

THE IMPACT OF DARK TRIAD, NATURE CONNECTEDNESS, AND EUDAIMONIC WELLBEING AMONG UNIVERSITY STUDENTS

Iqra Bibi^{*1}, Anza Imtiaz²

^{*1}Department of Applied Psychology, School of Social Sciences, University of Sargodha

²Department of Applied Psychology, School of Professional Psychology, University of Management and Technology, Lahore

¹engiqra1@gmail.com, ²anza.imtiaz.13@gmail.com

Corresponding Author: *

Iqra Bibi

DOI: <https://doi.org/10.5281/zenodo.19707786>

Received
20 February 2026

Accepted
30 March 2026

Published
15 April 2026

ABSTRACT

This paper examines how Dark Triad personality characteristics and Nature Connectedness impact Eudaimonic Wellbeing in university students at Sargodha in Pakistan. University life is a crucial period of identity, relationship building, and seeking purposes. The knowledge of the impact of personality traits and environmental relationships on the psychological prosperity of students will be especially important in developing nations, where cultures, social and economic conditions influence the experiences of young individuals. It used a cross-sectional research design and purposive sampling was used to recruit 300 university students (62.7 percent female, 37.3 percent male; age range 19-35 years) in government and private universities of Sargodha. The respondents were given the Short Dark Triad Scale (SD3), Connectedness to Nature Scale (CNS), and the Questionnaire of Eudaimonic Wellbeing (QEWB). Pearson correlation, multiple regression analysis and independent samples t-tests were used to analyze the data. Findings showed that there was a significant positive correlation between Nature Connectedness and Eudaimonic Wellbeing ($r = 0.33$, $p < 0.01$) in favor of the hypothesis that the stronger the relationship to nature, the more the flourishing of the psyche. Conversely, Eudaimonic Wellbeing was also significantly positively correlated with Dark Triad traits ($r = 0.23$, $p < 0.01$), indicating that there are more complicated relations between dark personality traits and wellbeing. Regression analysis showed that both Dark Triad (0.12 , $p < 0.003$) and Nature Connectedness (0.39 , $p < 0.001$) had a significant predictive value on Eudaimonic Wellbeing, explaining, 13% of the variance. Males scored significantly higher on Dark Triad characteristics, males ranked much higher than females ($t = 3.42$, $p = 0.001$, Cohen $d = 0.40$) as was previously seen in the difference between the male and female dark personality traits. These results add depth to the psychological thriving in non-Western educational settings, and highlight the value of nature involvement in student wellbeing, in addition to delivering complex associations between personality traits and wellbeing that contradict simplistic conceptualizations of the idea of dark characteristics as all equally bad.

Keywords: Dark Triad, Nature Connectedness, Eudaimonic Wellbeing

INTRODUCTION

This study focuses on how personality traits Dark Triad, Nature Connectedness, and Eudaimonic Wellbeing impact the mental health of university

students. The university setting is a pivotal developmental point that leads to a great growth and change. Besides the studies, students are also simultaneously developing their identities,

building social relationships, and searching their purpose in life. The interplay of the various personality traits, the inclination of students towards nature, and the sense of purpose is key variables that can be used to explain the factors that determine the psychological wellbeing of students. This question is especially relevant in those areas like Pakistan, where the experiential environment of young adults is shaped by the social, cultural, and environmental influences. Jusuf (2018) argues that personality is the set of attributes that define the behavior of a person in real life and is one of the central terms of psychology. Every person presents a unique set of characteristics, being either open and outgoing, or reserved and closed-off. As a rule, these characteristics are divided into two major orientations, namely extroversion and introversion. It is believed that these orientations affect the ability of students to learn and understand knowledge in classes and in extramural environments.

Dark Triad

Dark Triad is a combination of three personality traits, one of which is subclinical psychopathy, another one is narcissism, and the third one is Machiavellianism that have prevailed modern research on dark personality (Paulhus and Williams, 2002). Machiavellianism is cynical, pragmatic, misanthropic and indifferent to morality (Rauthmann & Will, 2011). The symptoms of narcissism are exaggerated self-perception, pompous imaginings of superiority, success, and adoration, and demands that others recognize their adoration of self-love (Morf and Rhodewalt, 2001). Impulsivity, a strong feeling of guiltlessness or lack of guilt when it comes to hurting others, and lack of regard of social controls as well as of other people characterize psychopathy (Hare and Neumann, 2009).

The Dark Triad is therefore a term used to refer to three negative personality factors that are counterproductive to others: psychopathy (prone to impulsive and thrill-seeking behavior), Machiavellianism (prone to manipulative behaviour), and narcissism (prone to feeling superior, ostentatious, and meritorious) (Paulhus

and Williams, 2002). According to Jones and Figueredo (2013), the antagonistic core of the three traits is constituted by callousness and manipulation. Despite the classic belief that the Dark Triad traits are unhealthy and unfit (Campbell and Miller, 2011), there is an adaptive approach that suggests the Dark Triad traits to be pseudopathologies, which bring personal gains at the cost of the group (Crawford and Anderson, 1989). As such, this paper takes such a position to explore the correlations between behavioral dysregulation, aggression, social manipulation and Dark Triad personality traits. It suggests a framework in which the Dark Triad traits are characterized by a social approach that puts other people above the self, which makes him or her hostile and lacking self-control (Jonason and Baruffi, 2015).

Nature Connectedness

The main aim of the research on Connectedness to Nature is to comprehend how people associate and identify with the nature and the associations people develop with the natural world. Literature on human and nature relationships has helped environmental psychology significantly, but the diversity and the range of terminologies may hinder a full understanding of the construct. As an example, the term Connectedness to nature can also be used as nature relatedness (Nisbet et al., 2009), love and care of nature (Perkins, 2010), connectivity with nature (Dutcher et al., 2007), emotional affinity with nature (Kals et al., 1999), dispositional empathy with nature (Tam, 2013), and inclusion of nature into the self (Schultz, 2001).

