

Research Article

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Exploring the Relationship between Cyberbullying and the Dark Triad among University Students

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Abstract

Background/purpose. The Dark Triad traits-narcissism, Machiavellianism, and psychopathy- are linked to unethical and aggressive behaviors, which may contribute to cyberbullying. This study sought to explore the relationship between cyberbullying and the dark triad among university students. It also aimed to identify the differences in the degrees of both cyberbullying and dark triad traits according to demographic variables: gender, faculty, and academic level.

Materials/methods. The descriptive correlational approach was employed due to its suitability for the study's objectives. The study sample consisted of 455 male and female students from Yarmouk University, selected through convenience sampling using an online model. The Cyberbullying and the Dark Triad Scale were used to verify the study objectives.

Results. The results revealed the existence of a statistically significant positive relationship between cyberbullying and the dark triad among university students. The results also revealed the existence of statistically significant differences in the degree of cyberbullying attributed to the gender variable, as the mean among males was higher compared to that of females. Furthermore, there is no statistically significant difference in the degree of cyberbullying attributed to the faculty and the academic level variables. There are no statistically significant differences attributed to the effect of gender in all dimensions, except for Machiavellianism, where the differences favored males. Additionally, there were no statistically significant differences attributed to the effect of faculty in all dimensions. The results also found no statistically significant differences attributed to the effect of academic level, except for psychopathy, where the differences favored the bachelor's degree.

Conclusion. The study provides valuable insights into the relationship between the Dark Triad traits and cyberbullying among university students.

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1. Introduction

The world is witnessing a radical transformation in methods of communication and social interaction, particularly among youth and university students, who have become among the most engaged and active users of modern internet technologies. This digital advancement has provided them with significant opportunities for learning and communication. Yet, it has also brought with it numerous challenges and risks, most notably, the engagement in harmful and negative behaviors such as cyberbullying, which has become a widespread phenomenon affecting individuals' psychological and social well-being (Zhu et al., 2021). Cyberbullying is considered a modern form of traditional bullying, characterized by the ease of perpetration and the broad reach of its impact through digital platforms (Alrajeh *et al.*, 2021).

Currently, the cyberbullying phenomenon is a common problem, and it has dimensions that could be correlated to negative personality traits, such as deceptive Machiavellianism, controlling narcissism, and impulsive psychopathy. Most previous studies have shown that bullying is aggressive behavior that causes harm to both the bullying person and the victim, and this is evident in the adverse psychological effects suffered by both parties (Elamrousy & Alshehri, 2024).

Machiavellianism refers to psychological and behavioral characteristics associated with manipulation, self-interest, and deception. Narcissism is characterized by a tendency to feel entitled, self-centered, exhibitionistic, and grandiose (Miller *et al.*, 2017). Psychopathy reflects antisocialism, callousness, and impulsiveness (Lilienfeld *et al.*, 2019). A recent longitudinal study revealed that psychopathy and Machiavellianism are strongly correlated to bullying more than narcissism and bullying across all time points (Davis & Vaillancourt, 2022). Thus, Dark Triad traits are positively correlated to bullying and cyberbullying among adolescents and youth (Fan *et al.*, 2019).

While many studies have explored the general psychological predictors of cyberbullying, relatively few have systematically examined the role of Dark Triad personality traits, particularly among university students in Arab contexts, despite their high engagement in digital environments. Existing research has primarily focused on adolescents or Western populations, leaving a notable gap in understanding how culturally diverse university students exhibit these traits about cyberbullying behavior (Panatik *et al.*, 2022; Li *et al.*, 2023). Moreover, limited studies have investigated how demographic variables such as gender, faculty type, and academic level might moderate this relationship. Therefore, this study seeks to fill this gap by analyzing the relationship between Dark Triad traits and cyberbullying in a university context, while also examining demographic influences. By addressing this overlooked area, the study contributes to a deeper understanding of personality-driven digital aggression in higher education. It offers evidence-based insights for developing tailored interventions and prevention programs within university settings.

2. Theoretical Background

2.1. Cyberbullying

The cyberbullying phenomenon has attracted scholars' attention because it represents a new form of bullying in the digital era, where individuals can now use modern media to intimidate others (Evangelio *et al.*, 2022). Bullying has also increased with the advancement of information and communication technology, which is logical, as indirect intimidation is considered a safer and more convenient method compared to traditional bullying (Mahmoud *et al.*, 2023). Victims of bullying can easily be intimidated anonymously, as perpetrators can use digital media to publicize their actions to the public quickly. Cyberbullying is considered more dangerous than traditional bullying because it can lead the victims to respond actively to the incidents, and this type of bullying often occurs in educational settings, especially among students (Neelakandan *et al.*, 2022).

Cyberbullying among university students leads to serious psychological and social effects, including poor social performance, increased psychological stress, negative emotions, and disorders such as depression and anxiety; it may even lead to suicide or addiction. It also negatively affects self-esteem and academic achievement, potentially causing some students to avoid or abandon their studies (Lei *et al.*, 2020).

