

The Dark Tetrad in Relation to Psychological Literacy of Future Teachers

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The Barcelona Conference on Education 2025
Official Conference Proceedings

Abstract

The dark tetrad, encompassing narcissism, Machiavellianism, psychopathy and sadism, has been explored within a variety of professional and educational settings. However, its relations with the psychological literacy of preservice teachers remains under-researched. This article examines the relations between the individual traits of the dark tetrad and psychological literacy in teacher education, which consists of psychological misconceptions, critical openness, reflective skepticism, trust in science, and integrity. The measures were administered to a sample of psychology teacher education students (N = 164) using the Dark Tetrad Questionnaire SD4 (Neumann et al., 2021), a questionnaire measuring psychological and pedagogical misconceptions, developed on the basis of the Psychological Misconceptions Scale (Tulis, 2013) and the General Psychology Misconceptions and Neuromyths questionnaire based on Educational Concepts Scale (McAfee & Hoffman, 2021), The Critical Thinking Disposition Scale (Sosu, 2013), The Credibility of Science Scale (Hartman, 2017) and The Integrity Scale (Schlenker, 2008). The following relations between the variables under study were found: The Dark Tetrad dimension Sadism was negatively correlated with Critical Openness, Reflective Skepticism, and Integrity, and weakly positively correlated with Trust in Science. The Dark Tetrad dimension Psychopathy correlated negatively with Reflective Skepticism and Integrity. The Dark Tetrad dimensions of Narcissism and Machiavellianism correlated negatively with Reflective Skepticism. On the basis of the above results, it is possible to recommend targeted selection of candidates for the teaching profession and systematic improvement of their psychological literacy in the sense of prevention of the occurrence of individual dimensions of the dark tetrad in the personality of future teachers.

Keywords: the dark tetrad, psychological literacy, teacher education

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Introduction

The dark tetrad is a term used in psychology to describe a group of four personality traits that are considered socially aversive - meaning they involve a tendency to harm, manipulate, or exploit others. It includes four distinct but interrelated traits: narcissism, characterized by grandiosity, entitlement, and a need for admiration (Raskin & Terry, 1988); Machiavellianism, defined by manipulation, strategic deception, and a lack of morality (Christie & Geis, 1970); psychopathy, associated with impulsivity, low empathy, and antisocial tendencies (Hare, 2003), and sadism, characterized by deriving pleasure from the suffering of others (Buckels et al., 2013).

Psychological literacy - the ability to apply psychological principles to personal and professional life is a crucial competency for future educators. Important components of psychological literacy are: psychological misconceptions, critical openness, reflective skepticism, trust in science, and integrity. It enables teachers to foster positive classroom environments, effectively manage student behavior, and engage in reflective teaching practices (McGovern et al., 2010).

However, certain maladaptive personality traits, such as those encapsulated in the dark tetrad (Paulhus, 2014), may undermine the development and application of psychological literacy in pre-service teachers. This study explores the intersection between the dark tetrad and psychological literacy, aiming to identify potential risks and areas for intervention in teacher education.

Literature Review

Research indicates that individuals with high dark tetrad traits may struggle with interpersonal relationships, ethical decision-making, and emotional regulation—essential qualities for effective teaching (Jonason et al., 2015). Teachers with high levels of narcissism may seek admiration from students rather than fostering genuine connections, potentially leading to a lack of constructive feedback and collaboration in the classroom. Machiavellian individuals, with their manipulative tendencies, may engage in strategic behaviors that prioritize personal success over student well-being, potentially affecting fairness in grading and discipline.

Psychopathy, characterized by impulsivity and low empathy, can hinder the ability to form positive relationships with students, reducing emotional support and sensitivity to their needs. Additionally, sadistic tendencies, although less prevalent, can manifest as excessive authoritarianism, leading to an intimidating and unsupportive learning environment. These maladaptive traits, if not properly managed, can negatively influence classroom dynamics, student performance, and overall teacher effectiveness.