The relationship between human beings and nature has gained a lot of academic interest in the recent years and has largely shown that being exposed or being linked to nature is beneficial to the health of human beings. The concept of nature connection covers a wide spectrum of the ideas, including direct interactions and learning through experience to an affective and cognitive connection to nature. Empirical data reveals that nature helps to improve physical health and minimize morbidity, anxiety, stress, depression, respiratory and cardiovascular disorders (James et

al., 2016).

Eudaimonic Wellbeing

Eudaimonic Well-Being is based on the idea that the higher the potential of the individuals is realized, the more they feel well and they should realize their purpose in life and perform the right duties (Ryan et al., 2008). Self-Determination Theory (SDT) has been widely identified in modern psychological studies as one of the key elements of the eudaimonic perspective of subjective wellbeing (Ryan and Deci, 2001).

According to Aristotle, eudaimonia is a life that fulfills the highest potential of a person as a human being, therefore, eudaimonia is a lifestyle that entails the intentional development of uniquely human virtues like wisdom, friendship, and societal peace (Fowers, 2015). Eudaimonic activities are linked with the feeling of overextended capabilities and competencies, excellence pursuit, the establishment of precise and harder-than-average targets, purposeful effort, and performance consciousness (Waterman et al., 2010).

Literature Review International Research

The research examined the role of Dark Triad traits on eudaimonic wellbeing. In a cross-sectional study of 737 adults in China, eudaimonic wellbeing and Dark Triad traits were found to have a significant relationship. In particular, narcissism had a direct predictive impact on eudaimonic wellbeing, meanwhile Machiavellianism and psychopathy had serial two-mediator relationships with familial support and hedonic wellbeing (Liu and Ma, 2021).

In another study, the relationship between Dark Triad personalities dimensions and problem gambling was investigated on a sample of Nigerian undergraduates, and the findings indicated a positive relationship between psychopathy and problem gambling, and narcissism was a negative predictor (Onyedire et al., 2021).

A study of seven cities in Europe proved that the beneficial impact of natural surroundings on wellbeing is enhanced by nature connectedness (Fleury-Bahi et al., 2023). In parallel, studies on environmental identity and nature connectedness

with the Colombian population revealed that the rural residents expressed greater environmental identity in comparison with urban ones (Sierra-Baran et al., 2023).

Garza-Teran et al. (2022) found that outdoor activity is associated with increased nature connectedness and wellbeing of the participants. Pirchio et al. (2021) determined that the outdoor education programmes enhanced psycho-physical wellbeing of students, their relationship with nature, and pro-social behaviours. Also, as noted by Joshanloo (2021) narcissism was positively correlated with wellbeing and psychopathy and Machiavellianism were negatively correlated among Korean adults. To include nature, Lengieza (2024) tested how eudaimonic experiences contributed to self-elaboration by finding that reflective deliberations of meaning and personal development were associated with higher nature connectivity.

Indigenous Research

A study done in Pakistan has investigated Dark Triad traits under different circumstances. Ali et al. indicated that career exploration behaviour, Dark Triad personality, and the inability to control emotions were strongly positively correlated with student's career exploration behaviour among intermediate-level students in Lahore (2023). Javaid et al. (2024) examined the eudaimonic wellbeing of elderly people in Pakistan and discovered that the general eudaimonic wellbeing was low, with women scoring better than men. In his article, Siddiqui (2021) examined the Dark Triad traits and counterproductive work behaviour in Pakistan and found that psychopathy and Machiavellianism were strongly correlated with counterproductive work behaviour.

Khan and Imran (2019) investigated how body concern, emotional intelligence, Dark Triad personality, and selfie uploading are related among students and revealed that there were significant negative correlations between emotional intelligence and selfie-itis behaviour and positive correlations between Dark Triad, body concern, and selfie-itis behaviour.

Rationale of the Study

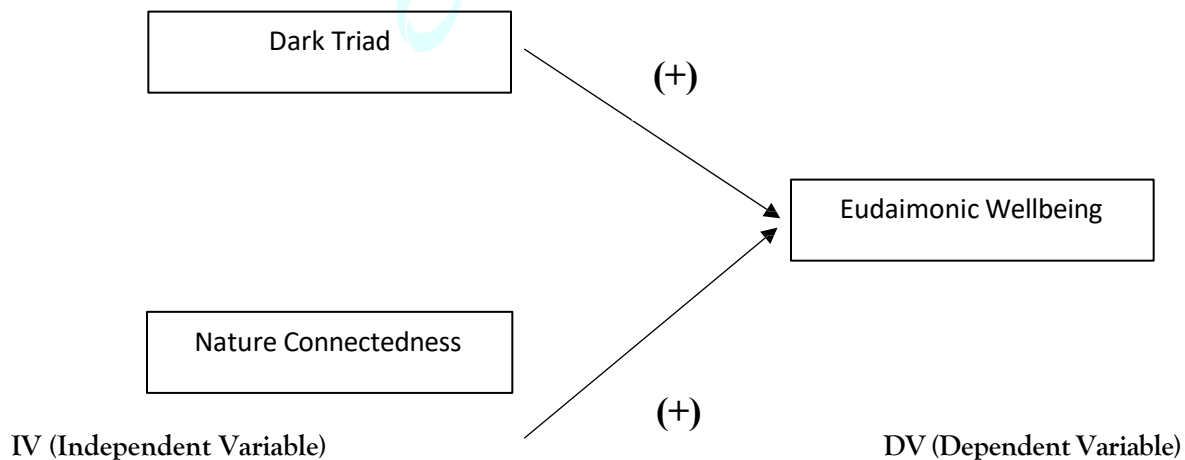
The rationality of the research is to investigate and get acquainted with the effects of Dark Triad traits, nature connectedness, and eudaimonic wellbeing among college students. University students in Pakistan are exposed to a lot of challenges that contribute immensely to their overall and psychological health in the fast-changing education system of the country. This paper explores the way in which this population negotiates a critical stage of life that is full of both opportunities and stress and interconnection of academic demands, societal pressure and personal growth.

