

# EXAMINATION OF THE CORRELATION BETWEEN ETHICAL ATTITUDES AND DARK TRIAD PERSONALITY TRAITS AMONG UNIVERSITY STUDENTS

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## ABSTRACT

The purpose of the present paper is to examine the relationship between the ethical attitudes of university students and their Dark Triad personality traits. Research has suggested that the juvenile attitudes of people predict their later behaviour. Therefore, it is worth exploring this area for future aspects. Both topics are at the center of research, both individually and in terms of the correlations between them. In the present paper, we examined the relationship between ethical attitudes and the Dark Triad personality traits through questionnaires used in international research with background variables. We found that the most unethical behaviour is 'Divulging confidential information,' 'Passing blame for your errors to an innocent co-worker,' and 'Claiming credit for someone else's work.' The least unethical behaviour is 'Eating snacks while at your workstation'. Factor analysis and linear regression analysis were used. Despite our expectations, the revealed relationships between ethical attitudes and Dark Triad personality traits were not clearly positive. According to the regression model, the dark triad personality score is lower if the respondent is female, studies at the commerce-marketing major, and has higher values at the following factors: 'physiological unethicalness', 'overcharge', and 'other ethical attitudes' factors.

## KEYWORDS

**Organizational behaviour, ethical behaviour, exploratory factor analysis, juvenile attitudes, linear regression, questionnaire survey**

## HOW TO CITE

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## Highlights

- *The most unethical behaviour was 'Divulging confidential information', 'Passing blame for your errors to an innocent co-worker', and 'Claiming credit for someone else's work'. The least unethical was 'Eating snacks while at your workstation'.*
- *We did not find a significant positive linear correlation between unethical attitudes, background variables, and Dark Triad personality traits.*

## INTRODUCTION

Currently, one of the most important challenges, on individual, community, organizational, and social levels, is to act more and more ethically because 'Those who deal with business science today will sooner or later face the problem of the ethical representativeness of strictly profit-oriented economic thinking. Social expectations and demands for responsible management are becoming increasingly evident towards companies. It seems less and less true that anything can be done in business life' (Szegedi, 2001: 3). One of the most important areas of ethical behaviour is workplace behaviour, as we spend a significant part of our lives in a workplace environment. As university lecturers and Ph.D. students, we shifted our focus towards the ethical attitudes of our students,

keeping in mind that they would become employees in the next phase of their lives. Ethical or responsible behaviour might be influenced by numerous factors, such as personality, upbringing and the resulting scale of values, family background, standard of living, and even the knowledge acquired through education (Fisher, Lovell and Valero-Silva, 2013). Among the many influencing factors in the scope of our research, we examine the relationship between personality and the ethical attitudes of university students towards workplace behaviour. On the one hand, the research was based on the Dark Triad personality theory, and on the other, the ethical questionnaire created by Ludlum et al. (2013). Dark triad traits have been chosen as variables in ethical attitudes research because these traits are frequently associated with counterproductive work behaviour

(Mahmood et al. 2021; Özsoy, 2018; Cohen, 2018), malevolent behaviour (Furnham et al., 2014; Özsoy, 2018) and other antisocial behaviour (Jonason et al., 2012) which are examples for unethical behaviour. In our research, we expect a negative connection between ethical behaviour and Dark triad traits.

In the remainder of our introduction, we provide a scientific literature review of two topics related to our topic. First, we present the characteristics of the Dark Triad personality model, then the research on the ethical attitudes of university students is reviewed. Finally, we present empirical research in which the above topics are interweaved and where others examine the ethical attitudes of individuals or university students.

In our opinion, this approach requires us to be responsible individuals or even organizations, not only towards the natural environment but also towards all of the stakeholders around us. That is, in our private life and as members of an organization (including our workplace), our actions must conform to moral and ethical standards. With the above in mind, researching and measuring the ethical attitudes of our students is worthwhile, and so is incorporating these values and norms into education.

## Literature review and hypothesis development

In this section, we overview the literature on Dark Triad personality traits, the theoretical background and empirical results on the ethical attitudes of university students, and the relationship between ethical workplace behaviours and Dark Triad personality traits.

### Dark Triad personality traits

In 2002, Paulhus and Williams drew attention to the Dark Triad, three unpleasant but non-pathological personality traits, Machiavellianism, narcissism, and psychopathy, which are conceptually distinct but overlapping according to empirical studies (Furnham, Richards and Paulhus, 2013). These personality traits are present to varying degrees in all people (Robbins and Judge, 2019). This study is also interesting from an organizational point of view because although these traits are undesirable by society, those who are strong in these personality traits often benefit from them. For instance, if these traits are accompanied by intelligence and an attractive appearance, they help the individual acquire leadership positions (Furnham, 2010).

Strong Machiavellian individuals are cynical and unconscientious, believing that manipulation of people is the key to a successful life and they act accordingly (Jones and Paulhus, 2009).

In the case of structured organizations, if the gap between individual desires and organizational profit grows, particular attention needs to be given to the potential Machiavellian personality of the manager, especially if the organization in question applies a performance-based compensation system. Such a bad manager is selfish, non-empathic, focuses solely on the achieved results, and tends to favor so-called 'solo star' employees who are fully willing to subordinate themselves to their personal performance and achieve their set objectives. The employment of such managers poses particular risks to organizations (Myung et al., 2017).

Narcissism is characterized by a sense of self-love, grandeur, entitlement, domination, and superiority (Paulhus and Williams, 2002). Narcissistic personality traits have a positive effect on business-like CSR activities only. Such activities may include protecting consumer rights, product liability, or consumer satisfaction. The narcissistic leader is typically considered a special personality, in which the role of mass media is very important. In fact, media might turn the spotlight towards the negative attributes of certain managers; namely, it can influence the behaviour of the managers of organizations if they seek to achieve the 'star-CEO' status. Managers with such personalities pay less attention to achieving feasible CSR goals concerning employees, the environment, or society (Myung et al., 2017). A personality survey of managers of state-owned South Korean companies showed that the presence of a narcissistic manager positively influences the performance of the state-owned company, which is more due to managerial decisions than corporate income management. However, this effect will only be true in the short term; in the long run, the presence of a narcissistic leader will lead to a deterioration in company performance (Kim, 2018). The expansion of narcissistic individualism is already affecting research performed in the field of holistic spirituality, as the latter phenomenon is typically analyzed within the framework of narcissistic individualism, with particular attention to its economic effects (Clot-Garrell and Griera, 2019). It should also be emphasized that observing information-related abnormalities and the extreme impact of social media is a strong self-regulatory need for all stakeholders (Aznar, 2019), including companies where the presence of a manager with an inadequate personality makes it difficult to avoid unwanted effects.

Psychopaths are characterized by irascibility, excitement-seeking, low empathy (Paulhus and Williams, 2002), and unconsciousness and insensitivity (Hare and Neumann, 2009). They can make a good impression but are emotionally superficial and often lead a parasitic lifestyle. The incidence of psychopathic leaders in the private sector is higher than in the public sector in general. Psychopathic leaders tend to impose greater workloads on their subordinates, more conflicts emerge between them, and they prefer to place organizational constraints on their staff. At the same time, psychopaths can often become real organizational stars, who are often honored. Still, at the same time, they exhibit extreme behaviours such as bullying, threat and intimidation, coercion, and restraint (Myung et al., 2017).

