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Personality and Individual Differences

The Dark Triad traits and intelligence: Machiavellians are bright, and narcissists and psychopaths are ordinary

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ABSTRACT

Extant empirical research, despite some theoretical descriptions, has consistently demonstrated that the Dark Triad is not related to general mental ability. In the present study, we investigated the relationship between the Dark Triad of personality (narcissism, Machiavellianism, and psychopathy) and fluid intelligence. A sample of 128 Polish high school students (M_{age} = 16.89 years; SD_{age} = 0.31; 28.1% of the sample were boys) completed the Polish translation of the Short Dark Triad and the Raven's Standard Progressive Matrices. Hypotheses were tested using a structural equation model, which fit the data well. As predicted, we found that of the three Dark Triad traits, only Machiavellianism was significantly predicted by fluid intelligence. Our findings are discussed in light of previous research and theory.

1. Introduction

1.1. Dark Triad

The Dark Triad consists of three related, but theoretically distinct personality traits (subclinical narcissism, Machiavellianism, and subclinical psychopathy; Paulhus & Williams, 2002). These dimensions, to varying degrees, are characterized by grandiosity, callousness, deceit, and aggression. More specifically, Raskin and Hall (1979) described subclinical narcissism as involving proclivities towards entitlement, dominance, grandiosity, and superiority. An example of narcissism in popular culture is Johnny Bravo, a pompous self-absorbed cartoon character, who presented himself to unacquainted women as perfect, whereas remained entitled and arrogant to people who knew him. Machiavellianism represents tendencies towards emotional coldness, strategic manipulation, and lack of conventional morality (Christie & Geis, 1970). An example of such a character is Theodore Kaczynski (aka the Unabomber), a mathematical genius who bombed and used threats of future violence to coerce the American press to publish his manifesto, with the goal of starting a revolution. Owing to his strategical skills and long-term planning, he remained invisible to the FBI for nearly twenty years. Lastly, psychopathy is typified by impulsivity, emotional coldness, and relative lack of anxiety (Hare, 1985). Vlad the Impaler, the fifteenth-century prince of Wallachia (aka Dracula) can be described as

an archetypal psychopath because of his deceitfulness, ruthlessness, and cruelty.

1.2. Empirical accounts of the Dark Triad

The empirical evidence on the distinction between these traits is not always consistent with this theoretical narrative. For instance, some studies suggested that Machiavellianism, as currently measured, is a global scale of psychopathy that confounds primary with secondary psychopathy (McHoskey, Worzel, & Szyarto, 1998; Persson, Kajonius, & Garcia, 2017; Rogoza & Cieciuch, 2018). Other self-report studies have corroborated this claim, demonstrating that self-control and impulsivity were correlated with Machiavellianism in a way that would be more consistent with theoretical accounts of psychopathy (low self-control, high impulsivity; Jonason & Tost, 2010; Jones & Paulhus, 2011; Marusic, Bratko, & Zarevski, 1995; Miller, Hyatt, Maples-Keller, Carter, & Lynam, 2017; Petrides, Vernon, Schermer, & Veselka, 2011). McHoskey et al.'s (1998) concerns were further echoed in self-report and meta-analytic investigations suggesting that Machiavellianism does not represent anything beyond psychopathy (Glenn & Sellbom, 2015; Lee & Ashton, 2005; Miller et al., 2017; O'Boyle, Forsyth, Banks, Story, & White, 2015; Vize, Lynam, Collision, & Miller, 2016).