The need to conduct this study is informed by the wish to understand the relationship between personality factors, especially those relating to the Dark Triad, and environmental factors including closeness to nature and their influences on the eudaimonic wellbeing of students. Past studies involving the Pakistani students have indicated the

importance of Dark Triad traits in the development of different dimensions of their behaviour. Strong positive correlations were found between Dark Triad traits, challenges in emotional regulation, and career exploration behaviour by Ali et al. (2023), highlighting the general implications of these personality traits on cognitive and emotional functioning of students. This research aims to inform mental health policy and educational practice through research into the interaction of these attributes with environmental conditions and their overall effects on the wellbeing of students. The research also aims at establishing possible interventions that would help in curbing the occurrence of Dark Triad characteristics, including development of empathy, emotional intelligence, and positive social relationships. The eventual goal is to assist in the creation of conducive university conditions in which students are able to develop intellectually and personally.

Proposed Model

Proposed model of the Impact of Dark Triad, Nature Connectedness and Eudaimonic Wellbeing among University Students.



Objectives:

To explore the impact of Dark Triad and Nature Connectedness on Eudaimonic Wellbeing To study the relationship between Nature Connectedness and Eudaimonic Wellbeing among university students

Hypothesis

H1: There will be a positive correlation between Nature Connectedness and Eudaimonic Wellbeing among university students

H2: There will be a negative relationship between Dark Triad and Eudaimonic Wellbeing among university students

H3: There will be a negative relationship between Dark Triad and Nature Connectedness among university students

H4: There will be an impact of Dark Triad and Nature Connectedness on Eudaimonic Wellbeing among university students

H5: Females will score lower than male participants on Dark Triad among university students

METHOD

Study Design

The study design was a cross-sectional study, where the investigators examined the effect of Dark Triad traits and Nature Connectedness on eudaimonic well-being among college students. The sample population was compiled using male and female students at both the public and the privately owned universities in Sargodha in Pakistan.

Participants and Sampling

The information was collected using a non-probability sampling technique known as purposive sampling, which was used to recruit 300 university students. The G+ Power analysis was used to establish the sample size. The recruitment of participants was done in the University of Sargodha and other universities in the Sargodha region.

Inclusion Criteria:

- Participants aged 19 to 35 years
- Students from every academic program or department
- Participants from both government and private institutions
- Both male and female students

Exclusion Criteria:

- School and college students
- Participants under 19 or above 35 years
- Participants with any physical or psychological disability

Demographic Sheet

Collected information on age, gender, educational level, socioeconomic status, and marital status.

The Short Dark Triad Scale (SD3): The scale is

created by Jones and Paulhus (2014) to measure Machiavellianism, narcissism, and psychopathy based on 27 items on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). The composite scores range between 27 and 135 with scores above 27 being indicative of escalated expression of dark personality traits. Internal consistency has been empirically tested and found to be robust with a Cronbach alpha coefficient varying between 0.71 and 0.87.

Nature Connectedness Scale (CNS): Mayer and Frantz (2004) constructed a fourteen-item measure developed to be able to measure the degree of emotion connectedness with nature using a five-point Likert scale to measure the response. The points on this scale are higher, which means that a person is more connected to natural environments. Empirical validation research has shown good internal consistency of the instrument with a Cronbach alpha of about .87.

Questionnaire for Eudaimonic Wellbeing Scale (QEWS): Waterman et al. (2010) developed the instrument, and it has 21 items to measure eudaimonic wellbeing in a 5-point Likert-type of response scale (0 = strongly disagree, 4 = strongly agree). The increase in total scores implies an increase in eudaimonic wellbeing. Empirical studies have indicated that the scale has a good internal consistency as demonstrated by the Cronbach's alpha of about 0.70.

Procedure

In the first stage of data collection, the researcher received official approval of the original authors of the three psychometric measures to be used in the study. A formal approval letter of the Department of Psychology at the University of Sargodha was also obtained, thus providing the institutional affiliation of the investigator and confirming that the research was a mandatory part of a Bachelor of Science in Psychology program. After getting authorization permission, the investigator got the consent of the heads and directors of the universities in Sargodha to enable data collection. The researcher went on the field and requested the potential participants to provide the necessary information and all the participants were properly

informed about the nature, purpose and objectives of the study before being included.

Ethical Considerations

1. Consents were obtained from the original authors for using the scales
2. Permission letters for data collection were used to seek permission from university authorities
3. Participants approval was obtained through consent forms, and they were briefed about their rights
4. Participants were assured that privacy and confidentiality would be maintained
5. Accurate results were reported after

statistical analysis

Data Analysis

Statistical Package for Social Sciences (SPSS), Version 26 was utilized to enter and to analyze the data collected. Descriptive Statistics were calculated in order to provide a description of the demographic characteristics of the participants. The Pearson Product Moment Correlation Coefficient was calculated to identify the relationship between all study variables. Multiple Regression Analysis was performed to investigate the predictive relationships among the variables. Independent Samples T-Tests were conducted to determine whether there existed a significant difference in means between males and females.