Despite their different origins, the Dark Triad personality types share common characteristics. To a different extent, all three carry a character labeled as socially malicious. These include self-promotion, emotional coldness, insidiousness, and aggression (Paulhus and Williams, 2002).

In the scientific literature, it is relatively easy to find empirical studies measuring university students' Dark Triad personality traits in relation to different factors. Do and Dadvari (2017) found that the Dark Triad personality had a mediating role in Taiwanese students' entrepreneurial attitude orientation and entrepreneurial intention. Giammarco and Vernon (2014), in a study done among Canadian undergraduate students,

found that two out of the three Dark Triad personality traits, 'Machiavellianism and psychopathy, were positively correlated with an emotional vengeance but negatively correlated with justice-fairness and justice-legal decisions' (Giammarco and Vernon, 2014:23). Harrison et al. (2018) in their research found that Dark Triad had a positive impact on fraud behaviour. Onyedire et al. (2019) examined the associations of Dark Triad traits with problem gambling among Nigerian undergraduate students. They found that psychopathy and students' age were positive, and narcissism negatively predicted problem gambling. Vedel and Thompsen (2017) compared newly enrolled students' Big Five and Dark Triad traits and found significant differences in different academic majors. The largest difference was measured between economics/business and psychology students. Students choosing economics/business majors had high Dark Triad scores, unlike those in psychology majors, who had low Dark Triad scores. Blais and Pruyssers (2017) analyzed the connection between Dark Triad and general personality traits and political ambition. Cannon et al. (2020) compared students in British private schools and British public schools based on Dark Triad personality traits. They found that students in private schools scored higher on Dark Triad personality traits and were less characterized by intellectual humility than students in public schools. Dark Triad personality traits have a negative relationship with intellectual humility, and this relationship was also stronger in private school students than in students in public institutions. Guo et al. (2023), in a survey of a sample of Chinese university students, found that the presence of Dark Triad personality traits has a limited effect on students' creativity levels. Kircaburun et al. (2021) examined the relationships between Dark Triad personality traits and learning addiction involving Turkish university students. They found that for females, only Machiavellianism related – not significantly – positively to study addiction, while for males, all three Dark Triad personality traits were significantly associated with study addiction. Nishant (2019) examined the impact of Dark Triad personality traits of university lectures on students' perceptions of institutional quality. He found that in the case of students studying at elite Indian management schools, the instructors' moderate-level Dark Triad personality traits had a positive effect on perceptions of institutional quality. In contrast, low and high-level Dark Triad personalities had the opposite effect. In a separate chapter, we provide more empirical research results which analyze the impact of personality on ethical attitude and behaviour.

### **Ethical attitudes of university students**

'Attitude is an evaluative statement or opinion about a person, object or event' (Robbins and Judge, 2013: 71). Based on this, judging and commenting on any activity according to moral standards can be defined as an ethical attitude. According to Moosavi et al. (2016), ethical attitudes indicate motivation and practical commitment. They also add that while ethical attitude includes conformity to formal codes of professional ethics, ethical attitudes are more complex than merely following the rules and codes of ethics. They also believe that an ethical attitude is important because regulation alone is

unable to answer to and prepare for every ethically dangerous situation. Referring to other sources (Gastmans, 1999; Solomon, 2001; Olthuis and Dekkers, 2003; Olthuis, 2007), it is stated that an ethical attitude can help resolve such ethically dangerous situations. Education at different higher educational institutions can positively affect the students' perception of ethics. The students mostly think universities are ethical places by their nature (Özeltürkay et al., 2018). Bangladeshi students underlined the importance of ethics (and mostly: business ethics) education in university curricula because they associated the managers to follow the different ethical rules if they know their meanings and if their importance is clarified (Adhikary and Mitra, 2015). The ethical content of the education has to be designed carefully, concerning the age specificity of the students. With effectively designed ethical training included in the curricula, the students were more willing to follow the ethical rules (Berkovich and Eyal, 2018). Using movies to demonstrate ethical problems seems to be a successfully used tool in the case of university ethical education (Schwartz, 2017).

McCabe, together with his fellow authors (McCabe and Trevino, 1993, 1996; McCabe and Bowers, 1996; McCabe, Treviño and Butterfield, 2001), attempted in several studies to uncover the values and behaviour of students in relation to cheating. In terms of the 30-year period they studied, it was shown that student participation in university cheating increased, the participation rate of females was higher, and their willingness to cheat was intensified by the accepting attitude of their fellow students (the effect of this was considered particularly strong), or if the students saw their fellow students cheating. Concerning the codes of ethics established by the universities, it has been stated that their preparation is insufficient in itself; its introduction to and acceptance by students and teachers is also required. Earlier research has also found that the environment surrounding a person has a significant effect on the development of behavioural deviations (McCabe and Trevino, 1993; Jordan, 2001). The accepting attitude towards the cheating behaviour of students is still a perceptible and existing phenomenon, and it should also be noted that higher education might enhance the need of students to act on their cheating tendencies, as exams with more attending students increase their willingness to cheat (Király et al., 2018). At the same time, according to a survey conducted among Hungarian students, both teachers and students addressed issues beyond the ethical and disciplinary consequences of cheating on exams, as both lecturers and students mentioned that cheating might significantly undermine the motivation of lecturers towards teaching and working (Csillag et al., 2017). There are some differences in willingness to follow ethical rules by the discipline of the students. Still, most students accept unethical acting because they do not want to be excluded from different social groups just because of their ethical behaviour (Rodzalan and Saat, 2016). Most students reported their unethical behaviour during university classes is mostly related to using different IT and smart equipment for non-learning aims in research completed on a sample of Malaysian students (Ahmad et al., 2017). This research shows the students know that if they deal with topics unrelated to the university lectures during the classes, their behaviour is unethical.

Our own examinations were based on another research activity conducted among students, which can be attributed to Ludlum et al., who first assessed in 2009 and then in 2015 the extent to which their students perceive certain workplace behaviours as unethical (Ludlum and Moskaloinov, 2009; Ludlum, Moskaloinov and Ramachandran, 2013; Ludlum et al., 2015). According to their findings, the workplace situations considered the most unethical were the following (Ludlum, Moskaloinov and Ramachandran, 2013:15, Ludlum et al., 2015): ‘passing blame for your errors to an innocent co-worker’; ‘divulging confidential information’ (Ludlum, Moskaloinov and Ramachandran, 2013:21); ‘claiming credit for someone else’s work’ and ‘falsifying reports’. The questionnaire and examination methodology are described in more detail in the scope of the Material and Methods section.

