intelligence, quick wit, and persuasive abilities.
3. **Primary Psychopathy**: These individuals are indifferent to punishment, experience no psychological pressure, and suppress antisocial impulses not out of conscience (which is absent) but for other reasons.
4. **Secondary Psychopathy**: These individuals are adventurous, influenced by daily and psychological stressors, and may experience anxiety while disregarding social behavioral norms (Albert, 2014, pp. 110-112).

Patrick et al. (2009) proposed a triarchic model distinguishing three constructs that characterize psychopathy:

1. **Boldness**: Manifested in dominance over others, a lack of fear, impulsivity, confidence, and risk-taking without considering consequences.
2. **Meanness**: Characterized by cruelty, lack of empathy, intentionality, and emotional shallowness.
3. **Disinhibition**: Marked by widespread problems with low impulse control, poor self-regulation, and failure to satisfy drives (Al-Shafi'i & Raji'a, 2023, p. 93).

Machiavellian Personality

The term "Machiavellianism" traces back to the political and military writer Machiavelli (1469–1527), who, in his book *The Prince*, articulated his views on human nature, suggesting that the evil and selfish nature of people justifies a leader's use of unethical means for the public good. Machiavellianism describes individuals who deceive others for personal and social gain. They are egocentric, deceptive, and justify their behaviors, adhering to the principle that "the end justifies the means," regardless of the nature of those means (Ali Martakos, 2016, p. 431).

Additionally, Machiavellianism involves the ability to control others and self-centeredness (Drinkwater, Dagnall, & Denovan, 2020, p. 1). It is characterized by unethical behavior and a cynical, distrustful view of human nature (Dahling et al., 2009, p. 2). Lee and Ashton (2005, p. 1573) noted that Machiavellian individuals lack honesty, loyalty, moderation, and humility, instead exhibiting cunning, greed, and malice. Routhmann and Will (2011) proposed a modern theoretical framework identifying the desires and perceptions that interact to produce Machiavellian behavior:

- **Machiavellian Desires**: Centered on self-interest, self-enhancement, and the pursuit of power and control.
- **Machiavellian Perceptions**: Characterized by a negative worldview, including cynicism, arrogance, negative evaluations of others, and excessive egocentricity.
- **Machiavellian Behavior**: Manifested in actions aimed at achieving gains at the expense of values, exploiting others for personal benefit, and lacking empathy or compassion, often to the point of cruelty (Al-Shafi'i & Raji'a, 2023, p. 90)

The Nature of Conflict in the Dark Triad Personality

The theoretical frameworks and perspectives developed in the field have contributed to the emergence of models that emphasize the integration of the three dimensions of the Dark Triad, painting a comprehensive picture of a dark personality. This integration is not merely theoretical; the nature of conflict within the dark personality is rooted in the darkness that dominates the self, transforming it into a malevolent and highly dangerous entity (Paulhus & Williams, 2002, p. 557).

Lee and Ashton (2014) proposed that a common element among the Dark Triad traits is the individual's predisposition to exploit others. This predisposition is

often associated with low honesty, increased deceit, greed, hypocrisy, and malice. The three traits also share a lack of empathy for others (Szabo & Jones, 2019, p. 160). By examining the differential relationships between the three dark traits and their psychological and social effects, the results were categorized into distinct groups:

- **Aggression–Delinquency**: Includes, for example, aggression, bullying, sadism, and violence.
- **Law Violation**: Includes, for example, impulsivity, risk-taking, and drug use.
- **Sexual Issues**: Includes, for example, sexual harassment, infidelity, and sexual fantasies.
- **Social and Emotional Deficits**: Includes, for example, lack of empathy, low emotional intelligence, and poor mental control.
- **Reduced Well-Being**: Includes, for example, depression, loneliness, and psychological stress.
- **Personal Problems**: Includes, for example, dominance, false entitlement, and expansionism.
- **Moral Issues**: Includes, for example, lack of moral values, deadly sins, and moral decline.
- **Antisocial Schemes**: Includes, for example, deceit, lying, and negative propaganda (Al-Shafi'i, 2023, pp. 102-103).