Cyberbullying as a concept is related to traditional bullying, and both of them refer to oppression (Ali & Shahbuddin, 2022). Bullying is an aggressive behavior that is deliberately and repeatedly directed toward individuals who have less power than the attacker, and bullying could take various forms, including physical, verbal, and social bullying (Mahmoud *et al.*, 2023). The physical form of bullying includes hitting, pushing, spitting, and other physical actions, and the verbal form includes mockery, insults, and threats. In contrast, the social form consists of disseminating rumors (slander), exclusion from peer groups, and other forms. When dealing with perpetrators, these three forms of bullying often occur face-to-face (Alrajeh *et al.*, 2021).

Cyberbullying refers to any hostile or aggressive behavior conducted by individuals or groups through electronic or digital media with the intent to repeatedly harm or cause discomfort to others (Paul & Saha, 2022). According to Tetteh *et al.* (2023), cyberbullying is the intentional and repeated harm that occurs using computers, mobile phones, and other electronic devices. In the same vein, Hajlo *et al.* (2015) described cyberbullying as a series of intentional and repeated sadistic behaviors conducted through electronic devices, such as computers and mobile phones. Similarly, Ndiege *et al.* (2020) stated that the most prevalent form of cyberbullying was due to grudges, whereby 49.7% of participants reported sending rude messages to someone electronically. The results also revealed that males were more likely to engage in cyberbullying compared to females.

Cyberbullying, like traditional bullying, relies on an unequal relationship between the bully and the victim (Yildiz Durak & Saritepeci, 2020). The most prominent feature of cyberbullying is the anonymity provided by the internet, which increases the victims' feelings of weakness and isolation (Paul & Saha, 2022). Victims of cyberbullying often tend to use the same method for revenge, as the anonymity feature provided by the internet was a significant factor in the continuation of this behavior (Saengcharoensap & Rujiprak, 2021).

Social dominance theory, along with the power comparison proposed by Beran and Li (2007), offers explanations for the phenomenon of cyberbullying. The theory examines how individuals and groups relate to one another through social hierarchies based on rank and control. Within this framework, peer groups are seen as hierarchical systems. In such systems, some students may engage in aggressive behavior as a means to dominate their peers, seeking status, power, and access to social resources.

The theory suggests that roles and power within a group are not evenly distributed. Some individuals use aggression and dominance to advance up the social ladder and achieve higher status. Victims, when subjected to this form of intimidation, often react with fear, attempts to escape, or even cry. These reactions, in turn, reinforce the bully's sense of control and superiority. As a result, the power imbalance deepens, allowing the bullying dynamic to persist over extended periods.

The repetition and intentionality of negative actions characterize cyberbullying. However, its repetitiveness has a unique character, as digital messages, videos, images, or memes can be easily distributed and stored for later viewing, even offline. Furthermore, this content often remains available online and is difficult to delete, resulting in lasting effects once it is uploaded (Kasturiratna *et al.*, 2024).

A study conducted in Spain by Aparisi *et al.* (2023) revealed that the most common bullying forms among university students are physical and verbal bullying. Al Qudah *et al.* (2020) conducted a study

in Saudi Arabia to explore the correlation between cyberbullying, psychological security, loneliness, and age among university students. The results revealed that 17.6% of participants were cyberbullies, the existence of statistically significant differences in cyberbullying attributed to the gender variable (in favor of males), and that psychological loneliness and age could be predictors of cyberbullying levels among university students.

2.2. The Dark Triad

In recent years, there has been a growing interest in understanding the darker aspects of human nature. Much of this attention has focused on the traits associated with the Dark Triad—a psychological concept referring to three maladaptive but non-pathological personality traits: Machiavellianism, subclinical narcissism, and subclinical psychopathy. These traits are often closely related and are labeled “dark” due to their harmful nature and tendency to promote manipulative and socially cruel behavior. Despite their correlations, the three traits remain conceptually distinct (Duradoni *et al.*, 2023).

It is worth noting that the concept of the dark triad was first introduced in 2002 by Paulhus and Williams (2002). This concept refers to three undesirable behavioral patterns that cause problems in interpersonal relationships: Machiavellianism, Narcissism, and Psychopathy (Yin *et al.*, 2023). Some scholars consider the dark triad a unique and unified trait, and others view it as a combination of multiple traits (Baheer *et al.*, 2023). These traits are viewed as short-term social strategies that aim to achieve self-interest and are positively correlated with manipulative behaviors (Yin *et al.*, 2023).