An interesting research question is what sort of thoughts and feelings university students express about CSR (Corporate Social Responsibility). The importance of this topic is underlined by Karácsony (2020), who paid attention to the role of profit-oriented companies causing global social problems and the possibilities of the leaders of minimizing these risks. Since current students once can become leaders at profit-oriented companies, their attitude to CSR will be crucial. Research in CSR has mainly focused on differences between genders, classes, cultures, and generations (Luthar and Karri, 2005; Haski-Leventhal, 2013; Kaifi et al., 2014; Alonso-Almeida, Fernández De Navarrete and Rodríguez-Pomeda, 2015). Reviewing the research findings, the following observations were made: Kaifi and his research group published that there were significant differences between males and females in terms of the priority of social responsibility to the benefit of the latter. There was also a significant difference based on the cultural affiliation of the respondents: people from high-context cultures are more committed to CSR. The members of Generation Y are significantly more sensitive within this area as compared to the members of Generation X (Kaifi et al., 2014). Research related to Haski-Leventhal revealed that ethical corporate behaviour was the most important factor within the CSR pyramid of students, legal compliance was the second important, followed by economic, social, environmental, and last but not least, philanthropic responsibility (Haski-Leventhal, 2013).

According to the above, it can be seen that the student CSR pyramid does not match the order shown in Carroll’s (1979, 1991) CSR pyramid. In an article by Alonso-Almeida published in 2015, students were categorized by grades: it was found that second and third-grade students were less sensitive to CSR than their first-year fellow students (Alonso-Almeida, Fernández De Navarrete and Rodríguez-Pomeda, 2015). Luthar and Karri’s research (2005) informs us that the expectations of females towards corporate ethical behaviour are higher, and the sensitivity of higher-grade students in this regard is stronger, a fact that contradicts Alonso-Almeida’s findings.

One might wonder whether it is relevant to infer the later workplace behaviour of university students from their ethical attitudes. In this regard, Sims demonstrated in a study published in 1993 that there was a connection between the two (Sims, 1993). The research outcomes published by Sims were agreed upon and confirmed by Selvalakshmi and Mutharasi (2017).

## Findings of the empirical studies related to the ethical attitudes of university students

Ludlum and Moskaloinov conducted their first research among university students in 2009: they examined how Russian students see the causes of corruption, whether they are involved in corrupt acts of business life, and whether they would report if such a case came to their knowledge. In their study summarizing the research findings ( $n = 540$ ), they report that according to Russian university students, the three most common causes of corruption are the low level of legal culture and low willingness to comply with laws, inefficient functioning of state institutions and the existence of legal loopholes as well as the greed and immorality of Russian bureaucrats (Ludlum and Moskaloinov, 2009). According to the research findings, about half (47%) of the students are not involved in business corruption, which is quite positive. Still, the situation could be more favorable when it comes to reporting corruption if it came to their attention in any form: 40% of them declared that they would not report it (Ludlum and Moskaloinov, 2009).

Ludlum et al. continued their research in the United States: their study papers, published in 2013 and 2015, examined the ethical attitudes of American university students. The first survey involved 725 people, who said they considered the most unethical the following behaviour: ‘divulging confidential information,’ ‘passing blame for one’s errors to an innocent co-worker’ and ‘falsifying reports’. From an ethical point of view, the most acceptable behaviours were eating snacks at work and falling asleep in church (Ludlum, Moskaloinov and Ramachandran, 2013:21). However, the authors also pointed out that different individuals and groups may follow very different ethical values, making it almost impossible to set unified ethical guidelines for everyone in business life (for example, by referring to the code of conduct for companies).

A 2015 study by Ludlum et al. reports on the findings of the second round of research, which involved a narrower scope of only 356 university students. According to their findings, the most unethical workplace situations are the following: ‘passing blame for one’s errors to an innocent co-worker’; ‘to divulge confidential information’; ‘to claim credit for someone else’s work’ and ‘falsifying reports’, while they labeled one as entirely not ethical at all, namely whether it is ethical to eat snacks at work (Ludlum et al., 2015). Examining gender differences showed that females are more ethical than males, and smokers are more ethical than non-smokers (the latter could not be explained).

The original questionnaire was developed by Ruch and Newstrom (Ruch and Newstrom, 1975), in which 17 workplace situations were formulated. The research involved managers and supervisors completing a test: how unethical is the behaviour described, do describe it to your manager, how often do they do it, and how often do you think your manager does it? (Ruch and Newstrom, 1975: 17-18)

Their main findings:

- Managers perceive degrees of ethics (situations are not only black or white; some things are seen as more or less unethical than others) (Ruch and Newstrom, 1975: 19).
- No ethical standard is accepted universally: this depends on ethical codes and climates of their organizations (Ruch and Newstrom, 1975: 19).

- Another main conclusion: managers see their superiors as an important reference group and tend to align their ethical standards with their bosses' beliefs (Ruch and Newstrom, 1975:20).

In 1996, Deshpande and their colleagues conducted a survey ( $N = 136$ ) in Sakha Republic of Russia using a questionnaire of Ruch and Newstrom (Deshpande et al., 2000). Significant differences between genders were identified. Female managers reported various activities to be more unethical than their male colleagues. Among other results, we could mention falsely claiming sickness, pilfering organization supplies are more unethical than male managers, and accepting gifts and favors for preferential treatment.

We have already tested the ethical attitudes of domestic university students on a sample of 67 people (Barizsné and Ujhelyi, 2017). According to our findings at the time, our students classified more situations as particularly unethical than their American counterparts: divulging confidential information, passing blame for one's errors to an innocent co-worker, pilfering organization materials, claiming credit for someone else's work, falsifying reports, falling asleep at work, not reporting violations of organization regulations, increasing accounts by more than 10%, and falling asleep in church (the mean score of these statements was higher than 4). However, students did not find it unethical to give gifts for preferential treatment, to use the company's resources for private purposes, not to report others violating company policies, or to eat snacks at work (the mean score of these responses was below 3). Based on our findings, we also concluded that our students had a high degree of agreement (lower standard deviation values) for the behaviours considered particularly unethical. In contrast, in the case of the rest of the statements, the standard deviation was higher. Namely, our students were more divided on these issues (Barizsné and Ujhelyi, 2017).

### **Examination of the relationship between ethical workplace behaviours and Dark Triad personality traits**

In this chapter, we provide a brief overview of empirical research that, similarly to our own research, sought correlations between Dark Triad personality traits and ethical workplace behaviours.

Over the past one and a half decades, there has been an expanding scope of research to uncover the success of Dark Triad personalities from a management science perspective (Vize et al., 2018). This process is in line with the research tendency in international economics that pays increasing attention to unethical, dishonest, and unlawful elements in the operation of companies (Sadaf et al., 2018) - as their emergence is certainly inseparable from the personality of corporate managers. The ethical attitudes of managers significantly influence the quality of the reports submitted by companies as well (Im and Nam, 2019). Consequently, it has been found that individuals belonging to the Dark Triad prefer to use various 'cheater strategies' to achieve their interpersonal and social goals despite their antisocial personality (Fox and Rooney, 2015). Regarding morality, Dark Triad personalities

are often called compromising or dysfunctional (Jonason et al., 2015). As a result of the competing nature of competitive relationships, opportunistic behaviours may also intensify in corporate management, providing another great example of how the extreme personality of managers may affect the performance of companies and how it may result in organizations willing to break market rules (Cygler and Sroka, 2017) cooperation is fraught with threats arising mainly from both the coexistence and interaction of streams of cooperation and competition between competitors. Research on a sample of 235 companies operating in the high technology sector (HT). In 2012, Moore's research team examined the relationship between Dark Triad personality traits and unethical organizational behaviour. Based on the findings of multiple surveys, they concluded that the more Machiavellian a person is, the more prone they are to lying, antisocial behaviour, and exploitation of others.