This controversy is further complicated with behavioural empirical evidence that demonstrates clear differences between Machiavellianism

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and psychopathy in ways that are consistent with their theoretical definitions. For instance, in a series of studies, Jones and Paulhus (2017) demonstrated that psychopaths, but not Machiavellians, cheated in coin-flip tasks when there was a serious risk of punishment; when ego-depleted however, the results for Machiavellian individuals were similar to those of psychopaths. Moreover, Jones and Weiser (2014) found that although all three Dark Triad traits correlated with retrospective infidelity, psychopaths' infidelity predicted relationship dissolution, while Machiavellians' infidelity was not related to relationship dissolution. Jones and Weiser (2014) explained these results citing that psychopaths are reckless, while Machiavellians are more strategic in their malevolence. This explanation is consistent with other behavioural studies (e.g., Jones, 2013, 2014; Jones & De Roos, 2017). This strategic element in Machiavellianism suggests the requirement of more cognitive resources (Jones & Paulhus, 2017). Previous research has further shown that Machiavellians devoted more cognitive effort to lying than psychopaths (Baughman, Jonason, Lyons, & Vernon, 2014) and showed elevated activity in the brain areas involved in anticipation of risky situations and inference making when playing an economic game (Bereczkei, Deak, Papp, Perlaki, & Orsi, 2013).

1.3. Dark Triad and intelligence

Fluid intelligence is a general ability that determines the efficiency of all activities, and therefore is crucial in terms of adaptation to the requirements of life and also is responsible for purposeful actions (cf. Matczak, 1994) – thus, it can be described as innate ability to reasoning (see also: Strelau, 2015). Crystallized intelligence, in turn, can be defined as a set of many different detailed intellectual abilities (cf. Matczak, 1994). The former is biologically preconditioned and constitutes intellectual potential, while the latter evolves under the influence of individual experiences and learning, by engaging this fluid potential in action and investing it in activities determined by environmental and cultural factors (cf. Matczak, 1994; Strelau, 2015). Research on the Dark Triad and intelligence demonstrates another discrepancy between theoretical assumptions and the empirical results, especially with respect to Machiavellianism. Machiavellians are described as strategic manipulators. Intuitively and consistently with this description, it would follow that Machiavellianism should be correlated with intelligence. Previous research however, does not support this prediction. Paulhus and Williams (2002) found that out of the Dark Triad, only narcissism was significantly (weakly) correlated with intelligence, while none of the Dark Triad traits were related to cognitive ability as measured by the Wonderlic Personnel Test (WPT; Wonderlic, 1977). In the same vein, in a meta-analysis of 48 independent samples, O'Boyle, Forsyth, Banks, and Story (2013) found that overall, there was no consistent relationship between Dark Triad traits and general mental ability, concluding that the evil genius hypothesis (the view that intelligent people are more likely to display socially exploitive personality dispositions) is not an accurate reflection of reality. In line with this conclusion, Jones and Paulhus (2009) warned against assuming that Machiavellians are skilled at manipulating people because of their dispositional willingness to try to manipulate people. Additionally, Jones and Paulhus (2009) suggest that any manipulative abilities of Machiavellians are from their superior impulse control, rather than superior cognitive ability.

Some explanation of the observed discrepancies may be assumed from the view stating that, "narcissists and, to a lesser extent, psychopaths tended to overestimate their intelligence, whereas Machiavellians did not" (Paulhus & Williams, 2002, p. 560). In this vein, Rauthmann (2012) investigated informal student dyads and analyzed the data on the Dark Triad and several kinds of intelligence in two perspectives: (1) "how dark personalities see themselves" and (2) "how dark personalities see others". The global intelligence score, in terms of self-appraisal, was positively related to narcissism and psychopathy, while negatively to Machiavellianism. Within dyad-partner evaluation was negatively

linked to Machiavellianism and psychopathy (Rauthmann, 2012). These results were also partially supported by the results of the study of Zajenkowski and Czarna (2015), who demonstrated that whereas narcissism was not related to objectively measured intelligence, it was positively correlated with subjectively assessed intelligence. These results are in line with observations suggesting that narcissists tend to engage in socially desirable responding (Kowalski, Rogoza, Vernon, & Schermer, 2018).