Moreover, educators exhibiting dark tetrad traits may struggle with emotional regulation, making it difficult to manage classroom stressors and conflicts effectively. The ability to remain calm, exercise patience, and handle challenging student behaviors with empathy is crucial for fostering a positive educational environment. A lack of these qualities could contribute to increased teacher burnout, job dissatisfaction, and high turnover rates in the profession.

Since psychological literacy involves knowledge of psychological concepts, critical thinking, self-awareness, and the ethical application of psychology in real-life situations (Cranney &

Dunn, 2011), teachers with high psychological literacy demonstrate better classroom management, conflict resolution, and student-centered teaching skills. Psychological literacy enables teachers to understand student behavior, recognize learning difficulties, and implement effective interventions to support academic success and well-being (Dunn et al., 2013).

Furthermore, psychological literacy involves the development of self-reflection, allowing educators to assess their biases, emotional responses, and decision-making processes (McGovern et al., 2010). Teachers with higher levels of psychological literacy are better equipped to foster inclusive and supportive learning environments, where students feel safe and motivated to engage in the learning process.

However, educators exhibiting dark tetrad traits may lack the empathy and ethical reasoning necessary to apply psychological principles effectively in educational contexts. Machiavellian and psychopathic tendencies, for instance, may lead to manipulative teaching practices or an inability to address students' emotional needs appropriately (Jonason & Krause, 2013). Sadistic traits may manifest in rigid disciplinary approaches or the failure to create a nurturing classroom atmosphere. Therefore, it is essential for teacher training programs to integrate psychological literacy education to mitigate these potential risks and promote ethical, empathetic teaching practices.

Educational institutions should incorporate evidence-based interventions, such as mindfulness training, ethical decision-making workshops, and interpersonal skills development, to enhance psychological literacy among future educators (Taylor & Neimeyer, 2015). These initiatives can help mitigate the negative impact of dark tetrad traits and cultivate emotionally intelligent, self-aware, and ethically responsible teachers who can positively influence student learning and development.

Methodology

Based on the findings, the research problem could be formulated as follows: Is there a negative relationship between the dimensions of the dark tetrad (Machiavellianism, Psychopathy, Narcissism and Sadism) and the dimensions of psychological literacy (Psychological Misconceptions, Critical Openness, Reflective Skepticism, Science Trustworthiness, Integrity).

The research goals stemming from the above could then be formulated as follows:

- To identify the relationship between the dimension of the dark tetrad Machiavellianism and the dimensions of psychological literacy (Psychological Misconceptions, Critical Openness, Reflective Skepticism, Science Trustworthiness, Integrity) of future teachers.
- To identify the relationship between the dimension of the dark tetrad Psychopathy and the dimensions of psychological literacy (Psychological Misconceptions, Critical Openness, Reflective Skepticism, Science Trustworthiness, Integrity) of future teachers.
- To identify the relationship between the dimension of the dark tetrad Narcissism and the dimensions of psychological literacy (Psychological Misconceptions, Critical Openness, Reflective Skepticism, Science Trustworthiness, Integrity) of future teachers.
- To identify the relationship between the dimension of the dark tetrad Sadism and the dimensions of psychological literacy (Psychological Misconceptions, Critical

Openness, Reflective Skepticism, Science Trustworthiness, Integrity) of future teachers.

Research Hypotheses

Within the study at hand, we verified the following hypotheses:

H1: We suppose that between the dimension of the dark tetrad Machiavellianism and the dimension of psychological literacy

- H1.1 psychological misconceptions,
- H1.2 critical openness,
- H1.3 reflective skepticism,
- H1.4 science trustworthiness,
- H1.5 integrity there is a negative relationship.

H2: We suppose that between the dimension of the dark tetrad Psychopathy and the dimension of psychological literacy

- H2.1 psychological misconceptions,
- H2.2 critical openness,
- H2.3 reflective skepticism,
- H2.4 science trustworthiness,
- H2.5 integrity there is a negative relationship.

H3: We suppose that between the dimension of the dark tetrad Narcissism and the dimension of psychological literacy

- H3.1 psychological misconceptions,
- H3.2 critical openness,
- H3.3 reflective skepticism,
- H3.4 science trustworthiness,
- H3.5 integrity there is a negative relationship.