RESULTS

Table 1: Psychometric Properties of Study Measures

Scale	M	SD	Range	Cronbach's α
Dark Triad (Total)	78.49	11.35	42-131	0.75
Machiavellianism	29.13	5.09	13-44	0.62
Narcissism	26.28	4.70	12-45	0.55
Psychopathy	23.07	5.05	11-45	0.60
Nature Connectedness	45.88	6.17	27-70	0.67
Eudaimonic Wellbeing	49.93	8.23	28-84	0.70

Table 1 provides an overview of the psychometric properties of the scales that were used in this study. For the Short Dark Triad Scale, a Cronbach's alpha of .75 was reported; thus, it indicated excellent internal consistency reliability. Acceptable to good levels of reliability for each of the subscales were also reported: Machiavellianism (alpha = .62); Narcissism (alpha = .55); and

Psychopathy (alpha = .60). The Connectedness to Nature Scale displayed a Cronbach's alpha of .67; thus, it indicated acceptable internal consistency reliability. The Questionnaire for Eudaimonic Well-being Scale had a Cronbach's alpha of .70 which indicated an extremely high level of internal consistency reliability.

Table 2: Bivariate Correlations Among Study Variables (N = 300)

V	1	2	3	4	5	6
DT	-	0.77**	0.72**	0.79**	0.24**	0.23**
MDT	-	-	0.32**	0.44**	0.19**	0.27**
NDT	-	-	-	0.36**	0.12	0.16** PDT
	-	-	0.22**	0.11		
CNS	-	-	-	-	-	0.33**
QEWB	-	-	-	-	-	-

Note: *p < 0.05, **p < 0.01

Table 2 presents Pearson's correlation analysis looks at the degree and direction of correlations between variables. The majority of Dark Triad characteristics showed significant positive relationships, with Machiavellianism and Dark Triad total showing the largest connection (r = 0.77, p < 0.01), indicating tight linkages within these personality dimensions. Additionally, there were strong positive associations between the Dark Triad and psychopathy (r = 0.79, p < 0.01) and narcissism (r = 0.72, p < 0.01), suggesting that those with greater levels of one characteristic typically exhibit higher levels of the others.

Hypothesis 1 (Supported): Students who have stronger ties to nature report better levels of psychological thriving, as seen by the substantial positive association between Nature

Connectedness and Eudaimonic Wellbeing (r = 0.33, p < 0.01). **Hypothesis 2 (Not Supported):** In contrast to the predicted negative association, Dark Triad characteristics had a substantial positive link with Eudaimonic Wellbeing (r = 0.23, p < 0.01). Psychopathy was not significantly correlated with any of the subscales, while Machiavellianism (r = 0.27, p < 0.01) and narcissism (r = 0.16, p < 0.01) were positively correlated. **Hypothesis 3 (Not Supported):** In contrast to the predicted negative association, Dark Triad characteristics demonstrated a substantial positive link with Nature Connectedness (r = 0.24, p < 0.01). Machiavellianism (r = 0.19, p < 0.01), psychopathy (r = 0.22, p < 0.01), and narcissism (non-significant but positive) all showed positive associations.

Table 3: Multiple Regression Analysis Predicting Eudaimonic Wellbeing

Predictor	B	SE	β	t	p	95% CI
Constant	22.69	4.10	-	5.55	.000	[14.64, 30.74]
Dark Triad	0.12	0.04	0.16	2.96	.003	[0.04, 0.20]
Nature Connectedness	0.39	0.07	0.29	5.25	.000	[0.24, 0.54]

Note: R² = 0.13, F (2, 297) = 23.159, p < .001

Table 3 presents the regression study looking at

how Eudaimonic Wellbeing is affected by Dark

Triad and Nature Connectedness. With $F(2, 297) = 23.159, p < .001$, the predictors accounted for 13% of the variation in the outcome variable, according to the R^2 value of 0.13. Hypothesis 4 (Supported): Eudaimonic wellbeing was significantly predicted by both Nature

Connectedness and the Dark Triad. Nature Connectedness ($\beta = 0.29, p < 0.001$) was a greater predictor than Dark Triad ($\beta = 0.16, p < 0.003$), suggesting that psychological flourishing is more significantly influenced by environmental connection than personality traits.

Table 4: Independent Samples t-test for Gender Differences

Variables	Males (N=112)		Females (188)		t	p	Cohen's d
	M	SD	M	SD			
DT	81.35	11.9	76.79	10.62	3.42	.001	0.40
CNS	46.50	6.26	45.51	6.11	1.35	.176	0.16
EWB	49.84	8.03	49.98	8.37	-.143	.885	0.01

Note: M=Mean, SD=Standard deviation, N=Sample, T= Sample difference, p= Significant value, DT= Dark Triad, CNS= Connectedness Nature Scale, EWB= Eudaimonic Wellbeing

Hypothesis 5 (Supported): Males scored significantly higher on Dark Triad traits ($M = 81.35, SD = 11.90$) compared to females ($M = 76.79, SD = 10.62$), with $t(298) = 3.42, p = .001$, and a medium effect size (Cohen's $d = 0.40$). No significant gender differences emerged for Nature Connectedness or Eudaimonic Wellbeing.

Emerg ed Model of the Study

The emerg ed model between independent variables Dark Triad, Nature Connectedness and dependent variable Eudaimonic Wellbeing.