Hervey M. Cleckley founded the psychopathy concept officially in 1964 to describe a group of his patients who lack morality (Oskarsson *et al.*, 2021). Within the *Dark Triad* frame, psychopathy is the most prominent trait, as individuals are distinguished by not feeling remorse for committing immoral and harmful behaviors. Thus, they lack empathy and feel guilty (Hollebeek *et al.*, 2022). These individuals are characterized by their tendency towards antisocial and criminal behavior, and they possess outstanding traits that include a lack of realistic goals, a parasitic lifestyle, and irresponsibility.

These individuals are also unable to learn from their experiences or create constructive relationships. Additionally, they are not deterred by punishments and continue their antisocial behavior without feeling guilty or remorse (Bergquist, 2020). A psychopath is characterized by selfishness and self-centeredness, has a tendency towards deception, and usually has medium intelligence. Psychopathic behavior is impulsive and characterized by lying, fraud, theft, and forgery, and their relationships with others are often based on exploitation. This personality type lacks insight and tends to have an uncontrolled sexual life without being committed to one relationship (Ribeiro *et al.*, 2021).

Elamrousy and Alshehri (2024) revealed a relationship between psychopathic, Machiavellian, and narcissistic traits among a group of female students, in addition to high levels of social and academic cyberbullying. The results also revealed that the psychopathic trait was an indicator of cyberbullying among the study sample. Li *et al.* (2023) conducted a study in China; the results revealed a positive correlation between cyberbullying, dark triad personality, and moral alienation among university students, whereby it was noticed that cyberbullying is correlated to Machiavellianism.

Individuals with narcissistic personality disorder exhibit excessive self-focus and an inflated sense of self-importance. They seek admiration from others, often using it manipulatively for personal gain. While they may sometimes display empathy, it is usually superficial or driven by self-interest. They also tend to misinterpret others' empathy, leading to a lack of genuine affection and sincere compassion (Andrews *et al.*, 2022).

Narcissists maintain a grandiose self-image through self-enhancement and competitiveness. Self-enhancement involves seeking uniqueness, indulging in fantasies, and displaying charm, while

competitiveness includes striving for superiority, devaluing others, and showing aggression. Despite their differences, both strategies are positively linked (di Giacomo *et al.*, 2023). Machiavellianism is named after *Niccolò Machiavelli*, the famous diplomat from the Republic of Florence and author of "*The Prince*," a Book that discusses effective governance methods at all costs. Besides, Machiavellianism is characterized by pragmatism, tactics, strategy, manipulative behavior, and a lack of morality (Kückelhaus *et al.*, 2021). This trait is correlated to social manipulation and specific patterns of emotional and social cognition (Monaghan *et al.*, 2020).

Social media platforms have become essential tools for interaction, information sharing, and community building among university students online (Akrami *et al.*, 2024). The internet has become an indispensable part of our daily lives, providing us with entertainment and happiness; however, it might sometimes be misused (Choudhary, 2020).

The internet also allows some individuals to engage in harmful activities, such as using pornography, drugs, violence, and cyberbullying (Evangelio *et al.*, 2022). Cyberbullying and online harmfulness are considered prevalent behaviors among university students, whereby cyberbullying is considered a modern form of bullying that can be practiced online (Alrajeh *et al.*, 2021). Currently, cyberbullying is a common problem that is associated with harmful personality traits, such as deceptive Machiavellianism, controlling narcissism, and psychopathy (Elamrousy & Alshehri, 2024).

The study of Panatik *et al.* (2022) revealed three dark traits, namely, Machiavellianism, psychopathy, and narcissism, and these traits are significantly correlated with cyberbullying behaviors. Thus, this study aims to investigate the relationship between the dark triad traits and cyberbullying among university students by answering the following two questions:

- Is there a statistically significant correlation at ($\alpha = 0.05$) between cyberbullying and the dark triad among university students?
- Are there statistically significant differences at ($\alpha = 0.05$) in the scores of cyberbullying and the dark triad attributed to the gender, faculty, and academic level?

3. Methodology

3.1. Study Design

This study aimed to explore the relationship between cyberbullying and the Dark Triad traits-narcissism, Machiavellianism, and psychopathy-among university students, using a quantitative descriptive design. This approach allowed for an accurate assessment of the associations between these psychological traits and cyberbullying behaviors while accounting for demographic factors such as gender, academic major, and year of study.

The methodology employed a descriptive-correlational strategy, enabling the analysis of both the strength and direction of relationships among variables. This study employed a quantitative descriptive-correlational design, deemed most suitable for exploring the relationships between latent psychological traits and observable behavioral patterns without manipulating any variables. The approach was selected to allow the researchers to examine both the direction and strength of associations between Dark Triad personality traits (Machiavellianism, narcissism, psychopathy) and cyberbullying behaviors in a naturalistic academic environment. This methodology supports data-driven insights that reflect the real-life experiences of university students within their social and digital contexts. Data were collected using a standardized instrument that integrated two validated scales: a cyberbullying scale to assess online aggressive behavior, and the Dark Triad scale to measure the three distinct personality traits.