1.4. Machiavellianism and intelligence

Because many of the past studies examining Machiavellianism and intelligence have relied more on self-appraisals (e.g., Rauthmann, 2012), and because Machiavellians tend to provide socially desirable responses (Kowalski et al., 2018), using different approaches where the effect of the social desirability is at least partially limited (e.g., experimental designs, implicit tests, power tests), are needed. Although it may be hypothesized that Machiavellians, with their ease of manipulating others (Paulhus & Williams, 2002), should be characterized by extraordinarily high intellectual skills (e.g., Jones & Paulhus, 2009), the data does not support such assumptions (e.g., O'Boyle et al., 2013; Paulhus & Williams, 2002; Wilson, Near, & Miller, 1996). As Jones and Paulhus (2014) indicate, one of the key elements of Machiavellianism, apart from manipulativeness and callous affect, is the strategic-calculating orientation, suggesting that the phenomenon of Machiavellian intelligence leaves much to be explained (see also: Jones & Paulhus, 2011).

In the light of the data collected so far (e.g., Jones & Paulhus, 2009; O'Boyle et al., 2013; Paulhus & Williams, 2002), the main question arises about the nature and type of intellectual abilities that could be attributed to Machiavellians. O'Boyle et al. (2013) suggested that the inability to confirm hypotheses linking Machiavellianism and intelligence within previous studies does not necessarily result from the actual lack of relationship between variables, but may rather reflect the influence of other moderators, as for example the choice of measurement tool for intelligence.

Recently Bereczkei (2018), in response to the inconsistency of previously reported results, proposed several hypotheses on the mechanisms of decision making and behavioural tactics of Machiavellians, which may determine directions of further research on Machiavellian intelligence. One of the aspects is the expectation of high intellectual abilities manifesting in reasoning, flexible processing, and quick problem solving. Thus, measurement methods used so far in order to investigate the relation between Machiavellianism and intelligence (O'Boyle et al., 2013; Paulhus & Williams, 2002; Wilson et al., 1996), seem to be not sufficiently focused on cognitive abilities attributed to Machiavellians in theoretical considerations (Bereczkei, 2018; Jones & Paulhus, 2009; O'Boyle et al., 2013). O'Boyle et al.'s (2013) meta-analysis also pointed out that the relation of Machiavellianism and intelligence assessed by the WPT (Wonderlic, 1977), is weaker than with other types of measures. The cognitive ability measured with the WTP is related to crystallized rather than fluid intelligence (Hick, Harrison, & Engle, 2015; Matthews & Lassiter, 2007). When the overall score of WPT was separated into verbal and non-verbal intelligence, a stronger relationship between Machiavellianism and non-verbal intelligence was reported (Paulhus & Williams, 2002).

2. Current study

The current paper examines the relation between the Dark Triad traits and fluid intelligence. Based on the conclusions derived from both empirical results and theoretical considerations (e.g., Bereczkei, 2018; O'Boyle et al., 2013; Paulhus & Williams, 2002; Wilson et al., 1996), it is predicted that Machiavellians can be characterized as being high in fluid intelligence. The review of the literature suggesting a null relationship between Machiavellianism and intelligence is because the

studies predominately focused on crystalized intelligence (O'Boyle et al., 2013), which may not reflected the theoretical definition of Machiavellianism (Bereczkei, 2018). Thus, we expect that when this discrepancy is taken into consideration, Machiavellianism should be positively explained by fluid intelligence. As there are few theoretical clues suggesting that psychopathy should be linked with intelligence (O'Boyle et al., 2013) and because existing research has demonstrated null relationships between narcissism and fluid intelligence (Zajenkowski & Czarna, 2015), we hypothesize that they both will be unrelated to fluid intelligence. To test these hypotheses, we tested the Structural Equation Model (SEM) in which fluid intelligence predicted the Dark Triad traits.