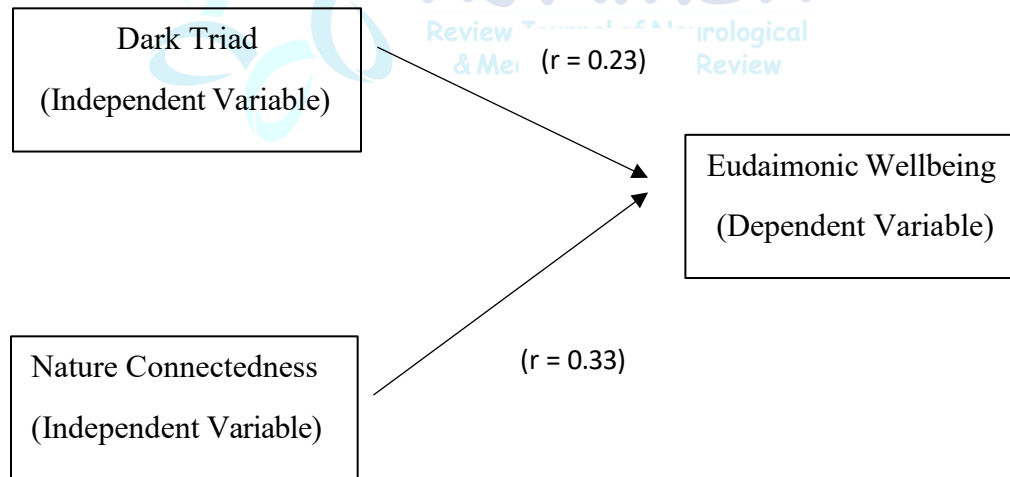


Table 5: Summary of Findings

Hypothesis	Status
------------	--------

H1: There will be a positive correlation between Nature Connectedness and Eudaimonic Wellbeing among university students.

Supported

H2: There will be a negative relationship between Dark Triad and Eudaimonic Wellbeing among university students.

Not Supported

H3: There will be a negative relationship between Dark Triad and Nature Connectedness among university students.

Not Supported

H4: There will be an impact of Dark Triad and Nature Connectedness on Eudaimonic Wellbeing among university students.

Supported

H5: Females will score lower than male participants on Dark Triad among

Supported

university

students.

DISCUSSION

The current study sought to investigate the effects of nature connectedness and Dark Triad personality characteristics on eudaimonic wellbeing among university students in Sargodha, Pakistan. The results showed a number of significant trends that add to the expanding corpus of research on psychological wellbeing, environmental connectedness, and personality in non-Western educational settings.

Nature Connectedness and Eudaimonic Wellbeing

Nature Connectedness and Eudaimonic Wellbeing showed a significant positive connection ($r = 0.33, p < 0.01$), which is consistent with Hypothesis 1. This suggests that students who feel more emotionally linked to nature report better feelings of purpose, meaning, and self-realization. This result is consistent with earlier studies showing the advantages of engaging with nature for wellness. Garza-Terán et al. (2022) discovered that participants' Nature Connectedness and wellbeing were positively improved by outdoor activities. According to Pirchio et al. (2021), pupils' psycho-physical wellness and sense of connection to nature were enhanced by environmental education programs. A theoretical foundation for comprehending this interaction is offered by the biophilia hypothesis (Kellert, 1993). Humans have an innate desire to connect with nature, and fulfilling this need via interaction with the environment fosters psychological well-being. According to Schultz's

(2002) Inclusion of Nature in Self paradigm, people who believe they are a part of nature are also more inclined to find purpose and mastery in their surroundings. These findings highlight the need of integrating green spaces and nature-based activities into university settings to improve student mental health in the Pakistani context, where urban growth is rapidly separating young people from natural ecosystems.

Dark Triad and Eudaimonic Wellbeing

In contrast to Hypothesis 2, there was a substantial positive connection between Dark Triad qualities and Eudaimonic Wellbeing ($r = 0.23, p < 0.01$), indicating that greater levels of these "dark" traits were linked to more eudaimonic experiences rather than less. This surprising discovery needs to be interpreted carefully in light of Pakistani culture. The subscales that exhibited the largest positive connection with Eudaimonic Wellbeing were Machiavellianism ($r = 0.27, p < 0.01$), narcissism ($r = 0.16, p < 0.01$), and psychopathy ($r = 0.16, p < 0.01$). These disparate patterns imply that not every dark characteristic has the same effect on wellbeing. This result is somewhat consistent with the findings of Joshanloo (2021), who discovered that among Korean adults, narcissism positively linked with wellbeing whereas psychopathy and Machiavellianism exhibited minor positive relationships.

Liu and Ma (2021) similarly reported that narcissism directly predicted Eudaimonic Wellbeing, while Machiavellianism and psychopathy exerted indirect effects through

mediating variables.

These results might be explained by a number of factors. First, narcissistic traits including self-assurance, goal-oriented behaviour, and the need for attention may make it easier to accomplish eudaimonic objectives in competitive academic settings, such as personal development and purpose fulfilment. Second, under some situations, Machiavellian people's strategic orientation and emphasis on individual success may coincide with eudaimonic aspirations of excellence and achievement, especially in societies where social systems must be strategically navigated due to resource restrictions. Third, these characteristics may not develop to pathological levels that hinder functioning because they are subclinical in a sample of university students.

Dark Triad and Nature Connectedness

In contrast to Hypothesis 3, there was a substantial positive association between Nature Connectedness and Dark Triad features ($r = 0.24$, $p < 0.01$). Psychopathy showed the highest association ($r = 0.22$, $p < 0.01$) among the three subscales. This result runs counter to earlier study by Fido et al. (2020), who discovered that psychopathy and Nature Connectedness were negatively correlated in Western groups.

This disparity might be explained by cultural variables. Even people with dark personality traits may be able to stay connected to nature in collectivist Pakistani culture through social norms that promote outdoor activities during family get-togethers, religious practices that emphasise appreciation of Allah's creation as mentioned in Islamic teachings, or family traditions. Furthermore, university students in Sargodha, a city surrounded by agriculture, could have better access to natural settings, making nature connection easier for people of all personality types. The positive association could also indicate that a connection to nature gives people with dark features a socially acceptable way to feel emotions they might not otherwise be able to.