To ensure the rigor and validity of the research process, the instruments were subjected to expert review by specialists in psychology and educational measurement. This panel assessed the

clarity, cultural relevance, and scientific adequacy of the items. Furthermore, a pilot study was conducted to evaluate the psychometric properties of the tools, particularly internal consistency reliability, thereby strengthening the credibility and generalizability of the study findings.

3.2. Participants

The study population consisted of all students at Yarmouk University, registered in the first semester of the 2024/2025 academic year, totaling 42,537 male and female students, as reported by the University's Admission and Registration Department.

From this population, a sample of 455 students (both male and female) was selected using a convenience sampling method. The researchers distributed an electronic questionnaire via official university communication channels, including student email lists and academic WhatsApp groups managed by faculty members. Participation was voluntary, and the study sample consisted of students who had access to the form and were willing to respond. This method was chosen for its practicality and efficiency, particularly given the large population size and the wide geographical distribution of students across various faculties.

The participants were categorized based on demographic variables including gender, faculty, and academic level. This categorization aimed to ensure representativeness and capture the broad diversity present within the university community. The demographic distribution of the sample closely mirrored that of the overall student body, which enhances the generalizability of the findings.

The nature of the research objectives guided the decision to study university students. This population is highly engaged in digital environments and is commonly exposed to cyberbullying. Additionally, university students are at a developmental stage where personality traits such as those within the Dark Triad are more clearly expressed, making them suitable subjects for the current investigation.

Data collection was conducted electronically via Google Forms, ensuring ease of access and a broad geographic reach across the university's student population. The use of online surveys supported efficient data gathering and encouraged wide participation while maintaining methodological rigor. The participants' demographic characteristics are summarized in Table 1 below.

Table 1. Distribution of the Participants According to Study Variables

	Categories	Frequency	Percentage
Gender	Male	207	45.4
	Female	248	54.5
Faculty	Humanitarian	294	64.6
	Scientific	161	35.3
Academic level	Diploma	74	16.2
	Bachelors	283	62.2
	Higher Education	98	21.5
	Total	455	

3.3. Ethical Consideration

Participation in this study was entirely voluntary, and participants were provided with all necessary information to make an informed decision regarding their involvement. Prior to data collection, participants were required to:

- Submit an informed consent form that indicates their willingness to participate, confirming that they fully understand the study's objectives, procedures, and any associated risks. This consent also emphasized that participation was voluntary and participants had the right to withdraw at any stage without any penalties or consequences.

- Confirm their active use of social media platforms and applications to ensure the relevance of the data to the study's focus on cyberbullying behaviors in digital environments. Participants were asked to verify that they regularly engage with online platforms, ensuring that the sample accurately represented individuals who might be exposed to or involved in cyberbullying.

- Ensure confidentiality and anonymity by safeguarding all personal and survey data. Information collected during the study was kept strictly confidential and used solely for the purposes of this research. Participants were assured that no identifying information would be included in any reports or publications resulting from the study, further protecting their privacy.

- A detailed explanation of the potential risks of participating, including any psychological discomfort, was provided. Participants were reminded that they could withdraw from the study at any point, without needing to provide any reason, and without facing any negative consequences. The study adhered to the ethical guidelines of the research ethics committee at the university where the study was conducted, ensuring compliance with all relevant ethical standards.

3.4. Study Tools

3.4.1. First: Cyberbullying Scale

The scale used was developed by Calvete et al. (2010) to assess electronic bullying among university students, and it consists of 16 items in its original form.

Validity and Reliability Indicators for the Scale Used in the Current Study:

Validity

The Face Validity: The scale was presented to a panel of arbitrators specialized in psychology, psychological counseling, and measurement and evaluation. Based on the panel comments, formulations of several paragraphs were modified, and two paragraphs were deleted; thus, the scale in its final form consisted of 14 items.

Construct Validity: To extract the scale's construct validity, Pearson correlation coefficients were used to extract the correlation between the items with the scale's total score among a pilot sample from outside the study sample, consisting of (n=30) university students. The correlation between the items and the scale total score ranged from 0.83 to 0.93, as shown in the following table.

Table 2. Correlation Coefficients Between the Scale Items and Total Score

Item No.	Correlation Coefficients	Item No.	Correlation Coefficients	Item No.	Correlation Coefficients
1	0.85**	6	0.88**	11	0.89**
2	0.85**	7	0.85**	12	0.85**
3	0.87**	8	0.83**	13	0.86**
4	0.93**	9	0.90**	14	0.84**
5	0.89**	10	0.84**		

*Statistical significance at ($\alpha=0.05$)

** Statistical significance at ($\alpha=0.01$)

It is worth noting that all correlation coefficients were acceptable and statistically significant; therefore, none of these items were deleted.