3. Method

3.1. Participants and procedure

The study involved $N = 128$ students starting their first year of high school (28.1% were boys), mostly aged 16 ($M = 16.89$ years; $SD = 0.31$). Following written consent of parents, headmasters, and teachers, the study took place during the classes and due to the longer time of the research procedure, testing took place in two stages: right after the beginning of the school year and two weeks later. During the first meeting, pupils completed a larger set of self-report measures including the Short Dark Triad questionnaire (SD3; Jones & Paulhus, 2014; Polish adaptation: Rogoza & Cieciuch, 2017). The SD3 is a self-report questionnaire, consisting of 27 statements (nine items per scale) measuring narcissism (example item, *I know that I am special because everyone keeps telling me so*), Machiavellianism (example item, *It's wise to keep track of information that you can use against people later*), and psychopathy (example item, *Payback needs to be quick and nasty*). Each item is respond to using Likert type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). For the present sample, the reliability (Cronbach's α) values were acceptable for the SD3 scales (narcissism: α = 0.71; Machiavellianism: α = 0.78; psychopathy: α = 0.78).

The second stage of the study was fully devoted to the measurement of intelligence carried out by a school psychologist. Students completed the Raven's Standard Progressive Matrices – Classic (Raven's Matrices; Raven, 1981). Each pupil got a booklet with Raven's Matrices as well as an answer sheet. Students followed the instructions for completing the test according to the recommendations included within the Polish manual (Jaworowska & Szustrowa, 2010). No time limits were applied; however the procedure took approximately 25–55 min. Raven's Matrices is a reliable nonverbal measure of fluid intelligence containing 60 tasks arranged in five series, with 12 tasks each. The multiple-choice questions are in the form of incomplete designs (matrices), and the test taker needs to select the missing fragment from those given. All of the data used for this paper are available at the link: https://osf.io/32kyv.

3.2. Statistical analyses

To test the hypothesis regarding the relation between intelligence and the Dark Triad traits, we used SEM in order to control for the large shared variance between the Dark Triad traits observed in empirical studies (e.g., Rogoza & Cieciuch, 2017). In the measurement model of the SD3 questionnaire (Jones & Paulhus, 2014), we created three parcels using three items tapping the same theoretical constructs (i.e., items measuring narcissism were parceled only within narcissism scale) using the item-to-construct balance approach (Little, Cunningham, Shahar, & Widaman, 2002). In assessing the model fit, we used the χ^2 test, which should be non-significant supplemented by approximate fit criteria of CFI ≥ 0.97 and SRMR ≤ 0.05 (Schermelleh-Engel, Moosbrugger, & Müller, 2003). We did not report RMSEA, as it tends to be artificially high in models with a low number of degrees of freedom (Kenny, Kaniskan, & McCoach, 2015).

4. Results

4.1. Descriptive statistics

To check the assumptions of normality, kurtosis and skewness were calculated. Coefficients for all Dark Triad variables did not reach a value greater than |1|, suggesting that the distributions were close to normal. The distribution for intelligence was negatively skewed ($S = -1.07$) and leptokurtic ($K = 1.61$), which means that the respondents obtained slightly above average results ($M = 48.95$; $SD = 4.97$) and that the group was relatively homogeneous in terms of test scores. Also, as according to the Polish manual of the Raven's Progressive Matrices (Jaworowska & Szustrowa, 2010) studied sample obtained higher results than the overall Polish population (μ = 45.50; σ = 7.20). The participants scored significantly higher on Machiavellianism ($M = 2.81$; $SD = 0.70$) than on narcissism ($M = 2.61$; $SD = 0.59$; $t_{(127)} = 3.28$; $p < .001$) and psychopathy ($M = 2.19$; $SD = 0.76$; $t_{(127)} = 10.44$; $p < .001$) as well as higher on narcissism than psychopathy ($t_{(127)} = 6.68$; $p < .001$).

4.2. Intelligence as a predictor of the Dark Triad traits

Due to the lack of the multivariate normality as assessed by the Mardia's test ($p < .001$), we used the robust Maximum Likelihood estimator. The results of the SEM in which intelligence predicts the Dark Triad traits are illustrated in Fig. 1.