In this context, Rogoza and Cieciuch (2020) noted that Machiavellianism and psychopathy are closely related and can even be treated as two facets of a single construct. Kaufman et al. (2019, p. 2) reported a correlational and causal relationship between Dark Triad traits and numerous harmful and injurious behaviors in society. The Dark Triad (Machiavellianism, psychopathy, and narcissism) is characterized by interrelated yet distinct traits marked by a lack of empathy (Brewer et al., 2018, p. 202). Al-Shafi'i (2021, p. 71) highlighted that these three traits sometimes overlap and sometimes diverge. For example, what unites them includes:
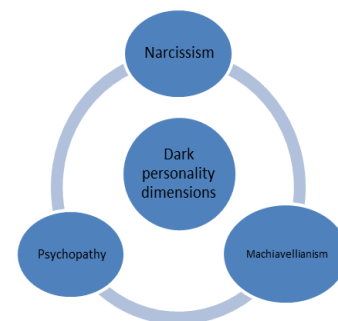
- Tendencies and motivations to climb over others.
- Double standards, where one set of criteria applies to the self and another to others.
- A lack of emotional influence, particularly in aggressive situations.

What distinguishes them includes:

- **Narcissists**: Specifically characterized by arrogance, grandiosity, and a false sense of entitlement.
- **Machiavellians**: Pragmatic, self-serving, and ruthless.

- **Psychopaths**: Extremely callous, sadistic, antisocial, and prone to delinquency and crime without regard for consequences.

What unites these traits is a lack of empathy for others and low levels of honesty and humility. Pathological manifestations of narcissism, Machiavellianism, and psychopathy share self-centeredness, emotional coldness, manipulation, and exploitation.

Figure (1) Illustrating the Relationship Between Dark Personality Traits

Cultural and social factors also play a role in shaping dark personality traits. Al-Shafi'i (2021, p. 31) noted that social and cultural factors influence the formation of the dark personality, as societal culture affects individuals' habits, attitudes, thinking patterns, values, standards, and expressions of motives and emotions. Key factors include family and school environments.

Additionally, Dark Triad traits are partially inherited; these darker aspects of personality—narcissism, Machiavellianism, and psychopathy—are characterized by selfishness, manipulative behaviors, impulsivity, and a lack of empathy and remorse (Koehn et al., 2019, p. 7). Thus, the Dark Triad represents an environmentally dependent strategy in which an individual's personality develops. There is some evidence that those with high Dark Triad traits (particularly Machiavellianism and psychopathy) grew up in harsh and unstable environments (Lyons, 2019, p. 25).

Previous Studies

Wertag and Hanzec (2013) explored the relationship between personality traits and life satisfaction, as well as gender differences in these traits. The study sample consisted of 642 students from various faculties at the University of Zagreb, with an average age of 21.73 years. Data were collected using the Life Satisfaction Scale and the Dark Personality Scale. The results showed that Machiavellianism and psychopathy were more

pronounced in males, as expected. Students with high life satisfaction scored lower on Machiavellianism and psychopathy than those with moderate or low life satisfaction. However, a statistically significant interaction between gender and narcissism indicated that females with high life satisfaction scored higher on narcissism, while males with higher narcissism scores had lower life satisfaction. These findings confirm gender differences in dark personality traits.

Jonason et al. (2017) aimed to examine Dark Triad traits from a historical perspective across six different countries, primarily focusing on Western samples and indirect assessments of life history strategies. The first study included 937 university students from three countries, measured using the Mini-K and Dark Triad scales. The second study included 1,032 university students from three additional countries, using the Consideration of Future Consequences Scale linked to Dark Triad traits. The results showed that psychopathy was associated with a fast life history strategy and a failure to consider future consequences. Machiavellianism was linked to faster life history strategies and future consequences, potentially exceeding psychopathy. Narcissism was associated with a slower life history pattern, as reflected in high Mini-K scores and a tendency to consider future consequences.

DeShong et al. (2017) investigated the relationship between Machiavellianism, narcissism, and psychopathy with aspects of investigative missions. The three Dark Triad (DT) constructs were closely related, with significant overlap between psychopathy and Machiavellianism in relation to investigative mission aspects. Additionally, the study examined DT constructs in relation to three types of workplace behaviors (counterproductive, citizenship, and unethical). The results indicated strong relationships between all three DT constructs and unproductive, unethical workplace behaviors.