O'Boyle and his fellow researchers (2012) looked for the relationship between the Dark Triad and counterproductive work behaviour. A meta-analysis was conducted by reviewing data from 186 studies, which found that the three Dark Triad traits were related and that all three Dark Triad traits were significantly associated with counterproductive workplace behaviours.

Furnham et al. (2013) analyzed the correlation between the Dark Triad traits and cheating among university students: psychopathy predicted copying the answers at exams, while Machiavellianism predicted plagiarism. As for the subjects involved in the study sample, those heavily psychopathic or Machiavellian students often demanded extra points they had not worked for.

Baughman's research group (2014) examined 462 university students. Their data found that psychopath and Machiavellian traits were positively correlated with cheating in both private life and university situations.

A study published by Roeser et al. (2016) pointed out that, in the case of the studied sample of 196 people (the respondents were students), the Dark Triad personality traits differed regarding unethical behaviour patterns. Machiavellians are involved in complex deception, while psychopaths are more involved in impulsive cheating (Roeser et al., 2016). Cohen's (2015) publication from 2016 confirms the findings of Boyle and his research team, namely that all Dark Triad traits positively correlate with so-called counterproductive workplace behaviour. We also found a source in the literature review that deals with a very actual topic related to business ethics: the management's role regarding the company's ethical operation. Intervention in the ethical side of the company operation can have a counterproductive effect. The aim of a company's management is more likely to create and maintain a milieu for the company that supports the formation of ethical working conditions (Treviño et al., 2006). This practice also supports the top-down flow of ethical norms and norm-creation at companies described by Diochon et al. (2018). In several cases, companies employ ethicist specialists to help the work of the ethical bodies - including, for example, an ethical committee - but applying ethics can also become counterproductive (Emmerich, 2009).

## Hypotheses

Ludlum et al. (2015) found that among the interviewed students, the most unethical workplace behaviours out of the 20 behaviours listed by them are: passing blame for one's errors to an innocent co-worker; divulging confidential information; claiming credit for someone else's work and falsifying reports, while the most ethically acceptable form of conduct from the same list is 'Eating snacks while at your work station'.

As a reflection of this:

H1: It is assumed that the opinions of our respondents about the unethical nature of the examined behaviours are in line with the findings of Ludlum (Ludlum et al., 2015)

H1.1: Students in the sample considered the following behaviour the most unethical:

- 'Divulging confidential information.'
- 'Passing blame for your errors to an innocent co-worker.'
- 'Claiming credit for someone else's work.'

In their research, Ludlum et al. (2015) identified 'Eating snacks while at your work station' as the most ethically acceptable form of behaviour. This can also be understood as indirectly shortening one's working time. Based on this:

H1.2: We assume that the least unethical form of behaviour in the sample of students is 'Eating snacks while at your work station.'

In her research, Moore (2012) found a link between Machiavellianism, propensity to lie, and antisocial behaviour. O'Boyle et al. (2012) found a significant association between Dark Triad personality traits and counterproductive workplace behaviour. Roeser et al. (2016) could relate those personality traits; we also examined various unethical behaviours. Based on this, we assume that:

H2: A significant positive linear correlation exists between unethical attitudes and Dark Triad personality traits.

H2.1: Acceptance of unethical behaviour suggests high Machiavellian values.

H2.2: Acceptance of unethical behaviour suggests high narcissistic value.

H2.3: Acceptance of unethical behaviour suggests high psychopathic value.

## MATERIAL AND METHODS

During our empirical research, we applied questionnaires as data collecting instruments with distinct scales for measuring ethical attitudes and Dark Triad personality.

The measurement tool for identifying ethical attitudes was taken over from previous research by Ludlum's research group (Ludlum, Moskalionov and Ramachandran, 2013). The original questionnaire contains 20 statements to evaluate, 19 describing workplace situations, and one describing a situation outside the workplace (actually in a church). Respondents were asked to rate on a Likert formatted 5-point evaluation scale the degree to which a given statement was considered unethical (5 being very unethical and 1 being very ethical).

Özeltürkay and their colleagues used this questionnaire in 2015: 275 questionnaires were collected at the university in the Mersin region, Turkey between 20 and 31 of July (Özeltürkay et al. 2018). They analyzed the scale's reliability

in their study: reliability analysis was done for both full of the items first. Then the scale was divided into two parts, and each part's reliabilities were calculated. The scale used in this study is reliable: both the first and the second half of the scale and the full of the scale have an appropriate Cronbach-alpha (0.781; 0.780; and 0.865) (Özeltürkay et al. 2018:7).

The Dark Triad personality traits were measured using a solid 12-item measurement tool called Dirty Dozen, developed and validated by Jonason and Webster (2010). They designed 4 Studies, involved 1085 respondents, and examined Dirty Dozen's structural reliability, convergent and discriminant validity, and test-retest reliability. This questionnaire contains 4 questions on Machiavellianism, 4 on Narcissism, and 4 on psychopathy. Respondents were asked to mark how much each behaviour is characteristic on a Likert formatted 7-point evaluation scale. Later, 2019 Maneiro et al. (2019) later validated the Spanish version of Dirty Dozen. The number of respondents was 326. The questionnaire showed good internal consistency and acceptable test-retest stability.

Data were collected between February and September 2017 among domestic students of the (*deleted to maintain integrity*) with the permission of the Ethics Committee of the Faculty. The students could fill in the questionnaires anonymously and voluntarily. Several background variables were recorded: gender, year of birth, number of siblings, the course they attended, and whether they attended an ethics course. The sample size is 347, of which 66.0% of respondents are females and 33.1% are males (missing data: 0.9%). The youngest respondent was born in 1999, and the oldest in 1964. 51% (177) of the students were born in 1996-1997. 65.7% (228) of the sample comes from programmes run by the faculty of economics and business, 27.7% (96) from the faculty of natural sciences, 4.6% (16) from the faculty of medical sciences, and the missing value is 2.0% (7).

For testing our hypotheses, linear regression analyses (factors representing ethical variables) were applied besides descriptive statistical methods. The Cronbach-alpha of the ethical full scale (20 items,  $N = 297$ ) is 0.789, while the Dark Triad questionnaire (12 items,  $N = 344$ ) is 0.825. Like Ozelturkay et al. (2018:7), we calculated the Cronbach-alpha for both sample halves. For the first half, it is 0.665 (10 items,  $N = 317$ ); for the second half, it is 0.694 (10 items,  $N = 311$ ). Bivariate linear correlation matrices of the total sample and the regression models reported in table 3 are presented in appendix 4.