The analyzed model turned out to be well-fitted to the data ($\chi^2_{(30)} = 41.15$; $p = .084$; CFI = 0.970; SRMR = 0.046) which explained slight amount of the intelligence variance ($R^2 = 0.05$; the scatterplots of the observed results are presented in Fig. 2 and the distribution of the residual errors are presented in Fig. 3). The Dark Triad traits were positively inter-correlated, with the highest observed relation between Machiavellianism and psychopathy. Among the Dark Triad traits, only Machiavellianism was positively predicted by fluid intelligence ($\beta = 0.31$; $t = 2.05$; $p < .05$), while the relation with psychopathy ($\beta = -0.18$; $t = -1.07$; $p = .287$) and narcissism ($\beta = 0.00$; $t = -0.01$; $p = .993$) remained insignificant.

The residuals were generally normally distributed ($M = 0.00$; $SD = 4.60$; $Med = 0.71$; $S = -0.93$; $K = 1.31$) which confirms the assumptions of the conducted analyses. There were also two outliers deviating from observed distribution of the residuals, however as the studied population was generally more intellectually gifted than the Polish population (Jaworowska & Szustrowa, 2010), we decided to keep the responses of these participants as they represented the actual values. However, as the explained variance of the intelligence was negligible, our results might be interpreted as without having any substantial effects. Therefore, we scrutinized this relation in more detail through comparison of the differences using *t*-tests between those who scored low on Raven's Matrices (i.e., lowest 33% of the sample with $n = 42$) and high on Raven's Matrices (i.e., highest 33% of the sample, $n = 42$) and moreover as the distribution of the Raven's Matrices scores differed from the population values, we calculated the correlation coefficients corrected for range restriction, which results are presented in Table 1.

The results suggest that those who scored high in Raven Matrices Test, also scored significantly higher on Machiavellianism ($t = -2.23$; $p < .05$), whereas there were no differences in psychopathy ($t = 0.04$; $p = .968$) and narcissism ($t = -0.74$; $p = .465$). The correction for the range restriction revealed that our results may be underestimated and the relation between intelligence, psychopathy and Machiavellianism might be higher than reported in the current study.