Čopková (2020) sought to explore and compare subclinical levels of dark personality traits among helping professionals. The study sample consisted of 172 participants, including 72 teachers (42.9%) and 100 pedagogy students (57.1%). The study used the Short Dark Triad questionnaire, which includes subscales for Machiavellianism, narcissism, and psychopathy. The results revealed significant differences in Machiavellianism between current teachers and future teachers. Machiavellianism was identified as the most significant dark trait compared to narcissism and psychopathy in both samples. The findings emphasized that the teaching profession provides opportunities to fulfill needs for power, dominant status, and gaining advantages from others.

Trahair et al. (2020) investigated the structure of Dark Triad traits using a network approach. The study sample consisted of 1,012 participants aged 17 to 35, selected via social media and online questionnaires. The results showed that all traits formed a single network with two dimensions. Narcissism was less strongly associated with Machiavellianism and psychopathy, and the antagonistic aspect of narcissism mediated the relationships between most active aspects of narcissism, Machiavellianism, and psychopathy.

Mohamed (2021) aimed to explore the relationship between the Dark Triad in personality, self-deception, and the tendency toward suicide among university students. The study was conducted on a sample of 258 students from the Faculty of Education at Mansoura University. Participants were administered the Dark Triad Personality Scale, the Self-Deception Scale, and the Suicide Tendency Scale. The study found the following results: a statistically significant positive correlation between students' scores on the Dark Triad Personality Scale and their scores on self-deception and suicide tendency; the ability to predict suicide tendency based on scores on the Dark Triad Personality Scale and self-deception; and no statistically significant differences in scores on the Dark Triad Personality Scale, self-deception, and suicide tendency based on gender, academic specialization, or their interaction

Study by Mohamed (2022)

This study explored the relationship between emotional regulation difficulties, moral disengagement, and their ability to predict the Dark Triad of personality among university students. The sample consisted of 261 university students, including 47 males and 214 females. The researcher used the Dark Triad Personality Scale, the Difficulties in Emotion Regulation Scale, and the Moral Disengagement Scale. The results indicated that the Dark Triad of personality could be predicted through certain dimensions of emotional regulation difficulties and moral disengagement. Specifically, emotional regulation difficulties negatively predicted narcissistic personality (through lack of emotional awareness) and positively predicted psychopathic personality (through impulse control difficulties and lack of emotional awareness). However, none of the dimensions of emotional regulation difficulties predicted Machiavellianism. Moral disengagement, through its two dimensions (self-justification and distortion of actions), predicted narcissistic and Machiavellian personalities. Psychopathic

personality was positively predicted by moral disengagement directed toward distortion of actions and negatively predicted by moral disengagement directed toward self-justification.

Study by -Vera et al. (2023)

This study aimed to analyze the structure of two of the most widely used short composite measures—the Dirty Dozen Scale and the Light Triad Scale—in a sample of 2,335 adults from Poland, Brazil, Nigeria, Colombia, and Peru. Structural equation modeling was conducted to better understand the structure of both instruments across the five countries. Subsequently, a network analysis was performed to observe the dynamics of both triads in countries with different cultures. The results found that Machiavellianism is one of the most significant traits in Latin American and European countries, while humanity is prominent in Nigeria. Other results confirmed that light and dark are not opposing traits but represent distinct constructs simultaneously.

Study by Li et al. (2024)

This study aimed to conduct a network analysis of the relationship between Dark Triad traits and depressive symptoms among university students. The sample consisted of 1,287 participants, and measures of Dark Triad traits and depression were administered using the Patient Health Questionnaire. The results revealed significant positive associations: Machiavellianism with feelings of worthlessness, narcissism with depressed or sad mood, and both Machiavellianism and psychopathy with thoughts of death. Notably, psychopathy emerged as a central influence in the network, suggesting that interventions targeting this trait may be effective in alleviating depression.