Predicting Eudaimonic Wellbeing

Regression analysis supported Hypothesis 4 by showing that Dark Triad and Nature

Connectedness both strongly predicted Eudaimonic Wellbeing, accounting for 13% of the variation. The significance of environmental involvement for psychological wellbeing was shown by the fact that Nature Connectedness ($\beta = 0.29$) was a greater predictor than Dark Triad ($\beta = 0.16$). This result is consistent with Fleury-Bahi et al. (2023), who showed that beneficial effects on wellbeing are facilitated by a connection to environment in seven European cities. The higher predictive power of Nature Connectedness indicates that environmental engagement-focused interventions, like campus greening projects, outdoor learning opportunities, and nature-based wellness programs, might be especially successful in improving student wellbeing in Pakistani universities.

Gender Differences

Male scores on Dark Triad features were considerably higher than female scores, supporting Hypothesis 5 ($t = 3.42$, $p = .001$, Cohen's $d = 0.40$). This result is in line with a large body of cross-cultural research that shows sex variations in dark personality characteristics. According to Jonason and Davis (2018), gender roles mediated the higher Dark Triad trait scores of men in both Australian and American populations. According to the mean effect size ($d = 0.40$), significant practical implications, suggesting that gender is still a crucial factor in comprehending dark personality presentation.

Nature Connectedness and Eudaimonic Wellbeing showed no discernible gender differences, indicating that these facets of psychological functioning are equally accessible to both genders in the Pakistani university setting. This conclusion is positive because it implies that all pupils, regardless of gender, may benefit from treatments meant to improve natural connection and wellbeing.

Theoretical Implications

These results theoretically contradict oversimplified conceptions of "dark" qualities as consistently harmful to wellbeing. The positive connections found imply that some features of narcissism and Machiavellianism may coexist with

or even promote eudaimonic functioning in particular cultural and developmental circumstances. According to adaptive viewpoints (Jonason et al., 2013), Dark Triad qualities could be pseudo-pathologies that help people in specific situations. By showing that both personality traits and contextual connectedness contribute to the satisfaction of fundamental psychological demands for autonomy, competence, and relatedness, the results thus expand on Self-Determination Theory (Ryan & Deci, 2001). By offering chances for independent inquiry, competence growth via environmental mastery, and relatedness through connection to the larger living world, nature connectedness may help satisfy needs.

Additionally, the findings add to the expanding corpus of research on positive psychology in non-Western contexts by showing that constructs that were primarily developed in Western contexts, such as the Dark Triad, Nature Connectedness, and Eudaimonic Wellbeing—show meaningful relationships in Pakistani samples and also reveal cultural patterns that call for more research.

Practical Implications

The findings suggest several practical implications for Pakistani universities and educational policymakers:

- 1. Nature-based interventions:** Universities should think about implementing green areas, outdoor learning opportunities, and environmental education initiatives to improve student welfare given Nature Connectedness's better predictive potential. Campus parks, rooftop gardens, and nature-based health initiatives might offer students easily accessible chances to strengthen their bond with the natural world.
- 2. Personality-sensitive approaches:** Given the intricate connections between dark features and wellbeing, treatments should steer clear of pathologizing inclinations and instead concentrate on directing traits toward positive results. Giving students with narcissistic tendencies the chance to succeed and take on leadership roles may promote their good growth. For individuals that possess Machiavellian traits, instruction in strategic thinking and ethical

influence might maximize their abilities and foster prosocial results.

- 3. Gender-sensitive programming:** Considering that guys have higher Dark Triad scores, therapies that focus on developing empathy, interpersonal skills, and ethical decision-making may be more helpful for male pupils. To help all pupils, these interventions should be created inclusively.

- 4. Mental health screening and support:** Regular mental health evaluations at universities should focus on environmental involvement as well as personality traits. To prevent these qualities from becoming maladaptive behaviours, students with increased dark tendencies might get targeted treatment.

- 5. Curriculum integration:** Content from positive psychology and environmental psychology might be incorporated into general education curricula to assist students comprehend the value of a connection to nature for wellbeing and to provide them with tools for creating meaningful interactions with the natural world.

Limitations

The study life span was only six months which was a short period of time to study Dark Triad personality and wellbeing in detail. Data was only collected from universities in Sargodha, not from any college. Students with psychological disorders or physical disabilities were excluded from the study, which may limit the generalizability of the findings. Social desirability bias, household environment, and cultural variability can be limitations to this study as it uses self-reported measures.

Suggestions

Extending the study's length would probably result in a larger sample size, which would reinforce the validity of the Dark Triad, Nature Connectedness, and Eudaimonic Wellbeing results. Additionally, comparison research should be conducted to look at gender inequalities and the variations between students from government and private colleges, as these factors may have different effects on the Dark Triad traits. This comparison may demonstrate how students' psychological traits

and overall well-being are impacted by gender and the educational environment. Since longitudinal studies would enable researchers to monitor changes over time and establish causal links between Eudaimonic Well-Being, Nature Connectivity, and Dark Triad qualities, they would be especially useful as students advance through their university years.

CONCLUSION

The current study's goal was to find out how Dark Triad personality characteristics and Nature Connectedness affect university students' Eudaimonic Wellbeing. The findings show that each attribute has a different degree of association with wellbeing measures and that Dark Triad elements have significant correlations with one another. Despite the fact that Eudaimonic Wellbeing and Nature Connectedness have significant positive relationships with the Dark Triad composite, Individual traits including narcissism and psychopathy exhibited weaker or non-significant correlations, suggesting their complicated influence on wellbeing.