Bullying Scale Reliability: To verify the scale's reliability, the test-retest method was employed by administering the scale and then re-administering it two weeks later to a sample (n=30) from outside the study sample. Then, the Pearson correlation coefficient was computed between their estimates in the two applications, and it reached 0.88. The reliability was also computed using the internal consistency method, as per Cronbach's alpha equation, yielding a value of 0.82. These values were considered appropriate for the purposes of this study.

3.4.2. Second: The Dark Triad Scale

The scale used was developed by Jones and Paulhus (2014), which consists of 41 items in their original form distributed over three dimensions (Narcissism (13), Machiavellianism (13), and Psychopathy (15)).

Validity and reliability indicators for the scale in its original form: Correlation coefficients ranged from 0.72 to 0.77, and Cronbach's alpha coefficient ranged from 0.89.

Validity and Reliability Indicators for the Scale Used in the Current Study:

Validity

The Face Validity: The scale was presented to a panel of arbitrators specializing in psychology, psychological counseling, and measurement and evaluation. Based on the panel comments, formulations of several paragraphs were modified, and two paragraphs were deleted; thus, the scale in its final form consisted of (39) items distributed over three dimensions: Narcissism (13), Machiavellianism (13), and Psychopathy (13).

Construct Validity: The correlation coefficients were extracted between the items with the total score of their respective dimension among a sample of 30 university students to extract the scale's construct validity. The correlation coefficients between the items and the total score of their respective dimensions ranged between 0.36 and 0.81, as shown in the following table.

Table 3. Correlation Coefficients Between the Item and Total Score of the Respective Dimension

Machiavellianism		Narcissism		Psychopathy	
Item No.	Correlation Coefficients	Item No.	Correlation Coefficients	Item No.	Correlation Coefficients
1	0.38*	14	0.49**	27	0.72**
2	0.55**	15	0.36*	28	0.52**
3	0.43*	16	0.42*	29	0.67**
4	0.60**	17	0.63**	30	0.79**
5	0.54**	18	0.73**	31	0.69**
6	0.36*	19	0.64**	32	0.46*
7	0.72**	20	0.41*	33	0.57**
8	0.76**	21	0.55**	34	0.55**
9	0.81**	22	0.63**	35	0.57**
10	0.55**	23	0.44*	36	0.59**

11	0.47**	24	0.46*	37	0.65**
12	0.67**	25	0.60**	38	0.65**
13	0.42*	26	0.61**	39	0.63**

*Statistical significance at ($\alpha=0.05$)

** Statistical significance at ($\alpha=0.01$)

It is worth noting that all correlation coefficients were acceptable and statistically significant; therefore, none of these items were deleted.

The Dark Triad Scale Reliability: To verify the scale's reliability, the test-retest method was employed by administering the scale and then re-administering it two weeks later to a sample ($n=30$) from outside the study sample. Then, the Pearson correlation coefficient was computed between their estimates in the two applications.

The reliability was also computed using the internal consistency method, as described by Cronbach's alpha equation. Table 4 presents the internal consistency values, calculated using Cronbach's alpha equation, and the re-test reliability of the dimensions. These values were considered appropriate for the purposes of this study.

Table 4. Values of the Internal Consistency and Test-Retest Reliability Coefficients for the Scale Dimensions

Scale Dimension	Test-retest reliability	Internal consistency
Machiavellianism	0.83	0.79
Narcissism	0.87	0.80
Psychopathy	0.90	0.84

3.5. Data Collection and Analysis

Data Collection

Data collection for this study was conducted using electronic survey tools to ensure broad accessibility and participation. The primary data collection instruments were two established scales: The Cyberbullying Scale and the Dark Triad Scale, which were developed and validated by experts in the field.

Cyberbullying Scale: This scale, developed by Calvete *et al.* (2010), was used to measure the participants' experiences with electronic bullying. The scale assesses various aspects of cyberbullying, including direct and indirect forms such as harassment, exclusion, and spreading rumors online.

Dark Triad Scale: The Dark Triad Scale, developed by Jones and Paulhus (2014), consists of 41 items divided into three dimensions: Narcissism, Machiavellianism, and Psychopathy. After expert review, two items were deleted, and the scale was finalized with 39 items, distributed evenly across the three dimensions.

Both scales were distributed electronically via Google Forms, allowing for convenient access and ensuring that participants from various geographical locations and academic backgrounds could easily take part in the study.

Data Analysis

The data collected from the survey responses were analyzed using a variety of statistical techniques to answer the research questions.

Descriptive Statistics: Descriptive statistics (means, standard deviations, and frequencies) were used to summarize the demographic characteristics of the sample and the overall levels of cyberbullying and Dark Triad traits among the participants.

Pearson's Correlation Coefficient: Pearson's correlation coefficient was computed to examine the relationships between cyberbullying and the three dimensions of the Dark Triad: Machiavellianism, Narcissism, and Psychopathy. This analysis helped determine whether there were significant positive correlations between the presence of Dark Triad traits and the occurrence of cyberbullying behaviors.