Problem of the study

Given these findings, scientists have called for further exploration of the most socially aversive traits of human nature, often referred to as the Dark Triad (psychopathy, narcissism, and Machiavellianism). Although each of these traits has been extensively examined in psychological literature, they have rarely been studied together, raising important questions about their nature, overlap, and specificities. Consequently, the field of dark personality research has begun addressing these questions (Thomaes et al., 2017, p. 836). The study's problem is defined by attempting to answer the following questions:

1. What is the factor structure of the dark personality among university students?
2. Is there a statistically significant effect of gender, academic specialization, and their interaction on

the three-dimensional personality of university students?

Aims of the Study

The current study aims to:

- Understand the dark personality traits among university students.
- Identify the factor structure of the dark personality among university students.
- Examine gender differences in the factors constituting the dark personality among university students.

Significance of the Study

- The study's significance lies in its focus on a concept that has recently gained attention in foreign environments but remains underexplored in Arab contexts: the dark personality.
- It seeks to identify dark personality traits believed to influence personality in various ways.

The Dark Triad of Personality

Paulhus and Williams (2002, p. 556) defined the Dark Triad of personality as a set of socially undesirable traits that manifest consistently across social situations over time. These traits can be distinguished into three dimensions: Machiavellianism, narcissism, and psychopathy.

- **Machiavellianism**: Defined as an interpersonal orientation characterized by a cynical worldview, lack of morality, manipulation, and callousness for selfish ends. Operationally, it is measured by the score obtained on items related to the Machiavellianism factor.
- **Psychopathy**: Defined as a trait characterized by two main elements: affective deficits (callousness) and poor self-control (impulsivity). Psychopaths exhibit cruelty and manipulation to achieve short-term goals. Operationally, it is measured by the score obtained on items related to the psychopathy factor.
- **Narcissism**: Defined as a conflict between grandiosity and underlying insecurity. Narcissists engage in relentless self-enhancement, leading to self-destructive behaviors. Narcissistic behavior is marked by manipulation and callousness. Operationally, it is measured by the score obtained on items related to the narcissism factor (Jones & Paulhus, 2014, p. 29).

Study Limitations

Methodology

The researcher adopted a descriptive approach in the current study, adhering to the conditions required for

descriptive research to test the validity of the hypotheses. The study included 500 fourth-year students from the Faculty of Education at Tanta University, selected randomly from both scientific and literary specializations. The specializations were as follows:

- **Literary Specializations**: History, Geography, Philosophy, Psychology, French, English, and Arabic.
- **Scientific Specializations**: Agriculture, Chemistry, Physics, Biology, and Commerce.

The study was conducted during the second semester of the academic year 2022/2023. The researcher used the Life Orientation Scale developed by Jonason and Paulhus (2014), translated into Arabic by Al-Shafi'i (2020), due to its applicability to the Egyptian environment, its suitability for the university student age group, and its ability to yield results across different cultures.

The translator converted the English text into Arabic, ensuring linguistic accuracy according to Arabic grammar rules. A session was then held with two English language specialists, who were presented with the content related to the three-dimensional dark personality. Each specialist was asked to independently translate the Arabic text back into English. The original English text, the back-translated text, and the Arabic text were then compared and discussed to ensure alignment between the Arabic text and the back-translated version in light of the original text.

Psychometric Properties of the Scale

Internal Consistency

The internal consistency of the scale was verified by calculating the correlation coefficients between each item and the total score. The correlation coefficients ranged between 0.63 and 0.89, which are significant at a level greater than 0.01 for $n=100$.

Validity

Validity was confirmed through exploratory factor analysis using the principal component method (Hotelling) and oblique rotation. The analysis revealed three independent factors on which all items loaded, based on Guilford's criterion for significant loadings (± 0.3) and Kaiser's criterion for eigenvalues (accepting factors with eigenvalues greater than 1).

Reliability

The reliability of the scale was verified by calculating the correlation coefficients between the scores of the reliability sample ($n=100$) across two administrations with a four-week interval. The correlation coefficient was $r=0.88$, which is significant at $p=0.000$ for $n=100$. Cronbach's alpha

coefficient was $\alpha=0.92$, indicating strong reliability.

Psychometric Properties of the Life Orientation Scale

Internal Consistency

The correlation coefficients were significant at $p<0.01$, confirming the validity of the Life Orientation Scale. The items and dimensions of the scale were valid for measuring what they were designed to assess.

Reliability

The reliability coefficient for the Life Orientation Scale was high, with Cronbach's alpha for the total score being $\alpha=0.873$, indicating strong reliability for the scale's items.