5. Discussion

Intelligence can be considered as two related specific factors: fluid and crystalized (Cattell, 1963; see also Strelau, 2015), while most of the
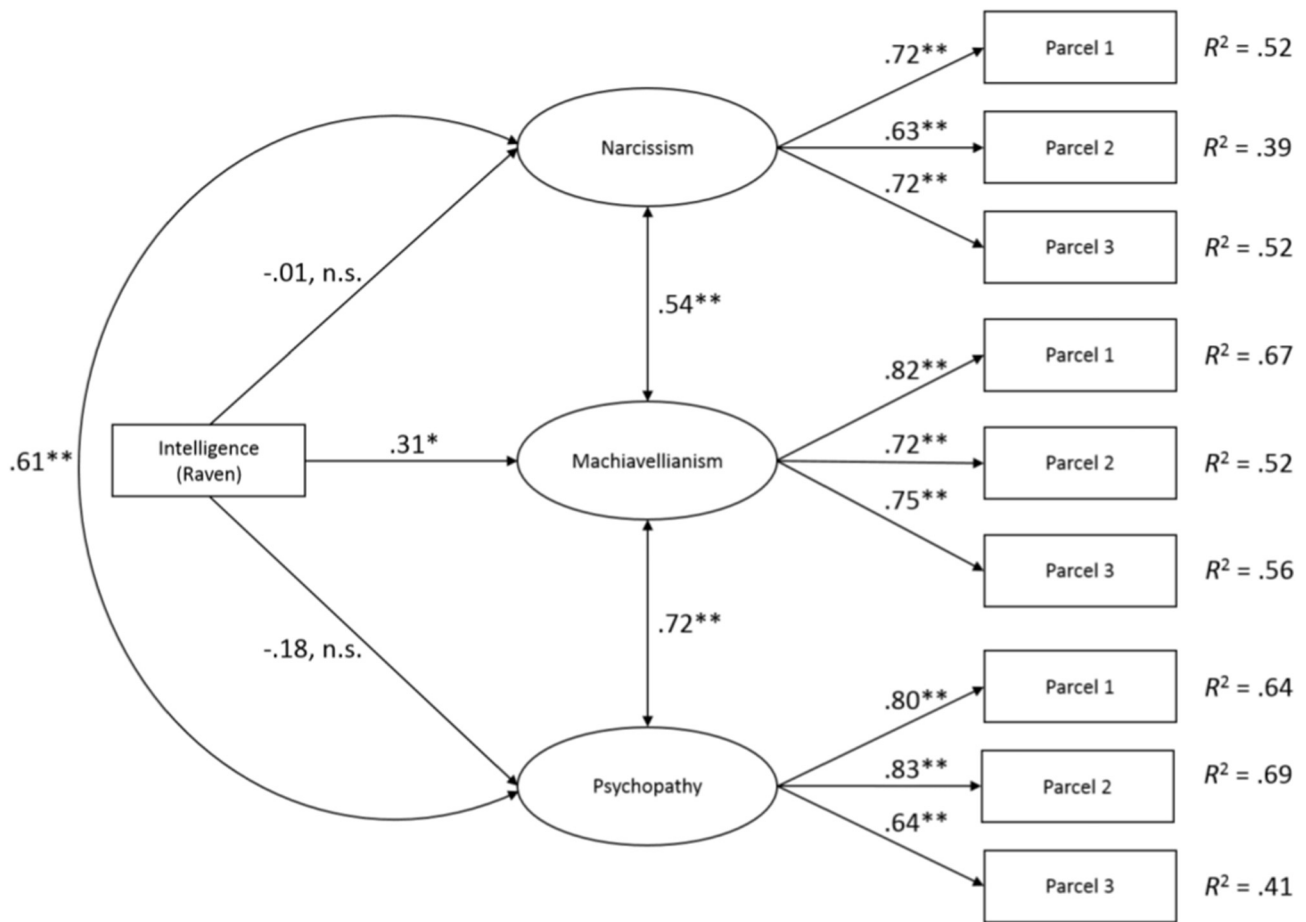
Fig. 1. Structural equation model of intelligence predicting Dark Triad traits.
p < .05; **p* < .01.

existing research on the Dark Triad predominately investigated the relationship with crystallized intelligence (e.g., Hick et al., 2015; O'Boyle et al., 2013). As predicted by the theory, correlations between intelligence and the Dark Triad personality traits should exist, however previous studies indicate such relationships to be very weak or missing (Paulhus & Williams, 2002; Jones & Paulhus, 2009; Rauthmann, 2012; O'Boyle et al., 2013; Zajenkowski & Czarna 2014). The aim of our study was therefore to fill this gap through scrutinizing the associations between fluid intelligence and the Dark Triad traits.

There is a prominent inconsistency between theoretical considerations and empirical accounts on the relation of Machiavellianism and intelligence as Machiavellians are expected to be strategic manipulators with exceptional ahead planning abilities (Christie & Geis, 1970; Jones & Paulhus, 2009, 2011; Rauthmann & Will, 2011) which therefore

should be supplemented by superior mental abilities (Jones & Paulhus, 2009, 2017). However, previous research has not confirmed such assumptions (Jones & Paulhus, 2009; O'Boyle et al., 2013; Paulhus & Williams, 2002; Wilson et al., 1996). One potential source of this inconsistency may be in fact that attempts to establish this relationship have focused on the measurement of crystallized intelligence (e.g., Hick et al., 2015; O'Boyle et al., 2013) which represents culturally-biased skills acquired in the course of learning and experiencing (e.g., Cattell, 1963; Horn & Cattell, 1968).