## RESULTS

In presenting our research results, we first address H1 (H1.1, H1.2) hypothesis through descriptive statistics. Then we focus on the connection between respondents' Dark Triad personality traits and their ethical attitude (H2.1, H2.2, H2.3 hypothesis). We analyzed the ethical attitudes using factor analysis. Then we used these factors in our linear regression model.

### Ethical attitudes

Table 1 in Appendix shows the means, standard deviations, medians, and mean ranks of the 20-item ethical attitude questionnaire (Ludlum, Moskalionov and Ramachandran, 2013).

Taking into consideration those responses only that contained answers to all the 20 items ( $N = 297$ ), there were statistically significant differences in the perceived unethicalness of the listed behaviours (Friedman test was conducted;  $\chi^2(19) = 2248.8327, p < 0.001$ ). We have found that students considered the following behaviours to be the three most unethical (median = 5): 'EB8. Passing blame for your errors to an innocent co-worker', 'EB5. Divulging confidential information, and 'EB9. Claiming credit for someone else's work'. Wilcoxon signed-rank test was conducted for the consecutive item pairs to examine if the next item significantly differed from the previous one. EB8 and EB5 did not differ significantly ( $Z = -0.007, p = 0.994$ ), but the EB5-EB9, EB9-EB15 pairs do ( $Z = -3.813, p < 0.001$ ;  $Z = -2.738, p = 0.006$  respectively). EB15 and EB10 ( $Z = -1.533, p = 0.125$ ) did not differ again. The ethically most acceptable behaviour was 'Eating snacks while at your workstation', which had a significantly lower rank than the previous EB7 ( $Z = -5.409, p < 0.001$ ).

Factor analysis of the ethical attitudes questionnaire was performed with the exclusion of EB16 ('Falling asleep at church') (item labelling according to Table 1) as it is the only statement that does not represent work-related behaviour, and EB14 ('Authorizing a subordinate to violate organization rules.') as it did not fit to any of the revealed factors. The results of factor analysis with EB14 (KMO = 0.777, Bartlett's score = 1215.873,  $p < 0.001$ , explained variance = 57.807%) are not presented here for length reasons since we will not work with them further. However, the information in parentheses above shows that the omission of EB14 changed significantly, explaining neither the goodness of the factor analysis nor the proportion. The factor analysis was performed using the Listwise method to avoid possible biases caused by incomplete questionnaires.

The statistics for the Kaiser-Meyer-Olkin Measure of Sampling Adequacy test (0.773), and the Bartlett's test score (1134.775,  $p < 0.001$ ). Based on the results of the tests, exploratory factor analysis can be performed. The analysis resulted in 6 factors, which together explain 59.355% of the total variance. The factor analysis was conducted using the principal component method, varimax rotation, and Kaiser normalization (Table 2 in Appendix).

The resulting 6 factors were named as follows:

- Factor 1: mixed (EB5, EB8, EB9, EB10, EB15)
- Factor 2: physiological unethicality: (EB12, EB13, EB18, EB19)
- Factor 3: bribery: (EB3, EB17)
- Factor 4: overcharge: (EB2, EB11)
- Factor 5: exploitation of corporate resources: (EB1, EB4, EB6)
- Factor 6: 'honor among thieves': (EB7, EB20)

### Testing the connection between Dark Triad personality traits and ethical attitude factors

Regression analyses were performed to reveal linear relationships between the Dark Triad personality traits, ethical attitude factors, and other background variables (Table 3 in Appendix). In the regression model, we will use the following variables:

*FEMALE*: 1 if the respondent is female, 0 if male.

*BIRTHYEAR*: the year when the respondent was born

*SIBLING\_1*: 1 if the respondent has 1 sibling, 0 if otherwise (no sibling or more than one).

*SIBLING\_2*: 1 if the respondent has 2 siblings, 0 if otherwise (more or less than two).

*SIBLING\_3*: if the respondent has exactly 3 siblings, 0 if otherwise

*SIBLING\_4+*: if the respondent has 4 or more siblings, 0 if less than 4.

*PARTTIME*: 1 if the respondent is a part-time student, 0 if otherwise.

*2ND\_YR*: 1 if the respondent is a 2<sup>nd</sup> year student, 0 if otherwise.

*3RD\_YR*: 1 if the respondent is a 3<sup>rd</sup> year student, 0 if otherwise.

*MAJOR\_FA*: 1 if the respondent's major is BSc in Finance and Accounting, 0 if otherwise.

*MAJOR\_CM*: 1 if the respondent's major is BSc in Commerce and Marketing, 0 if otherwise.

*MAJOR\_ML*: 1 if the respondent's major is MSc in Management and Leadership, 0 if otherwise.

*MAJOR\_INT*: 1 if the respondent's major is BSc in International Economics, 0 if otherwise

*MAJOR\_B*: 1 if the respondent's major is BSc in Biology, 0 if otherwise

*MAJOR\_G*: 1 if the respondent's major is BSc in Geography, 0 if otherwise

*MAJOR\_HCM*: 1 if the respondent's major is MSc in Health Care Management, 0 if otherwise

*ETHICSCLASS*: 1 if the respondent has completed an Ethics related course, 0 if has not.

*FACT<sub>n</sub>*: The value of the ethics factor  $n$ .

Based on the results in Table 3, the summarized (total) score of the Dark Triad traits could be described by Equation 1 in the examined sample at a 5% significance level, which model was able to explain about 20.0% of the Dark Triad score.

$$Y_{DARKTRIAD} = 37.525 - 3.447 (X_{FEMALE}) - 6.581 (X_{MAJOR_CM}) - 3.402 (X_{FACT1}) - 0.668 (X_{FACT1})^2 - 0.326 (X_{FACT2})^3 - 1.271 (X_{FACT4})^3 + \varepsilon \quad (1)$$

$\varepsilon$  is the random error term. According to the regression model estimated from the sample, the dark triad personality score is lower if the respondent is a female, studies at the commerce-marketing major, and has higher values of the mixed (FACT1), physiological unethicality (FACT2), and overcharge (FACT4) factors.

The regression model of the Machiavellian personality trait is described in Equation 2 (based on Table 3):

$$Y_{MACHIAVELLISM} = 12.484 - 2.033 (X_{FEMALE}) + 0.337 (X_{FACT2})^2 - 0.497 (X_{FACT4})^3 + \varepsilon \quad (2)$$

This model can explain 11.7% of the variation of the Machiavellianism score. In our sample, male respondents, as well as ones with a higher 'physiological unethicality' (FACT2) value, tend to have a higher Machiavellianism level, while higher values of the 'overcharge' (FACT4) factor predict a lower level of Machiavellianism.

The second model in Table 3 shows the regression analysis results between the narcissism personality trait (explaining 10.9% of its variability) and the ethical attitude factors. The model is formalized in equation 3:

$$Y_{NARCISSISM} = 12.991 + 2.553(X_{MAJOR\_ML}) + 1.969(X_{MAJOR\_INT}) - 1.365(X_{FACT4}) + \varepsilon \quad (3)$$

Respondents of the sample tend to have more narcissistic personalities if they study management and leadership or international management. Higher values of the fourth ethics factor predict a less narcissistic personality.