H4: We suppose that between the dimension of the dark tetrad Sadism and the dimension of psychological literacy

- H4.1 psychological misconceptions,
- H4.2 critical openness,
- H4.3 reflective skepticism,
- H4.4 science trustworthiness,
- H4.5 integrity there is a negative relationship.

Sample

The structure of the research sample as regards gender and profession is stated in Table 1. The age range of the sample was from 19 to 50 years old.

Table 1
Structure of Research Sample

	Research sample	N	%
Sex	Men	16	9,8
	Women	147	89,6
	Did not indicate	1	0,6
Country	Students from Slovakia	90	54,9
	Students from Czech Republic	74	45,1
Study programme	Primary school teaching	25	15,2
	Secondary school teaching	100	61,0

Note. N - count

Measurements

The battery of questionnaires used contained demographic questions at the start, concerning age, sex, country and study programme (preschool and elementary education, primary school teaching, secondary school teaching). To measure the presence of the so-called dark tetrad in the personality of the participants we used the Short dark tetrad (SD4) questionnaire (Neumann, et al., 2021). A cross-sectional study was conducted with 250 pre-service teachers enrolled in education programs across multiple universities. The authors created a questionnaire consisting of 28 elements. As an element example, there is People perceive me as a natural leader. The questionnaire is four-dimensional, the individual dimensions measure machiavellianism, psychopathy, narcissism and sadism. We translated the questionnaire into Slovak. Our version instructed the participants as follows: To which level do you agree with the following statements? The participants answered the individual questions of the questionnaire on a five point scale, where 1 meant do not agree at all and 5 meant agree completely. The following questionnaires were used to measure the psychological literacy of future teachers:

To measure psychological and pedagogical misinformation, we administered 25 statements from psychology and pedagogy related to teaching practice, drawn from the Psychological Misconceptions Scale (Tulis, 2013) and the General Psychology Misconceptions and Neuromyths Based on Educational Concepts Scale (McAfee & Hoffman, 2021). Participants rated how strongly they believed each statement to be true on a five-point scale (1 = not true at all; 5 = definitely true). A higher score indicates greater misinformation.

Critical Thinking Disposition Scale (CTDS). The scale was developed by Sosu (2013), who based it on the assumption that every individual has a tendency towards critical thinking, but may not necessarily use this disposition. The author understands critical thinking disposition as the ability to use critical thinking when it is necessary to justify, argue, and make decisions. According to Sosu (2013), critical thinking dispositions represent an individual's attitudes, intellectual capabilities, and habits of mind. The scale contains 11 items – statements that participants rate on a 5-point scale (1 = strongly disagree, 2 = disagree, 3 = no opinion, 4 = agree, 5 = strongly agree). They rate each statement in relation to themselves and their behavior. The questionnaire measures two dimensions of critical thinking dispositions – critical openness (7 items) and reflective skepticism (4 items). The author explains reflective skepticism as an individual's ability to critically view information, question evidence, and learn from past experiences. He understands critical openness as the ability to modify one's own

opinions and thinking as a result of convincing evidence. The questionnaire is easy to administer and takes approximately 2-3 minutes to complete.

Credibility of Science Scale (CSS). The author of the modified Credibility of Science Scale we used is Hartman (2017). The scale consists of six statements, in relation to which participants express their level of agreement or disagreement on a 5-point scale (1 = strongly disagree, 2 = disagree, 3 = no opinion, 4 = agree, 5 = strongly agree). The modification of the tool consists in reducing the 7-point scale to a 5-point scale, which is considered more effective (Hartman, 2017). The advantages of the scale are its short length, quick administration (approximately 3 minutes), convincing validity, and wide range of uses.

Integrity Scale (IS). The Integrity Scale was developed by Schlenker (2008). The scale consists of 18 items formulated as statements. Participants express their level of agreement or disagreement with the statements on a 5-point scale (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree). The integrity scale focuses on identifying attitudes and personality traits that predict desired ethical behavior and thus lead to greater psychological well-being, stress management, and effective functioning in the social system. The advantage of the questionnaire is that it is quick to administer (taking approximately 3–5 minutes) and easy to evaluate.