The significance of environmental involvement for psychological flourishing was highlighted by the discovery that Nature Connectedness was a better predictor and significant positive correlation of Eudaimonic Wellbeing. As part of their all-encompassing student support services, colleges should prioritise green areas, outdoor learning opportunities, and nature-based health initiatives. Males scored higher than females on Dark Triad traits, according to the study, underscoring the importance of considering gender when examining these relationships. This gender disparity, which is in line with research from throughout the world, implies that therapies aimed at dark personality characteristics would need to be modified for male and female pupils.

Contrary to expectations, Dark Triad traits showed positive correlations with both Nature Connectedness and Eudaimonic Wellbeing, challenging assumptions that these characteristics are uniformly detrimental to positive psychological outcomes. These findings lay the groundwork for future research examining the conditions under which dark traits may coexist

with or even facilitate wellbeing, and highlight the potential of increasing nature connectedness as a factor for promoting people's general wellbeing in university settings.

In conclusion, by showing that both personality traits and contextual connections are important for eudaimonic wellbeing, this study advances knowledge of psychological flourishing among Pakistani university students. These results imply that addressing students' relationship with nature may be just as crucial as treating personality traits in Pakistani universities and similar settings that aim to promote students' mental health and development. Universities may better assist their students' holistic development during this crucial time of growth and transition by fostering environments that encourage both meaningful involvement with the natural world and constructive expression of varied personality types.

REFERENCES

- Ali, Y., Amin, F., Ali, H., & Draz, U. (2023). Dark Triad of personality, difficulties in emotional regulation and career exploration behavior in students. *Journal of Psych Science Research*, 3(1), 1-7.
- Amernic, J. H., & Craig, R. J. (2010). Accounting as a facilitator of extreme narcissism. *Journal of Business Ethics*, 96, 79-93.
- Boddy, C. R. P. (2010). Corporate psychopaths and organizational type. *Journal of Public Affairs*, 10, 300-312.
- Brunell, A. B., Gentry, W. A., Campbell, W. K., Hoffman, B. J., Kuhnert, K. W., & DeMarree, K.
- G. (2008). Leader emergence: The case of the narcissistic leader. *Personality and Social Psychology Bulletin*, 34, 1663-1676.
- Bruni, C., & Schultz, W. (2010). Implicit beliefs about self and nature: Evidence from an IAT game. *Journal of Environmental Psychology*, 30, 95-102.
- Campbell, W. K., & Miller, J. D. (2011). *The handbook of narcissism and narcissistic personality disorder*. John Wiley & Sons.

- Crawford, C. B., & Anderson, J. L. (1989). Sociobiology: An environmentalist discipline. *American Psychologist*, 44, 1449-1459.
- Dutcher, D. D., Finley, J. C., Luloff, A. E., & Johnson, J. B. (2007). Connectivity with nature as a measure of environmental values. *Environment and Behavior*, 39(4), 474-493.
- Fido, D., et al. (2020). Examining the connection between nature connectedness and dark personality. *Journal of Environmental Psychology*, 72, 101-112.
- Fleury-Bahi, G., Galharret, J. M., Lemée, C., Wittenberg, I., Olivos, P., Loureiro, A., & Navarro, O. (2023). Nature and well-being in seven European cities: The moderating effect of connectedness to nature. *Applied Psychology: Health and Well-Being*, 15*(2), 479-498.
- Fowers, B. J. (2015). *The evolution of ethics: Human sociality and the emergence of the ethical mind*. Palgrave/McMillan.
- Garza-Terán, G., Tapia-Fonllem, C., Fraijo-Sing, B., Borbón-Mendivil, D., & Poggio, L. (2022). Impact of contact with nature on the wellbeing and nature connectedness indicators after a desertic outdoor experience on Isla del Tiburon. *Frontiers in Psychology*, 13, 864836.
- Hare, R. D., & Neumann, C. S. (2009). Psychopathy: Assessment and forensic implications. *Canadian Journal of Psychiatry*, 54, 791-802.
- James, P., Hart, J. E., Banay, R. F., & Laden, F. (2016). Exposure to greenness and mortality in a nationwide prospective cohort study of women. *Environmental Health Perspectives*, 124(9), 1344-1352.
- Javaid, Z. K., Shahid, A., Ashfaq, S., Nisar, E., & Fatima, N. (2024). Exploration of eudaimonic wellbeing among senior citizens: A qualitative study. *International Journal of Contemporary Issues in Social Sciences*, 3(2), 2340-2348.
- Jonason, P. K., & Davis, M. D. (2018). A gender role view of the Dark Triad traits. *Personality and Individual Differences*, 125, 102-105.
- Jonason, P. K., Lyons, M., Bethell, E., & Ross, R. (2013). Different routes to limited empathy in the sexes: Examining the links between the Dark Triad and empathy. *Personality and Individual Differences*, 57, 572-576.
- Jones, D. N., & Figueredo, A. J. (2013). The core of darkness: Uncovering the heart of the Dark Triad. *European Journal of Personality*, 27, 521-531.
- 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.
- Joshanloo, M. (2021). Conceptions of happiness mediate the relationship between the dark triad and well-being. *Frontiers in Psychology*, 12, 643351.
- Jusuf, H. (2018). Understanding personality. *Journal al-Lisan*, 3*(1).
- Kals, E., Schumacher, D., & Montada, L. (1999). Emotional affinity toward nature as a motivational basis to protect nature. *Environment and Behavior*, 31(2), 178-202.
- Kellert, S. R. (1993). The biological basis for human values of nature. In S. R. Kellert & E. O. Wilson (Eds.), *The biophilia hypothesis* (pp. 42-69). Island Press.
- Khan, M. A., & Imran, I. (2019). Dark triad personality, body concern, emotional intelligence and selfitis behavior among students. *Journal of Research and Reviews in Social Sciences Pakistan*, 2(2), 424-439.
- Lachowycz, K., & Jones, A. P. (2013). Towards a better understanding of the relationship between greenspace and health: Development of a theoretical framework. *Landscape and Urban Planning*, 118, 62-69.