Three-Way Analysis of Variance (ANOVA): To assess the impact of demographic variables (such as gender, faculty, and academic level) on the levels of cyberbullying and Dark Triad traits, a three-way ANOVA was used. This method allowed for the exploration of interaction effects between the demographic factors and the dependent variables, specifically focusing on differences in cyberbullying and Dark Triad traits based on these factors.

Cyberbullying Levels: Results showed statistically significant differences in cyberbullying levels based on gender, with males reporting higher levels of cyberbullying. No significant differences were found for faculty or academic level.

Dark Triad Dimensions: Significant differences were found in Machiavellianism between genders, with males exhibiting higher levels, but no significant differences were found across faculty or academic levels for most dimensions. However, there were significant differences in the psychopathy dimension based on academic level, with postgraduates reporting lower levels compared to undergraduates.

Posthoc Tests (Scheffe Test): To further investigate statistically significant differences, posthoc comparisons using the Scheffe test were conducted for variables that showed significant effects in the ANOVA. This helped identify where specific differences existed between the groups, such as in the case of the psychopathy dimension based on academic level.

All statistical analyses were conducted using SPSS with a significance level set at 0.05. The results provided insights into the relationships between the Dark Triad traits and cyberbullying, and they also highlighted the role of demographic factors in shaping these behaviors.

Normality Test

The normality of the data distribution was verified using the One-Sample Kolmogorov–Smirnov test. Table 5 presents the results of the normality test for the independent and dependent variables.

Table 5. Results of the One-Sample Kolmogorov–Smirnov Test for the Study Variables

Variable	Kolmogorov–Smirnov Test Value	Sig. (p-value)
Machiavellianism	1.185	.120
Narcissism	1.132	.154
Psychopathy	1.135	.152
Cyberbullying	1.138	.150

As shown in Table 5, the significance values of the Kolmogorov–Smirnov test for all variables were greater than the significance level ($\alpha \leq 0.05$), indicating that the variables follow a normal distribution. Furthermore, according to the Central Limit Theorem, if the sample size is greater than 30 and the distribution has a defined mean (μ) and variance (σ^2), the sampling distribution of the

mean approximates a normal distribution. Given the sample size of 455, the use of parametric tests such as Pearson's correlation and ANOVA is thus statistically justified.

4. Results

Question 1: "Is there a statistically significant correlation at ($\alpha \leq 0.05$) between cyberbullying and the dark triad among university students?"

To answer this question, Pearson's correlation coefficient was extracted between cyberbullying and the dark triad among university students. Table 6 shows this.

Table 6. Pearson's Correlation Coefficient for the Relationship Between Cyberbullying and Dark Triad Among University Students

		Cyberbullying Scale
Machiavellianism	Pearson correlation coefficient	0.187**
	Statistical Significance	0.000
	N	542
Narcissism	Pearson correlation coefficient	0.145**
	Statistical Significance	0.001
	N	542
Psychopathy	Pearson correlation coefficient	0.327**
	Statistical Significance	0.000
	N	542

*Statistical significance at ($\alpha=0.05$)

** Statistical significance at ($\alpha=0.01$)

Table 6 shows that there is a statistically significant correlation between Cyberbullying and the Dark Triad among university students.

Question 2: "Are there statistically significant differences at ($\alpha= 0.05$) in the scores of cyberbullying and the dark triad attributed to the gender, faculty, and academic level?"

To answer this question, arithmetic means and standard deviations were calculated for the Cyberbullying and the Dark Triad variables, using the following factors: Gender, Faculty, and Academic level. Table 7 shows that.

4.1. First: Cyberbullying Level

Table 7. Arithmetic Means and Standard Deviations for the Score of Cyberbullying According to the Variables Gender, Faculty, and Academic Level.

		Mean	S.D.	N
Gender	Male	1.58	0.645	259
	Female	1.45	0.598	283
Faculty	Humanitarian	1.53	0.611	287
	Scientific	1.49	0.638	255

Educational level	Diploma	1.57	0.704	86
	Bachelors	1.52	0.639	316
	Postgraduate	1.45	0.527	140

Table 7 demonstrates an apparent variation in the means and S.D. for the degree of cyberbullying due to the difference in the gender categories, faculty, and academic level. To illustrate the statistical differences, the three-way analysis of variance (3-way ANOVA) was used. Table 8 shows that.

Table 8. Three-way ANOVA Analysis for the Impact of Gender, Faculty, and Educational Level on the Degree of Cyberbullying

Variance source	Sum of squares	Degree of freedom	Mean squares	F value	P value	Effect Size
Gender	1.999	1	1.999	5.187	0.023	.010
Faculty	0.299	1	0.299	0.775	0.379	.001
Academic qualifications	1.060	2	0.530	1.375	0.254	.005
Error	206.991	537	0.385			-
Total	210.273	541				-

Table 8 demonstrates that:

- There were statistically significant differences ($\alpha = 0.05$) attributed to the gender variable, as the F value reached 5.187 with a statistical significance of 0.023, and the differences were in favor of males.
- No statistically significant differences ($\alpha = 0.05$) were attributed to the faculty, as the F value reached 0.775, with a statistical significance of 0.379.
- No statistically significant differences ($\alpha = 0.05$) were attributed to the academic level, as the F value reached 1.375 with a statistical significance of 0.254.