To process the data obtained, statistical procedures were used – descriptive statistic (arithmetic mean, standard deviation, median, minimum, maximum) and inferential statistics (Pearson's correlation coefficient) to discover the relationships among variables.

Results

In the following text and tables we state the descriptive data of individual dimensions of psychological literacy first (Psychological Misconceptions, Critical Openness, Reflective Skepticism, Science Trustworthiness, Integrity), and the dimensions of dark tetrad, of the participants of our research sample (Table 2), which were obtained using the Short dark tetrad SD4 questionnaire, Psychological Misconceptions Scale, General Psychology Misconceptions and Neuromyths based on Educational Concepts Scale, Critical Thinking Disposition Scale, Credibility of Science Scale and The integrity scale. The results are stated as average gross score, minimum, maximum, median and standard deviation of measured variables, as in, the psychological literacy – Psychological Misconceptions, Critical Openness, Reflective Skepticism, Science Trustworthiness, Integrity and the dimensions of the dark tetrad (Machiavellianism, Psychopathy, Narcissism and Sadism) of participants.

Table 2
Descriptive Data on Psychological Literacy and Dark Tetrad in Participants

	N	AM	Median	SD	Min	Max
Psychological Misconceptions	164	3.148	3.14	0.285	2.250	3.92
Critical Openness		4.230	4.29	0.507	2.860	5.00
Reflective Skepticism		4.163	4.25	0.577	2.750	5.00
Science Trustworthiness		3.438	3.33	0.841	1.000	5.00
Integrity		3.516	3.50	0.461	2.530	4.80
Machiavellianism		3.191	3.29	0.637	1.430	4.86
Narcissism		2.509	2.43	0.694	1.140	4.71
Psychopathy		1.793	1.71	0.573	1.000	4.14
Sadism		1.660	1.43	0.629	1.000	4.14

Note. N – count, AM – arithmetic mean, SD – standard deviation, Min – minimum value, Max – maximum value

Participants in our research sample (N = 164) achieved an average gross score of 3.148 points in the Psychological Misconceptions dimension, with a standard deviation of 0.285, a median of 3.14, the lowest value was 2.25, and the highest was 3.92 points. In the Critical Openness dimension, they achieved an average raw score of 4.23 points, with a standard deviation of 0.507, a median of 4.29, the lowest value being 2.86 and the highest 5 points. In the Reflective Skepticism dimension of psychological literacy, they achieved an average raw score of 4.163 points, with a standard deviation of 0.577, a median of 4.25, the lowest value reaching 2.75, and the highest 5 points. In the Science Trustworthiness dimension, they achieved an average raw score of 3.438 points, with a standard deviation of 0.841, a median of 3.33, the lowest value being one and the highest being 5 points. In the Integrity dimension, participants achieved an average raw score of 3.516 points, with a standard deviation of 0.461, a median of 3.5, the lowest value being 2.53 and the highest 4.8 points. In the Machiavellianism dimension of the dark tetrad, participants in our research sample achieved an average raw score of 3.191 points, with a standard deviation of 0.637, a median of 3.29, a minimum value of 1.43, and a maximum value of 4.86 points. In the Narcissism dimension, participants achieved an average raw score of 2.509 points, with a standard deviation of 0.694, a median of 2.43, the lowest value reaching 1.14 and the highest 4.71 points. In the Psychopathy dimension, participants achieved an average raw score of 1.793 points, with a standard deviation of 0.573, a median of 1.71, the lowest value being one and the highest 4.14 points. In the Sadism dimension, participants achieved an average raw score of 1.660 points, with a standard deviation of 0.629, a median of 1.43, the lowest value being one and the highest 4.14 points.

In our research, we looked at the mutual relationship (the strength and polarity) of the individual dimensions of future teachers psychological literacy and the dimensions of the dark tetrad. The results of the correlation analysis are listed in Table 3.