Hypotheses of the Study

1. There is a correlation between the factors of the dark personality (narcissism, Machiavellianism, and psychopathy) among university students.
2. There is no statistically significant effect of gender, academic specialization, or their interaction on the three-dimensional personality of university students.

Results of the study

Testing the First Hypothesis

The first hypothesis states that there is a general factor linking the three dimensions of the dark personality among university students. To test this hypothesis, the researcher calculated Spearman's correlation coefficients. Table 1 presents the results.

Table (1) Pearson Correlation Coefficients Between University Students' Scores on the Life Orientation Scale (Three-Dimensional Dark Personality) ($n=500$)

Trait	Machiavellianism	Psychopathy	Narcissism
Machiavellianism	1	-0.009	0.113*
Psychopathy		1	0.167**
Narcissism			1

*Significant at $p<0.05$, **Significant at $p<0.01$

Table 1 reveals the following:

- There is no significant correlation between Machiavellianism and psychopathy among university students.
- There is a significant positive correlation between narcissism and both Machiavellianism and psychopathy among university students.

This can be explained by the fact that dark personality traits share a common core. Individuals with pronounced dark traits are often perceived as boastful, deceitful, manipulative, sadistic, predatory, bullying, or overtly aggressive (Thomaes et al., 2017, p. 837). These traits share several characteristics, as all three entail a socially harmful personality with behavioral tendencies toward self-promotion, emotional coldness, duplicity, and aggression (Paulhus & Williams, 2002, p. 557).

However, the presence of certain traits does not necessarily imply a correlation. Each individual exhibits some degree of these three traits: we are narcissistic, Machiavellian, and psychopathic, but to varying degrees (Ibrahim Al-Shafi'i Ibrahim, 2021, p. 65). This aligns with the findings of Rauthmann (2012), who noted that narcissism, Machiavellianism, and psychopathy manifest differently. Similarly, O'Boyle et al. (2012) found that the three traits are positively correlated, and Čopková (2020) identified Machiavellianism as the most significant dark trait compared to narcissism and psychopathy.

Given the nature of Dark Triad traits, individuals exhibiting high levels of any single trait can make life difficult for others, leading to unpleasant interpersonal interactions. Dark Triad traits are typically more aggressive (Hermann et al., 2018, pp. 198-199). Trahair et al. (2020) revealed that the antagonistic aspect of narcissism mediates the relationships between most active aspects of narcissism, Machiavellianism, and psychopathy. Ramos-Vera et al. (2023) found that Machiavellianism is one of the most significant traits in Latin American and European countries, while Li et al. (2024) identified significant positive associations between Machiavellianism and feelings of worthlessness, narcissism and depressed mood, and both Machiavellianism and psychopathy with thoughts of death.

Table(2)Factor Loadings of Items on the Life Orientation Scale (Three-Dimensional Dark Personality)

Factor (Narcissism Trait)	Loadings
Narcissism	0.782
Psychopathy	0.641
Machiavellianism	0.418
Eigenvalue	1.20
Variance Explained	39.91%
Total Variance	39.91%

From Table 2, it is evident that narcissism has the highest loading (0.782), indicating that the narcissism factor links

the three dimensions of the dark personality among university students. The eigenvalue for this factor is 1.20, which, according to Kaiser's criterion, is acceptable for interpretation as it exceeds 1. This factor explains 39.91% of the total variance.

The correlation between Machiavellianism, psychopathy, and narcissism can be attributed to the fact that narcissism is a pattern that some individuals cling to from early childhood. This factor strengthens when reinforced by parental approval, becoming a prominent part of the personality in later stages of adulthood, manifesting in noticeably selfish interactions (Carl Albert, 2014, p. 79).

Narcissism manifests in two forms: grandiose and vulnerable. Grandiose narcissism involves traits such as aggression and dominance in service of self-enhancement. Due to their inflated self-concept, grandiose narcissists are often self-confident and self-centered, seeking to maintain this self-concept by devaluing others. Vulnerable narcissists also seek to maintain an inflated sense of self but focus on hiding feelings of inadequacy and insecurity. They tend to be introverted, shy, overly sensitive, and act defensively or hostilely to protect their fragile ego (Van Groningen et al., 2021).