Bereczkei (2018) argued that there is a need to search for new directions in research on these relations and our findings corroborates these conclusions. Machiavellianism, was found to be positively predicted by fluid intelligence, suggesting that Machiavellians are characterized by high abstraction and inference capabilities. Therefore, the
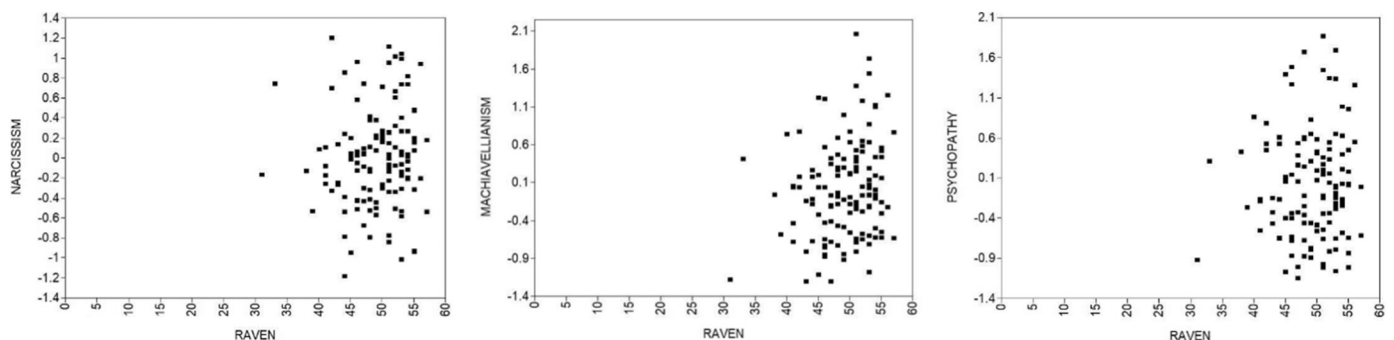

Fig. 2. Scatterplots of the observed values in the Dark Triad traits and Raven scores.
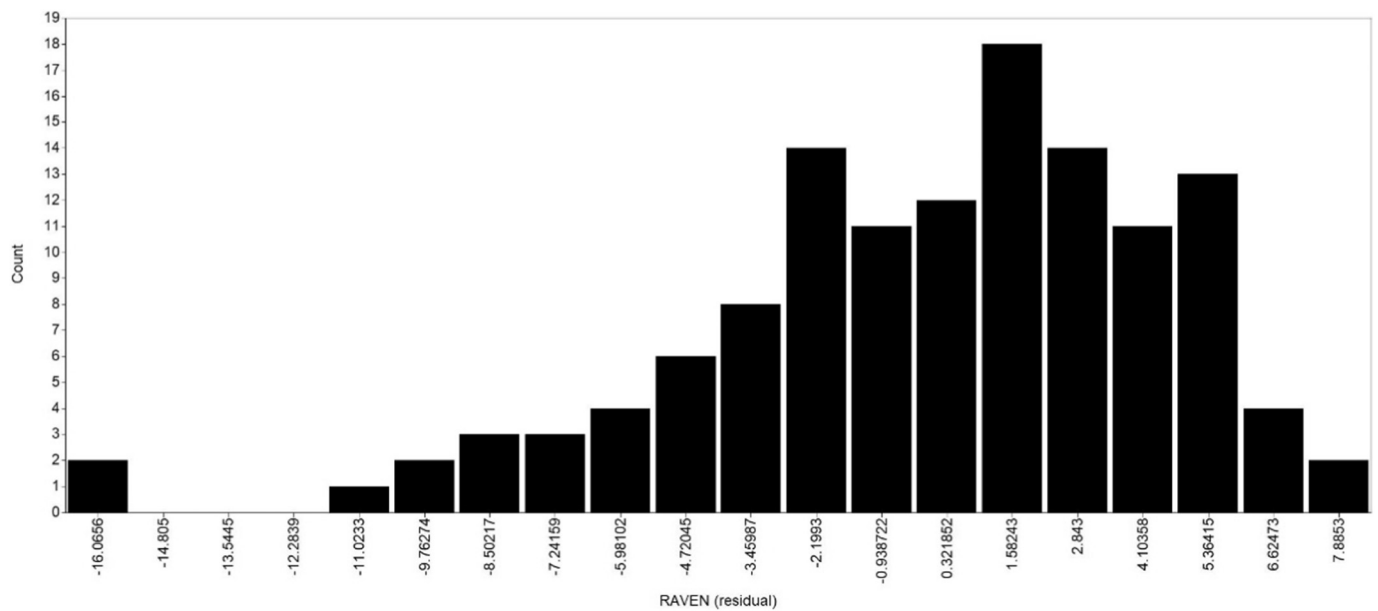
Fig. 3. Distribution of the residual errors of the Raven Matrices test scores.