The level of a psychopathic personality in the students' sample (Table 3) is formulated in Equation 4:

$$Y_{PSYCHOPATIC} = 10.807 - 1.973(X_{FEMALE}) - 2.186(X_{MAJOR\_HCM}) - 1.123(X_{FACT1}) - 0.176(X_{FACT1})^2 - 0.145(X_{FACT2})^3 - 0.230(X_{FACT4})^3 + \varepsilon \quad (4)$$

Psychopathic personality was lower in the sample for female and health management students, as well as if the values of the first, second, and fourth ethics factors had higher values. The model explained 18.3% of the studied personality trait.

## DISCUSSION

Our findings (see Appendix 1) on ethical attitudes are consistent with the findings of Ludlum et al. (2013; 2015), according to which the most unethical behaviour is 'Divulging confidential information' (EB5), 'Passing blame for your errors to an innocent co-worker' (EB8) and 'Claiming credit for someone else's work.' (EB9). The least unethical behaviour is 'Eating snacks while at your work station' (EB19). Based on the above, we have failed to reject (on the 5% level of significance) both sub-hypotheses (H1.1, H1.2) of our first hypothesis (H1: 'the opinions of our respondents about the unethical nature of the examined behaviours are in line with the findings of Ludlum'). When analyzing the research outcomes, we must remember that from a moral viewpoint, misleading and lying have different meanings (Berstler, 2019). As our analysis was completed on a sample of business students, we also paid attention to the outcomes of Gwinner et al. (2019), who stated that business students are more likely to formulate an opinion based on the needs of the business life than the non-business students. This circumstance is very important because, as Holcomb et al. (2019) underlined, companies with Ethics and Compliance Committees are more successful than those that do not use this kind of company practice. The university students' opinion – who will once become leaders at these companies – is very important and has an outstanding impact on their future performance.

Exploratory factor analysis was carried out based on the ethical attitudes questionnaire items, and we identified six factors.

Using linear regression analysis, we examined how these factors (and the background variables) reduce or increase the expected degree of the Dark Triad personality traits. We rejected our second hypothesis, 'H2: There is a significant positive linear correlation between unethical attitudes and Dark Triad personality traits' (on the 5% significance level) because our assumptions were only partially supported in the cases of certain factors in some models.

The investigations related to the ethical behaviour of the students and their moral beliefs have about a century-long history (Barnes, 1904; Carter, 1929; Dudycha, 1933). This topic is always actual as the universities have key roles in the employability of (former) students.

That circumstance means that universities are partly responsible for the students' employment (López-Miguens et al., 2021), and the students' success in the labor market can also depend on their ethical education. The role of ethical education in Eastern-Central-Europe became more important, as well as the ethics management elements used to spread in this region (Lašáková et al., 2021).

## CONCLUSION

This paper aimed to examine the relationship between the ethical attitudes of university students and their Dark Triad personality traits. Ludlum's questionnaire (Ludlum, Moskalionov and Ramachandran, 2013) was used to measure ethical attitudes, and the Dirty Dozen (Jonason and Webster (2010) measurement tool was chosen to evaluate the Dark Triad traits. Besides descriptive statistics, linear correlation analysis, factor analysis, and regression analysis were applied to prove the relationship. Our findings are in line with previous research results. The most unethical behaviour was 'Divulging confidential information', 'Passing blame for your errors to an innocent co-worker', and 'Claiming credit for someone else's work'. The least unethical behaviour was 'Eating snacks while at your workstation'. The relationship between the Dark Triad personality traits and six ethical attitudes factors were tested using linear regression analysis. We have found connections only between a few ethical factors and each DT trait.

Our study has several limitations. One is that the data were collected only once from one university. Analysing only one sample raises the problem of common method variance, which is a possible source of methodological bias. For more generalizable conclusions, future studies should extend the area of investigation.

We see further research opportunities in exploring the correlations between specific ethical attitudes and Dark Triad personality traits. However, examining the correlation between other individual characteristics and ethical attitude/behaviour is also recommended. Among individual characteristics, future models should include personality types (e.g., MBTI) or traits (e.g., Big Five), as well as academic performance.



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## APPENDIX

| Ethical Behaviour (EB)  | Mean  | Std. Dev. | Median | Mean Rank |
|---|-------|-----------|--------|-----------|
| EB8. Passing blame for your errors to an innocent co-worker.                              | 4.747 | 0.604     | 5.000  | 16.520    |
| EB5. Divulging confidential information.  | 4.731 | 0.633     | 5.000  | 16.515    |
| EB9. Claiming credit for someone else's work.   | 4.576 | 0.654     | 5.000  | 15.540    |
| EB15. Pilfering (taking) organization materials and supplies.                             | 4.444 | 0.761     | 5.000  | 14.763    |
| EB10. Falsifying time/quality/quantity reports.   | 4.370 | 0.671     | 4.000  | 14.355    |
| EB2. Padding (increasing) an expense account up more than 10%.                            | 4.030 | 0.844     | 4.000  | 12.306    |
| EB14. Authorizing a subordinate to violate organization rules.                            | 3.997 | 0.832     | 4.000  | 11.939    |
| EB16. Falling asleep at church.   | 3.684 | 1.053     | 4.000  | 10.285    |
| EB11. Padding (increasing) an expense account less than 10%.                              | 3.724 | 0.857     | 4.000  | 10.184    |
| EB13. Falling asleep at work.   | 3.707 | 0.804     | 4.000  | 10.133    |
| EB20. Not reporting others' violations of organization policies and rules.                | 3.515 | 0.826     | 4.000  | 8.975     |
| EB4. Taking longer than necessary to do a job.  | 3.519 | 0.847     | 3.000  | 8.914     |
| EB18. Taking extra personal time (arriving late for work, leaving early).                 | 3.515 | 0.754     | 4.000  | 8.854     |
| EB12. Call in sick to take a day off work.  | 3.485 | 0.745     | 4.000  | 8.803     |
| EB17. Accepting gifts/favors in exchange for preferential treatment.                      | 3.343 | 0.995     | 3.000  | 8.227     |
| EB6. Doing personal business on organization time.  | 3.313 | 0.744     | 3.000  | 7.697     |
| EB1. Using organization services for personal use (making long distance telephone calls). | 3.226 | 0.775     | 3.000  | 7.337     |
| EB3. Giving gifts/favors in exchange for preferential treatment.                          | 3.131 | 1.026     | 3.000  | 7.079     |
| EB7. Concealing ones errors.  | 3.121 | 0.846     | 3.000  | 6.705     |
| EB19. Eating snacks while at your work station.   | 2.754 | 0.840     | 3.000  | 4.869     |