The researcher concludes that the association between the Dark Triad traits is not a recent scientific development but has ancient roots. Examining personality and its traits reveals that the three dark personality traits—narcissism, Machiavellianism, and psychopathy—are closely interconnected, as all are fundamentally antisocial traits.

Testing the Second Hypothesis

The second hypothesis states that "there is no statistically significant effect of gender, academic specialization, or their interaction on the three-dimensional personality of university students." This hypothesis branches into the following sub-hypotheses:

1. There are no statistically significant differences in the mean scores of the three-dimensional personality among university students based on gender.

2. There are no statistically significant differences in the mean scores of the three-dimensional personality among university students based on academic specialization.

3. There is no statistically significant interaction effect between gender and academic specialization on the scores of the three-dimensional personality among university students.

To test the validity of the third hypothesis, a two-way ANOVA (Gender × Specialization) was conducted, with

the three-dimensional personality scale as the dependent variable. Table 3 presents the means and standard deviations for the three-dimensional personality scale.

Table 3 Means and Standard Deviations of Gender and Specialization Groups on the Life Orientation Scale (Three-Dimensional Dark Personality) (n=500n=500)

Dimension	Gender	Specialization	N	Mean	SD
Machiavellianism	Male	Literary	64	28.68	5.49
		Scientific	53	30.33	6.28
	Female	Literary	60	28.41	7.74
		Scientific	323	30.93	11.74
Total		Literary	124	28.55	6.65
		Scientific	376	30.86	11.13
Psychopathy	Male	Literary	64	29.65	5.52
		Scientific	53	29.71	7.01
	Female	Literary	60	30.90	6.29
		Scientific	323	30.08	7.34
Total		Literary	124	30.25	5.91
		Scientific	376	30.03	7.29
Narcissism	Male	Literary	64	27.14	4.91
		Scientific	53	29.03	6.36
	Female	Literary	60	29.46	6.80
		Scientific	323	32.54	5.87
Total		Literary	124	28.26	5.99
		Scientific	376	32.05	6.06

Table 3 reveals differences in the mean scores of the specialization groups (scientific vs. literary) within each gender group on the three-dimensional personality scale. To test the validity of the three null hypotheses, a two-way ANOVA (Gender × Specialization) was conducted, with the three-dimensional personality scale as the dependent variable. Table 4 presents the results of this analysis.

Table(4)Results of Two-Way ANOVA for Sample Students' Scores on the Life Orientation Scale (Three-Dimensional Dark Personality)(n=500n=500)

Dimension	Source of Variance	Sum of Squares	Degrees of Freedom	Mean Square	FF-Value	Sig
Machiavellianism	Gender	1.97	1	1.97	0.02	Not Significant
	Specialization	321.04	1	321.04	0.5	Significant
	Interaction (Gender × Specialization)	13.92	1	13.92	0.13	Not Significant
	Error	51944.98	496	104.72		
	Total	511016.00	500			
Psychopathy	Gender	47.79	1	47.79	0.97	Not Significant
	Specialization	10.52	1	10.52	0.22	Not Significant
	Interaction (Gender × Specialization)	14.18	1	14.18	0.29	Not Significant
	Error	24215.33	496	48.82		
	Total	476918.00	500			
Narcissism	Gender	627.14	1	627.14	17.78	Significant
	Specialization	456.24	1	456.24	12.93	Significant
	Interaction (Gender × Specialization)	25.71	1	25.71	0.72	Not Significant
	Error	17490.69	496	35.26		
	Total	503532.00	500			
Total Score		227.05	21.74	222.08	12.488	0.927 Not Significant

The results in Table 4 indicate the following:

- There is no statistically significant effect of gender (male/female) on the dependent variable

(three-dimensional personality) for Machiavellianism and psychopathy.

- There is a statistically significant effect of gender (male/female) on the dependent variable (three-dimensional personality) for narcissism, favoring females.
- There is no statistically significant effect of academic specialization (literary/scientific) on the dependent variable (three-dimensional personality) for psychopathy.
- There is a statistically significant effect of academic specialization (literary/scientific) on the dependent variable (three-dimensional personality) for Machiavellianism and narcissism, favoring the scientific specialization.
- The results did not reveal a significant interaction effect between the independent variables (gender and specialization) on the three-dimensional personality of university students (Machiavellianism, psychopathy, and narcissism).