- Lengieza, M. L. (2024). Eudaimonic self-expansion: The effects of eudaimonic reflections on nature connectedness. *Journal of Environmental Psychology, 94*, 102231.
- Liu, Y., Zhao, N., & Ma, M. (2021). The Dark Triad traits and the prediction of eudaimonic wellbeing. *Frontiers in Psychology, 12*, 693778.
- Mayer, F. S., & Frantz, C. M. (2004). The connectedness to nature scale: A measure of individual feeling in community with nature. *Journal of Environmental Psychology, 24*, 503-515.
- Morf, C. C., & Rhodewalt, F. (2001). Unraveling the paradoxes of narcissism: A dynamic self-regulatory processing model. *Psychological Inquiry, 12*, 177-196.
- Nisbet, E. K., Zelenski, J. M., & Murphy, S. A. (2009). The nature relatedness scale: Linking individuals' connection with nature to environmental concern and behavior. *Environment and Behavior, 41*, 715-740.
- Onyedire, N. G., Chukwuorji, J. C., Orjiakor, T. C., Onu, D. U., Aneke, C. I., & Ifeagwazi, C. M. (2021). Associations of Dark Triad traits and problem gambling: Moderating role of age among university students. *Current Psychology, 40*, 2083-2094.
- Paulhus, D. L., & Williams, K. M. (2002). The Dark Triad of personality: Narcissism, Machiavellianism, and psychopathy. *Journal of Research in Personality, 36*, 556-563.
- Perkins, H. E. (2010). Measuring love and care for nature. *Journal of Environmental Psychology, 30*(4), 455-463.
- Pirchio, S., Passiatore, Y., Panno, A., Cipparone, M., & Carrus, G. (2021). The effects of contact with nature during outdoor environmental education on students' wellbeing, connectedness to nature and pro-sociality. *Frontiers in Psychology, 12*, 648458.
- Rauthmann, J. F., & Will, T. (2011). Proposing a multidimensional Machiavellianism conceptualization. *Social Behavior and Personality, 39*, 391-403.
- Rosenthal, S. A., & Pittinsky, T. L. (2006). Narcissistic leadership. *The Leadership Quarterly, 17*, 617-633.
- Ryan, R. M., & Deci, E. L. (2001). On happiness and human potentials: A review of research on hedonic and eudaimonic wellbeing. *Annual Review of Psychology, 52*(1), 141-166.
- Ryan, R. M., & Deci, E. L. (2008). From ego depletion to vitality: Theory and findings concerning the facilitation of energy available to the self. *Social and Personality Psychology Compass, 2*(2), 702-717.
- Ryan, R. M., Huta, V., & Deci, E. L. (2008). Living well: A self-determination theory perspective on eudaimonia. *Journal of Happiness Studies, 9*(1), 139-170.
- Ryff, C. D., & Singer, B. H. (2008). Know thyself and become what you are: A eudaimonic approach to psychological well-being. *Journal of Happiness Studies, 9*(1), 13-39.
- Schultz, P. W. (2001). The structure of environmental concern: Concern for self, other people, and the biosphere. *Journal of Environmental Psychology, 21*, 327-339.
- Schultz, P. W. (2002). Inclusion with nature: The psychology of human-nature relations. In P. Schmuck & W. P. Schultz (Eds.), *Psychology of sustainable development* (pp. 61-78). Kluwer Academic.
- Siddiqui, D. A. (2021). Dark Triad and counterproductive work behaviour in Pakistan: The mediatory role of perceived organizational fairness complemented by organizational climate. *Journal of Organizational Behavior Research*.
- Sierra-Barón, W., Olivos-Jara, P., Gómez-Acosta, A., & Navarro, O. (2023). Environmental identity, connectedness with nature, and well-being as predictors of pro-environmental behavior, and their comparison between inhabitants of rural and urban areas. *Sustainability, 15*(5), 452.

- Steger, M. F., Frazier, P., Oishi, S., & Kaler, M. (2006). The meaning in life questionnaire: Assessing the presence of and search for meaning in life. *Journal of Counseling Psychology*, 53(1), 80-93.
- Tam, K. P. (2013). Concepts and measures related to connection to nature: Similarities and differences. *Journal of Environmental Psychology*, 34, 64-78.
- Van den Berg, A. E., Maas, J., Verheij, R. A., & Groenewegen, P. P. (2010). Green space as a buffer between stressful life events and health. *Social Science & Medicine*, 70(8), 1203-1210.
- Waterman, A. S., Schwartz, S. J., Zamboanga, B. L., Ravert, R. D., Williams, M. K., Bede Agocha, V., & Brent Donnellan, M. (2010). The Questionnaire for Eudaimonic Well-Being: Psychometric properties, demographic comparisons, and evidence of validity. *The Journal of Positive Psychology*, 5(1), 41-61.
- Wood, L., Hooper, P., Foster, S., & Bull, F. (2017). Public green spaces and positive mental health: Investigating the relationship between access, quantity and types of parks and mental wellbeing. *Health and Place*, 48, 63-71.
- Zettler, I., Friedrich, N., & Hilbig, B. E. (2011). Dissecting work commitment: The role of Machiavellianism. *Career Development International*, 16, 20-35.