4.2. Second: Dark Triad Level

To answer this question, arithmetic means and standard deviations were extracted for the Dark Triad scores according to the variables (Gender, Faculty, and Academic level), and Table 9 below shows that.

Table 9. Arithmetic Means and Standard Deviations for the Score of Dark Triad According to the Variables (Gender, Faculty, and Academic Level)

			Machiavellianism	Narcissism	Psychopathy
Gender	Male	Mean	3.69	3.32	3.08
		S.D.	0.47	0.46	0.50
	Female	Mean	3.54	3.30	3.02
		S.D.	0.44	0.41	0.46
Faculty	Humanitarian	Mean	3.62	3.32	3.05

Educational level	Scientific	S.D.	0.48	0.46	0.49
		Mean	3.61	3.30	3.05
	Diploma	S.D.	0.43	0.40	0.47
		Mean	3.65	3.24	3.02
	Bachelors	S.D.	0.47	0.43	0.51
		Mean	3.62	3.34	3.10
	Postgraduate	S.D.	0.47	0.43	0.47
		Mean	3.58	3.29	2.95
		S.D.	0.42	0.43	0.47

Table 9 demonstrates an apparent variation in the means and S.D. for the degree of the Dark Triad due to the difference in the gender categories, faculty, and academic level. To illustrate the statistical differences, the three-way analysis of variance (3-way ANOVA) was used. Table 10 shows that.

Table 10. Three-Way ANOVA Analysis for the Impact of Gender, Faculty, and Educational Level on the Dimensions of the Dark Triad

Variance source	Dimensions	Sum of squares	Degree of freedom	Mean squares	F value	P value	Effect Size
Gender	Machiavellianism	3.143	1	3.143	15.366	.000	.028
	Narcissism	.097	1	.097	.519	.472	.001
	Psychopathy	.695	1	.695	3.059	.081	.006
Faculty	Machiavellianism	.038	1	.038	.184	.668	.000
	Narcissism	.077	1	.077	.415	.520	.001
	Psychopathy	.053	1	.053	.234	.629	.000
Academic qualifications	Machiavellianism	.370	2	.185	.905	.405	.003
	Narcissism	1.016	2	.508	2.725	.066	.010
	Psychopathy	2.562	2	1.281	5.635	.004	.021
Error	Machiavellianism	109.853	537	.205			
	Narcissism	100.058	537	.186			
	Psychopathy	122.087	537	.227			
Total	Machiavellianism	113.425	541				
	Narcissism	101.166	541				
	Psychopathy	125.243	541				

Table 10 demonstrates that:

- There were no statistically significant differences ($\alpha = 0.05$) attributed to the effect of gender in all dimensions except for Machiavellian, and the differences were in favor of males.
- There were no statistically significant differences ($\alpha = 0.05$) attributed to the effect of the faculty in all dimensions.
- No statistically significant differences ($\alpha = 0.05$) were attributed to the effect of the academic level in all dimensions except for psychopathy. To determine the statistically significant pairwise differences between arithmetic means, the Scheffe test was performed, and Table 11 shows the results.

Table 11. Results of the Scheffe test (Posthoc Comparisons) for the Effect of the Academic Level in Psychopathy Dimension

	Mean	Diploma	Bachelor's	Postgraduate
Diploma	3.02			
Bachelor's	3.10	0.08		
Postgraduate	2.95	0.07	0.15*	

*Statistical significance at ($\alpha=0.05$)

It is noted from Table 11 that there are statistically significant differences ($\alpha = 0.05$) between the bachelor's and postgraduate levels in favor of the bachelor's level.

5. Discussion

The present study sought to examine the relationship between cyberbullying and the Dark Triad traits-Machiavellianism, narcissism, and psychopathy-among university students. The findings revealed a statistically significant positive correlation between the three Dark Triad traits and cyberbullying behavior. This result aligns with several prior studies (e.g., Monaghan *et al.*, 2020; Panatik *et al.*, 2022; Li *et al.*, 2023), reinforcing the theoretical assumption that individuals exhibiting high levels of manipulateness, entitlement, or callousness are more inclined to engage in aggressive online behavior.