Based on the results of Table 4, the first null sub-hypothesis regarding gender differences in the three-dimensional personality scale is accepted, except for narcissism. The second null hypothesis regarding specialization differences in the three-dimensional personality scale is accepted, except for narcissism. The third null hypothesis regarding the interaction effect between gender and specialization is also accepted.

The Dark Triad and Shared Characteristics

The grouping of the three traits under the umbrella of the Dark Triad is attributed to their shared characteristics. These traits collectively describe a socially harmful personality with behavioral tendencies toward self-enhancement, emotional coldness, duplicity, and aggression (Paulhus & Williams, 2002, p. 557). In this context, Rogoza and Cieciuch (2020) noted that Machiavellianism and psychopathy are closely related and can even be treated as two facets of a single construct.

Interpretation of the Lack of Gender and Specialization Effects

The researcher explains the absence of significant effects of gender and academic specialization in the current study through several factors:

1. **Nature of Dark Triad Traits**: The Dark Triad traits are not diagnosable mental health conditions in themselves. These similar yet distinct dark personality traits manifest in different ways and are interrelated.

2. **Independence of Traits**: An individual may score high on one trait while scoring low on the other two.

3. **Age and Awareness**: The age group of the study participants (university students) may lack sufficient awareness of dark personality traits. University students often exhibit narcissism, and no statistically significant differences were found in dark personality traits based on gender or specialization.

4. **Socialization Theories**: The lack of significant effects on the dark personality scale regarding gender and specialization can be attributed to the socialization of gender roles from childhood through later developmental stages (Rydell, Berlin, & Bohlin, 2003).

5. **Role of Heredity, Environment, and Education**: Heredity, environment, social life, and education play a significant role in shaping an individual's personality and the degree to which they develop psychological and behavioral disorders. As John and Robins (2021, p. 96) noted, traits are the end product of a series of motivational, cognitive, and social processes shaped over time as individuals interact with their biological predispositions and environment.

6. **Developmental Stage**: During this age stage, individuals seek various satisfactions, such as fulfilling needs and values. Freud outlined stages of personality development toward maturity, detailing the characteristics, motivations, dynamics, conflicts, and setbacks of each stage and their impact on the final outcome of personality (Sulaiman Abdulwahid Ibrahim, 2014, p. 18).

Spierings (2014) found that narcissism was associated with direct aggression in males, while only Machiavellianism was significantly associated with indirect aggression in females. Wertag and Hanze (2013) indicated a statistically significant interaction between gender and narcissism, with higher narcissism scores in females. Jouni (2016) showed that law students exhibited narcissism, with no statistically significant differences in dark personality traits based on gender. Jonason and Davis (2018) found that Dark Triad traits were associated with lower femininity and higher masculinity. Huda Ibrahim Abdelhamid (2020) revealed gender differences in relational aggression and the Dark Triad traits (Machiavellianism and psychopathy), with males scoring higher. Pavlović and Rajter (2020) demonstrated that

Machiavellianism alone had a significant and consistent impact on all dimensions of academic dishonesty.

Researcher's Perspective

The researcher posits that narcissism is higher among females in scientific specializations, as females strive for feelings of entitlement, grandiosity, and attention. Narcissism manifests differently in males and females, and these differences may align with gender role expectations associated with femininity and masculinity in Arab environments. Biological differences between genders are believed to create a division of labor through gender socialization practices, leading to the emergence of "gender-appropriate" social roles closely linked to narcissistic personality traits. This suggests that females seek leadership and dominance within the workplace.

Ethical Approval Declaration

"All procedures involving human participants in this study were conducted in accordance with the ethical standards set by applicable research guidelines and the principles of the 1964 Declaration of Helsinki and its subsequent amendments. Ethical approval was secured before the commencement of data collection."

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Data availability:-

The datasets generated and analysed during the current study will be available from the author upon reasonable request.

Consent for publication:-

I hereby provide consent for the publication of the manuscript detailed above.

Competing interests:-

The authors declare no competing interests.

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