Table 3

Results of Correlation Analysis of Psychological Literacy Levels and Dark Tetrad in Research Sample Participants (N = 164)

Psychological Literacy	Dark Triad			
	Machiavellianism	Psychopathy	Narcissism	Sadism
Psychological Misconceptions	0.004	-0.001	-0.029	-0.050
Critical Openness	-0.148	-0.044	-0.003	-0.262***
Reflective Skepticism	-0.164*	-0.259***	-0.212**	-0.372***
Science Trustworthiness	-0.048	-0.079	-0.028	0.160*
Integrity	-0.147	-0.259***	-0.144	-0.210**

Note. r – Pearson's correlation coefficient, *** correlation is significant at the 0.001 level (2-tailed), ** correlation is significant at the 0.01 level (2-tailed), * correlation is significant at the 0.05 level (2-tailed)

A strong negative relationship was found between the dark tetrad dimension of sadism and reflective skepticism. A moderately strong negative relationship was found between the dark tetrad dimension of sadism and critical openness, trust in science (inverse questionnaire items), and integrity. A moderately strong negative relationship was also found between the dark tetrad dimension of psychopathy and reflective skepticism and integrity, between the dark tetrad dimension of narcissism and reflective skepticism, and between the dark tetrad dimension of Machiavellianism and reflective skepticism.

Discussion

The present study explored how the four dimensions of the Dark Tetrad—sadism, psychopathy, narcissism, and Machiavellianism—relate to epistemic and ethical-personality dispositions, namely reflective skepticism, critical openness, trust in science (via inverse items), and integrity. In summary: a strong negative association emerged between the sadism dimension and reflective skepticism; further, sadism showed a moderately strong negative relationship with critical openness, trust in science, and integrity. In addition, psychopathy was moderately negatively associated with reflective skepticism and integrity; narcissism was moderately negatively associated with reflective skepticism; and Machiavellianism was moderately negatively associated with reflective skepticism.

Sadism and Reflective Scepticism

The particularly strong negative relationship between sadism and reflective skepticism suggests that individuals higher in sadistic disposition are markedly less inclined to engage in reflective, critical thinking about underlying assumptions and to entertain doubt or meta-cognitive reflection of their own beliefs. One plausible interpretation is that the sadistic disposition—characterised by deriving pleasure from another's suffering or ignorance (e.g., Buckels et al., 2013) may diminish the motivation to question or revisit one's views, perhaps because the individual takes comfort in dominating or remaining unchallenged. This aligns with evidence indicating that sadism adds a unique component beyond the Dark Triad and is empirically distinct from psychopathy (Johnson et al., 2019). Thus, our results extend this literature by showing how sadism relates not only to aggression or interpersonal dominance, but also to lowered epistemic virtue - specifically reflective skepticism.

Psychopathy, Narcissism, Machiavellianism, and Epistemic/Ethical Dispositions

The observed moderate negative associations between psychopathy (and to a lesser extent narcissism and Machiavellianism) and reflective scepticism and integrity suggest that individuals higher in these dark traits are less likely to adopt a stance of intellectual humility, self-questioning, or moral self-consistency. For psychopathy, this is consistent with prior findings that higher psychopathy is tied to lower integrity and greater unethical behaviour: for instance, in the study by Rassin et al. (2024) showing that high scores on the Short Dark Tetrad predicted deceptive responses on integrity tasks. Similarly, the negative link between dark traits and trust in institutions finds parallel in research by Jonason et al. (2015): Machiavellianism and psychopathy, for example, have been shown to associate with lower political trust and greater conspiracy belief endorsement, which in turn may reflect generalized epistemic mistrust or cynical worldview. Although our study did not measure conspiracy beliefs directly, the pattern of reduced trust in science among individuals higher in sadism suggests a similar underlying logic: a dark-trait profile marked by antagonism, suspicion, callousness, and exploitativeness may undermine the readiness to trust scientific authority or evidence.

With regard to narcissism, the moderate negative association with reflective scepticism indicates that grandiose self-views and entitlement may impair one's willingness to question one's own beliefs or assumptions. While narcissism has sometimes been linked to higher confidence or boldness, this may come at the cost of lower reflective doubt or epistemic humility.