Specifically, narcissistic individuals may use cyberbullying as a way to seek admiration and dominance, enhancing their self-image by demeaning others. This is consistent with Miller *et al.* (2017), who noted that narcissists often lack empathy and exhibit a need for superiority. Similarly, individuals high in psychopathy tend to show little remorse or guilt and may derive satisfaction from controlling or harming others, a pattern echoed in Elamrousy & Alshehri (2024). The psychopathic dimension thus appears particularly relevant to aggressive and impulsive behaviors online. As for Machiavellianism, the findings support the idea that such individuals view cyberbullying as a strategic tool to manipulate others or secure social advantage-consistent with the manipulative interpersonal style.

Furthermore, the results indicated that male students scored significantly higher on cyberbullying behaviors than females. This gender difference can be attributed to social norms and stereotypes that associate masculinity with control, power, and emotional suppression—factors that may normalize or even reward aggressive digital behaviors in male groups. This interpretation is supported by findings from Donat *et al.* (2023) and Ali & Shahbuddin (2022). The increased use of online games and competitive social platforms by males may also explain their higher exposure to and participation in cyberbullying. However, contrasting evidence from Al-Taraqi (2024) suggests that

gender differences may vary by context and sample characteristics, highlighting the need for further cross-cultural research.

Interestingly, no significant differences were found in cyberbullying levels across faculties or academic levels, suggesting that cyberbullying is not strongly influenced by academic specialization but rather by individual personality traits and shared social environments. This supports the idea that exposure to online risks is a universal phenomenon among university students, regardless of their faculty affiliation. However, this result contradicts the findings of Ali & Shahbuddin (2022), who reported higher cyberbullying rates among students in the humanities. These discrepancies may be attributed to contextual or cultural differences between the studies.

Regarding the Dark Triad traits, the only demographic variable that showed a significant difference was gender, specifically in relation to Machiavellianism, where males scored higher. This may be due to gendered patterns of socialization that reward assertiveness, strategic thinking, and even manipulative behavior among males. A notable finding was the significant difference in psychopathy scores based on academic level, with undergraduate students showing higher levels than graduate students. This could be explained by the increased emotional maturity and academic focus required at the graduate level, which may reduce tendencies toward impulsive or antisocial behavior. The structured, research-oriented nature of graduate programs may foster greater self-regulation and interpersonal responsibility.

The findings of this study contribute to a growing body of literature that underscores the role of personality traits in shaping online behaviors. The integration of demographic analysis also provides practical insight into targeted intervention strategies. Future research could benefit from a longitudinal design to examine causality and from expanding the sample to include students from diverse cultural and educational backgrounds.

6. Conclusion and Recommendations

Excessive dependence on the internet in various life aspects, in general, and in university education in particular, might contribute to increased cyberbullying behavior among students. It is noted that cyberbullying behavior degrees are higher among males compared to females, without significant differences between the students attributed to the faculty or academic level. Also, students with dark triad personality traits (Machiavellianism, Narcissism, and Psychopathy) showed higher cyberbullying behaviors. There were no significant differences in the degree of dark triad traits attributed to faculty; however, Machiavellianism was higher among males than females, while psychopathy was higher among bachelor's-level students. Consultants must focus on the importance of raising awareness about the effects of bullying, implementing treatment programs to reduce bullying behavior among bullies, and helping bullying victims heal from the effects of bullying.

This study sought to explore the relationship between the dark triad traits and cyberbullying among university students and to investigate the influence of different demographic variables, including gender, ethnicity, and academic level, in this relationship. The results revealed a positive relationship between cyberbullying and the dark triad among university students. The study recommended the following:

- Organizing awareness workshops and lectures on the effects of cyberbullying on psychological and social health.
- Providing psychological counseling services to the students affected by bullying.
- Designing social support programs and raising awareness about bullying.
- Increasing the monitoring of the university platforms and electronic groups.

- Emphasizing the importance of empathy and the sense of responsibility towards others while interacting with others on campus.
- Organizing awareness workshops to introduce the concept of psychopathic behavior and Machiavellian personality to the students and explain their adverse effects on the individual and society.

7. Study Limitations

This study acknowledges several limitations that may affect the generalizability of its results, and they are:

- Relying on self-reported scales of cyberbullying and the dark triad might cause biases, as participants may under- or over-report their behaviors and feelings.
- The sample was limited to university students within a specific demographic, which may not represent the broader population.

Therefore, the results may not be applicable to all students or in different cultural contexts. Additionally, the study design does not allow causal inferences between the variables, which limits the ability to establish definitive relationships over time. Finally, the rapid development of reliance on the internet, social media platforms, and editing tools may also impact the relevance of the findings in future studies.

Declarations

Author Contributions. Dr. Rawan Abdul Mahdi Neyef Al-Saliti was responsible for data collection and statistical analysis. Dr. Abdelrahim Fathy Ismail contributed to the literature review, interpretation of results, and the final writing and preparation of the manuscript.

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Ethical Approval. This study was conducted in accordance with ethical standards. Informed consent was obtained from all participants involved in the study.

Data Availability Statement. The data that support the findings of this study are available from the corresponding author upon reasonable request.

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