Table 1
Differences between individuals scoring low and high on Raven Matrices Test in the Dark Triad traits and their associations corrected for the range restriction.

	M	SD	t	p	r corrected for range restriction
Narcissism			−0.74	.465	−0.03
Low Raven scorers	2.55	0.65			
High Raven scorers	2.65	0.62			
Psychopathy			0.04	.968	−0.27
Low Raven scorers	2.19	0.77			
High Raven scorers	2.19	0.72			
Machiavellianism			−2.23	.028	0.44
Low Raven scorers	2.63	0.68			
High Raven scorers	2.97	0.71			

strategic thinking abilities attributed to Machiavellians may be explained by a high level of intellectual potential. This is, so far, the first result consistent with theoretical considerations, supporting the view that Machiavellians have higher planning, reasoning and problem-solving abilities, thus providing data supporting the hypothesis of evil genius in the context of Machiavellianism.

In regard to the studies investigating narcissism, our results corroborated those of Zajenkowski and Czarna's (2015) and Gabriel, Critelli, and Ee's (1994) that indicated that narcissism was unrelated to fluid intelligence. Despite narcissists self-reporting higher intelligence (Gabriel et al., 1994; Paulhus & Williams, 2002; Zajenkowski & Czarna, 2015), when objective measures of intelligence are used, they are just as intelligent as non-narcissists. Past research has been inconsistent regarding the relationship between Raven's Matrices scores and psychopathy, with some research indicating a weak to moderate negative correlation (e.g., Spironelli, Segre, Stegagno, & Angrilli, 2014; Wilson, Abramowitz, Vasilev, Bozgunov, & Vassileva, 2014), while other research suggesting that there is no relationship between psychopathy and Raven's Matrices scores (e.g., Bate, Boduszek, Dhingra, & Bale, 2014). In the current study, psychopathy was not significantly related to fluid intelligence, however the correlation coefficient reached $r = -0.18$ (and when we controlled for the range restriction this coefficient was even higher), so we advise to interpret this result with caution as one limitation of this study is its modest sample size and higher than population's level of intelligence. If indeed there is a significant relationship between fluid intelligence and psychopathy, this

may not necessarily mean that psychopaths are less intelligent; such a result could also be interpreted as an effect of psychopaths' impulsivity (Jones & Paulhus, 2011). That is, psychopaths may simply put less thought and effort into choosing the appropriate response. Thus, future research should aim to clarify the link between fluid intelligence and psychopathy. Possibly measuring reaction time may further explain the possible effects of psychopathic impulsivity.

5.1. Limitations

Our study has a number of limitations. Firstly, the modest sample size restricts the interpretability of the data. Another limitation of our study was the use of the SD3 rather than the full-length Dark Triad measures, nevertheless the SD3 is a commonly used and well-validated measure of the Dark Triad traits and showed adequate reliability in the current study. Moreover, our sample is limited to teenaged participants, and girls are overrepresented in the sample (71.9% girls); therefore our results may not be as applicable to other populations, however they are consistent with theoretical accounts of the Dark Triad. The current study is unable to clearly determine whether developmentally Machiavellianism was predicted by intelligence and that psychopathy and narcissism were not, and we do not know whether thus pattern will remain stable in adulthood; therefore in light of these limitations, we suggest that the results obtained in the current study should be interpreted with caution and replicated in future studies on different populations.

Acknowledgement

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