Critical Openness and Trust in Science

Our finding that sadism in particular was moderately negatively related to critical openness underscores that this trait may hamper not only scepticism (i.e., questioning) but also the disposition to engage with alternative viewpoints or new evidence. This echoes broader personality research linking openness to experience with cognitive curiosity, intellectual breadth and reflective thinking (e.g. Kaufman et al., 2016). Indeed, given that openness is positively associated with reflective learning styles and elaborative processing, it is plausible that individuals higher in dark traits, by virtue of lower openness, might show reduced critical openness. Moreover, the negative relationship between dark traits and trust in science in our study aligns with work showing that dark personality traits predict lower compliance with public health measures (e. g. COVID-19 vaccination uptake) and lower institutional trust (see Blasco-Belled et al., 2024, about meta-analysis on Dark Triad and well-being).

Integrity

Integrity, operationalised here as self-reported adherence to ethical and moral consistency, was negatively related in our data to sadism and psychopathy. This finding dovetails with previous research showing that dark traits are predictive of immoral, unethical or exploitative behaviours in organisational settings, and can serve as screening tools for integrity violations. For example, the study by Rassin et al. (2024) found that individuals lying on a matrix task had elevated scores on all four dark traits. Thus, our results linking dark traits to lower integrity further position epistemic and ethical dispositions (scepticism, openness, trust) within the broader nomological network of dark personality.

Conclusion

In summary, the present research demonstrates that individuals higher in dark personality traits—particularly sadism and psychopathy—tend to display lower levels of reflective scepticism, lower critical openness, less trust in science and lower integrity. These findings broaden the conceptual reach of dark traits into the domain of epistemic and ethical dispositions, highlighting the importance of personality for how people think about knowledge, evidence, science and morality. Future work should explore longitudinal pathways, interventional possibilities, and the interplay of dark traits with cognitive, educational and cultural factors.

Implications

The findings have practical implications. In the context of education, organizational, or scientific communication, it may be useful to consider how individuals with high levels of dark traits (particularly sadism and psychopathy) may respond differently to efforts to promote critical thinking, scientific literacy, or ethical integrity. For example, initiatives that rely on promoting reflective skepticism or trust in science may require tailored approaches if certain personality dispositions predispose individuals to resistance or distrust of such processes. When assessing integrity (e.g., in organizations or in employee recruitment), measurements of dark traits may signal not only the risk of unethical behavior but also epistemic resistance (a reduced willingness to reflect or trust evidence), which could hinder evidence-based decision-making.

Limitations

Several limitations must be acknowledged. First, the cross-sectional design prevents strong causal inference: while we interpret dark traits as antecedents of lower scepticism, openness, trust and integrity, it is also plausible that lower integrity or lower critical openness might foster or reinforce dark tendencies over time. Longitudinal designs would help clarify directionality. Second, measurement constraints: though the Short Dark Tetrad and related scales have acceptable psychometric properties, some research points to overlap among the dark traits (especially sadism and psychopathy) and to measurement issues (Johnson et al., 2019).

Recommendations

Future studies could include assessments using multiple methods (e.g., informant reports, behavioral tasks) to enhance their reliability. Reflective skepticism, critical openness, trust in science, integrity—although theoretically important, are relatively new to the dark traits literature; further research is needed to validate these constructs and explore potential mediators (e.g., moral detachment, epistemic curiosity, cynicism) or moderators (e.g., education, cognitive ability, cultural context) is needed to verify these constructs and explore potential mediators (e.g., moral detachment, epistemic curiosity, cynicism) or moderators (e.g., education, cognitive ability, cultural context). Finally, generalizability may be limited by the sample (e.g., students, one country), and replication in different cultural contexts would strengthen the credibility of the findings.

Acknowledgements

The study was supported by the scientific grant agency of the Ministry of Education, Research, Development and Youth of the Slovak Republic as part of the project VEGA 1/0255/24 Professional Competencies and Psychological Literacy of Teachers.

Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

The authors declare that generative artificial intelligence (AI) and AI-assisted technologies were used in the preparation of this manuscript solely for language proofreading and the formulation of professional and domain-specific phrasing. All ideas, interpretations, and conclusions presented in the text are the original work of the authors. The AI tools did not contribute to the generation of scientific content, data analysis, or interpretation of results.

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