Note: N = 297, minimum and maximum values are 1 and 5 in every case

**Table 1: Descriptives of ethical attitude-related responses, in order of their mean rank (source: own calculation)**

| Standardized EB values | Component |        |        |        |        |        |
|------------------------|-----------|--------|--------|--------|--------|--------|
|                        | 1         | 2      | 3      | 4      | 5      | 6      |
| EB1                    | -0.045    | -0.099 | 0.132  | 0.228  | 0.763  | -0.147 |
| EB2                    | 0.146     | 0.001  | 0.821  | 0.157  | 0.201  | -0.073 |
| EB3                    | 0.099     | -0.018 | 0.038  | 0.868  | 0.089  | 0.030  |
| EB4                    | 0.204     | 0.227  | 0.046  | 0.019  | 0.518  | 0.239  |
| EB5                    | 0.510     | 0.120  | 0.127  | 0.011  | 0.157  | 0.020  |
| EB6                    | 0.150     | 0.357  | 0.075  | -0.042 | 0.622  | 0.185  |
| EB7                    | 0.142     | -0.041 | 0.099  | 0.046  | 0.185  | 0.768  |
| EB8                    | 0.741     | 0.055  | -0.049 | 0.048  | -0.085 | 0.133  |
| EB9                    | 0.744     | -0.032 | -0.057 | 0.128  | 0.242  | 0.030  |
| EB10                   | 0.666     | 0.137  | 0.183  | 0.077  | 0.010  | 0.197  |
| EB11                   | 0.113     | 0.051  | 0.881  | 0.029  | 0.021  | 0.101  |
| EB12                   | 0.236     | 0.593  | 0.063  | 0.080  | 0.229  | 0.161  |
| EB13                   | 0.263     | 0.684  | -0.059 | -0.112 | -0.006 | -0.050 |
| EB15                   | 0.547     | 0.261  | 0.211  | -0.059 | -0.006 | 0.079  |
| EB17                   | 0.061     | 0.245  | 0.145  | 0.827  | 0.089  | 0.114  |
| EB18                   | 0.079     | 0.541  | 0.128  | 0.077  | 0.229  | 0.302  |
| EB19                   | -0.050    | 0.725  | 0.000  | 0.220  | 0.001  | 0.001  |
| EB20                   | 0.160     | 0.227  | -0.077 | 0.077  | -0.068 | 0.730  |

Note: Standardized EB values are the standardized values of the responses to ethical questions (see Table 1).

**Table 2: Ethical factors – Rotated component matrix, 2017-2018 (source: own calculation) N = 307**

| Independent        | Machiavellianism |           | Narcissism |           | Psychopathy |           | Dark Triad Total |           |
|--------------------|------------------|-----------|------------|-----------|-------------|-----------|------------------|-----------|
|                    | B                | t         | B          | t         | B           | t         | B                | t         |
| CONSTANT           | 12.484           | 23.845*** | 12.991     | 43.031*** | 10.807      | 28.260*** | 37.525           | 36.557*** |
| FEMALE             | -2.033           | -3.412*** |            |           | -1.973      | -4.239*** | -3.447           | -2.759**  |
| BIRTHYEAR          |                  |           |            |           |             |           |                  |           |
| SIBLING_1          |                  |           |            |           |             |           |                  |           |
| SIBLING_2          |                  |           |            |           |             |           |                  |           |
| SIBLING_3          |                  |           |            |           |             |           |                  |           |
| SIBLING_4+         |                  |           |            |           |             |           |                  |           |
| PARTTIME           |                  |           |            |           |             |           |                  |           |
| 2ND_YR             |                  |           |            |           |             |           |                  |           |
| 3RD_YR             |                  |           |            |           |             |           |                  |           |
| MAJOR_FA           |                  |           |            |           |             |           |                  |           |
| MAJOR_CM           |                  |           |            |           |             |           | -6.581           | -2.624**  |
| MAJOR_ML           |                  |           | 2.553      | 2.613**   |             |           |                  |           |
| MAJOR_INT          |                  |           | 1.969      | 2.676**   |             |           |                  |           |
| MAJOR_B            |                  |           |            |           |             |           |                  |           |
| MAJOR_G            |                  |           |            |           |             |           |                  |           |
| MAJOR_HEA          |                  |           |            |           | -2.186      | -2.123*   |                  |           |
| ETHICS CLASS       |                  |           |            |           |             |           |                  |           |
| FACT1              |                  |           |            |           | -1.123      | -3.566*** | -3.402           | -3.998*** |
| FACT1 <sup>2</sup> |                  |           |            |           | -0.176      | -2.280*   | -0.668           | -3.214**  |
| FACT1 <sup>3</sup> |                  |           |            |           |             |           |                  |           |
| FACT2              |                  |           |            |           |             |           |                  |           |
| FACT2 <sup>2</sup> | 0.337            | 2.094*    |            |           |             |           |                  |           |
| FACT2 <sup>3</sup> |                  |           |            |           | -0.145      | -3.726*** | -0.326           | -3.116**  |
| FACT3              |                  |           |            |           |             |           |                  |           |
| FACT3 <sup>2</sup> |                  |           |            |           |             |           |                  |           |
| FACT3 <sup>3</sup> |                  |           |            |           |             |           |                  |           |
| FACT4              |                  |           | -1.365     | -4.975*** |             |           |                  |           |
| FACT4 <sup>2</sup> |                  |           |            |           |             |           |                  |           |
| FACT4 <sup>3</sup> | -0.497           | -4.555*** |            |           | -0.230      | -2.732**  | -1.271           | -5.655*** |
| FACT5              |                  |           |            |           |             |           |                  |           |
| FACT5 <sup>2</sup> |                  |           |            |           |             |           |                  |           |
| FACT5 <sup>3</sup> |                  |           |            |           |             |           |                  |           |
| FACT6              |                  |           |            |           |             |           |                  |           |
| FACT6 <sup>2</sup> |                  |           |            |           |             |           |                  |           |
| FACT6 <sup>3</sup> |                  |           |            |           |             |           |                  |           |
| F                  | 13.563***        |           | 12.607***  |           | 11.612***   |           | 12.812***        |           |
| adjR <sup>2</sup>  | 0.117            |           | 0.109      |           | 0.183       |           | 0.200            |           |
| N                  | 285              |           | 285        |           | 285         |           | 285              |           |

Notes: Listwise method. \* 5% significant, \*\* 1% significant, \*\*\*0.1% significant

Table 3: Linear regression model for the explanation of the Dark Triad personality traits, 2017-2018 (source: own calculation)

|                   | birthyear | FAC1      | FAC1 <sup>2</sup> | FAC1 <sup>3</sup> | FAC2     | FAC2 <sup>2</sup> | FAC2 <sup>3</sup> | FAC3      | FAC3 <sup>2</sup> | FAC3 <sup>3</sup> | FAC4      | FAC4 <sup>2</sup> | FAC4 <sup>3</sup> | FAC5     | FAC5 <sup>2</sup> | FAC5 <sup>3</sup> | FAC6     | FAC6 <sup>2</sup> | FAC6 <sup>3</sup> |
|-------------------|-----------|-----------|-------------------|-------------------|----------|-------------------|-------------------|-----------|-------------------|-------------------|-----------|-------------------|-------------------|----------|-------------------|-------------------|----------|-------------------|-------------------|
| Machiavellianism  | 0.076     | -0.102*   | -0.017            | 0.029             | -0.075   | 0.124*            | -0.105*           | -0.042    | 0.016             | -0.046            | -0.241*** | -0.027            | -0.271***         | 0.025    | 0.127*            | -0.023            | -0.037   | 0.012             | -0.013            |
| Narcissism        | 0.008     | -0.059    | -0.050            | 0.068             | -0.068   | 0.038             | -0.077            | 0.004     | -0.013            | 0.007             | -0.282*** | 0.093             | -0.268***         | -0.004   | 0.058             | -0.021            | 0.054    | 0.070             | 0.086             |
| Psychopathy       | 0.077     | -0.194*** | 0.029             | -0.014            | -0.092   | 0.142**           | -0.206***         | -0.072    | 0.076             | -0.071            | -0.127*   | -0.034            | -0.175**          | 0.016    | 0.077             | -0.046            | 0.053    | -0.018            | 0.042             |
| DT total          | 0.067     | -0.144    | -0.019            | 0.038             | -0.098*  | 0.126*            | -0.158**          | -0.044    | 0.030             | -0.044            | -0.282*** | 0.015             | -0.307***         | 0.016    | 0.112*            | -0.037            | 0.026    | 0.029             | 0.047             |
| birthyear         | -0.080    | 0.083     | -0.056            | -0.056            | -0.047   | 0.011             | -0.049            | -0.184*** | 0.048             | -0.112*           | -0.108*   | -0.043            | -0.100*           | -0.028   | -0.011            | 0.028             | 0.046    | 0.049             | 0.035             |
| FAC1              | -0.729*** | 0.667***  | -0.029            | -0.016            | 0.009    | 0.002             | 0.061             | 0.010     | 0.061             | -0.010            | -0.007    | 0.108*            | 0.009             | -0.010   | -0.103*           | 0.066             | -0.034   | 0.133*            | -0.034            |
| FAC1 <sup>2</sup> | -0.967*** | -0.017    | -0.029            | 0.013             | 0.012    | 0.012             | -0.026            | -0.002    | -0.026            | -0.011            | -0.095    | -0.095            | -0.020            | -0.042   | 0.086             | -0.055            | -0.045   | -0.041            | -0.024            |
| FAC1 <sup>3</sup> | 0.031     | 0.021     | -0.003            | -0.032            | 0.034    | 0.034             | 0.034             | -0.010    | 0.082             | 0.000             | 0.018     | 0.082             | 0.000             | 0.018    | -0.049            | 0.013             | 0.035    | 0.048             | 0.002             |
| FAC2              | -0.145**  | 0.729***  | -0.011            | -0.045            | 0.018    | -0.021            | -0.045            | 0.007     | -0.022            | -0.145**          | 0.063     | 0.009             | -0.024            | 0.044    | 0.063             | 0.009             | -0.024   | 0.044             | 0.044             |
| FAC2 <sup>2</sup> | -0.286*** | -0.025    | -0.055            | 0.030             | -0.011   | -0.028            | 0.025             | -0.199*** | 0.318***          | -0.304***         | -0.038    | 0.025             | -0.038            | 0.025    | -0.026            | -0.026            | 0.025    | -0.026            | -0.026            |
| FAC2 <sup>3</sup> | -0.006    | -0.017    | 0.000             | -0.082            | -0.044   | -0.037            | 0.058             | -0.183*** | 0.190***          | -0.002            | -0.053    | 0.004             | 0.004             | 0.004    | 0.004             | 0.004             | 0.004    | 0.004             | 0.004             |
| FAC3              | -0.272*** | 0.696***  | -0.072            | 0.069             | -0.064   | 0.018             | -0.110*           | 0.045     | 0.004             | -0.038            | 0.012     | 0.012             | 0.012             | 0.012    | 0.012             | 0.012             | 0.012    | 0.012             | 0.012             |
| FAC3 <sup>2</sup> | -0.677*** | 0.001     | 0.033             | -0.008            | -0.034   | 0.068             | 0.026             | 0.043     | 0.149**           | 0.127*            | 0.127*    | 0.127*            | 0.127*            | 0.127*   | 0.127*            | 0.127*            | 0.127*   | 0.127*            | 0.127*            |
| FAC3 <sup>3</sup> | -0.055    | 0.066     | -0.039            | -0.041            | -0.114*  | -0.047            | -0.137*           | -0.073    | -0.073            | -0.073            | -0.073    | -0.073            | -0.073            | -0.073   | -0.073            | -0.073            | -0.073   | -0.073            | -0.073            |
| FAC4              | 0.009     | 0.850***  | 0.008             | 0.062             | -0.082   | -0.023            | -0.051            | 0.106*    | 0.008             | 0.042             | 0.042     | 0.042             | 0.042             | 0.042    | 0.042             | 0.042             | 0.042    | 0.042             | 0.042             |
| FAC4 <sup>2</sup> | 0.062     | -0.082    | -0.023            | -0.051            | 0.106*   | 0.008             | 0.042             | 0.042     | 0.042             | 0.042             | 0.042     | 0.042             | 0.042             | 0.042    | 0.042             | 0.042             | 0.042    | 0.042             | 0.042             |
| FAC4 <sup>3</sup> | 0.005     | -0.035    | -0.009            | 0.030             | -0.040   | 0.002             | 0.002             | 0.002     | 0.002             | 0.002             | 0.002     | 0.002             | 0.002             | 0.002    | 0.002             | 0.002             | 0.002    | 0.002             | 0.002             |
| FAC5              | -0.050    | 0.750***  | -0.043            | 0.012             | -0.020   | -0.025            | -0.025            | -0.025    | -0.025            | -0.025            | -0.025    | -0.025            | -0.025            | -0.025   | -0.025            | -0.025            | -0.025   | -0.025            | -0.025            |
| FAC5 <sup>2</sup> | -0.288*** | 0.035     | 0.119*            | -0.025            | -0.025   | -0.025            | -0.025            | -0.025    | -0.025            | -0.025            | -0.025    | -0.025            | -0.025            | -0.025   | -0.025            | -0.025            | -0.025   | -0.025            | -0.025            |
| FAC5 <sup>3</sup> | -0.086    | 0.014     | -0.042            | -0.042            | -0.042   | -0.042            | -0.042            | -0.042    | -0.042            | -0.042            | -0.042    | -0.042            | -0.042            | -0.042   | -0.042            | -0.042            | -0.042   | -0.042            | -0.042            |
| FAC6              | 0.057     | 0.783***  | 0.057             | 0.235***          | 0.235*** | 0.235***          | 0.235***          | 0.235***  | 0.235***          | 0.235***          | 0.235***  | 0.235***          | 0.235***          | 0.235*** | 0.235***          | 0.235***          | 0.235*** | 0.235***          | 0.235***          |
| FAC6 <sup>2</sup> | 0.235***  | 0.235***  | 0.235***          | 0.235***          | 0.235*** | 0.235***          | 0.235***          | 0.235***  | 0.235***          | 0.235***          | 0.235***  | 0.235***          | 0.235***          | 0.235*** | 0.235***          | 0.235***          | 0.235*** | 0.235***          | 0.235***          |

Notes: N = 285. \* 5% significant, \*\* 1% significant, \*\*\*0.1% significant

Table 4: Correlation matrix for Dark Triad, 2017-2018 (source: own calculation)