RESEARCH ARTICLE

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Dark Triad Traits and Workplace Performance on the Iowa Gambling Task (IGT)

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Abstract:

Background: Psychologists have recently turned their focus to the "dark side" of workplace behavior, particularly negative traits that impact professional environments.

Methods: In this exploratory study, we examined the Dark Triad traits Machiavellianism, narcissism, and psychopathy among 3,112 bank employees. Additionally, we analyzed the Iowa Gambling Task (IGT) performance in a subset of 1,613 participants to explore correlations between Dark Triad traits and decision-making. We also investigated differences based on sex and job position.

Results: Our findings reveal that men scored higher on Dark Triad traits than women, reinforcing well-established findings. Furthermore, sales managers and premium client managers displayed the highest levels of Machiavellian strategies, though overall, bank employees showed significantly lower Machiavellianism scores compared to published Russian norms. While IGT performance showed no sex differences, it varied between managers and non-managers. A significant negative correlation emerged between Machiavellianism and psychopathy and good deck choices on the IGT, with a linear regression indicating that lower Dark Triad scores predicted better decision-making.

Conclusion: Further research is needed to explore the relationship between affective decision-making and dark personality traits.

Keywords: Dark triad, Machiavellianism, Narcissism, Psychopathy, Iowa gambling task, Negative traits.

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1. INTRODUCTION

Recent scientific studies have increasingly highlighted the impact of "dark" personality traits on workplace behavior and outcomes [1-5]. While past research largely focused on positive aspects of organizational behavior, attention has shifted in recent years to the darker side of personality [6, 7]. Paulhus and Williams [8] first identified the "Dark Triad," a cluster of traits consisting of Machiavellianism, narcissism, and psychopathy, which are distinct yet interconnected. These traits are characterized by entitlement, superiority, dominance (narcissism), manipulativeness (Machiavellianism), and impulsivity, along with callous social attitudes and interpersonal antagonism (psychopathy) [9]. Thus, it consists of Machiavellianism (Mac), subclinical narcissism (Nar), and subclinical psychopathy (Psy). Despite their unique features, these traits share common roots and often correlate but remain separate psychological variables.

Several studies suggest a possible underlying factor known as the Dark Factor of Personality (D) [10], which links the Dark Triad traits due to their theoretical and empirical overlap. In organizational settings, these traits

are commonly associated with negative, counter-productive, and sometimes toxic behaviors [5, 11-13]. Research describes these behaviors as forceful, pushy, and highly competitive [14]. While organizational support may mitigate some negative outcomes, reducing the frequency and impact of such behaviors, the presence of dark personality traits still poses significant challenges in the workplace [15]. Besides, social and organizational support [12], though beneficial, cannot entirely eliminate the negative consequences associated with these traits.

The following is an exhaustive list of possible negative outcomes of workers with dark personalities:

- Mac: Abusive supervisor behavior [16], low self-control [17], reductions in the quality of job performance [18], and corruption intention [5].
- Nar: Unethical behavior, lack of ethics [19, 20], favoring bold actions that attract attention, resulting in big wins or big losses [21], power aspiration [22] and fluctuating organizational performance in CEOs [21].
- Psy: Hard goal-achieving tactics, low level of social responsibility [2], antisocial behavior, low self-control [17], reductions in the quality of job performance [18] and corruption intention [5].

Overall, workers with Dark Triad traits can cause a range of negative outcomes in the workplace. Besides, those high in Machiavellianism (Mac) often engage in abusive supervisor behavior, exhibit low self-control, and contribute to decreased job performance quality. Likewise, they may also have a higher propensity for corruption. Whereas, narcissistic individuals (Nar) tend to display unethical behavior, a lack of moral grounding, and a penchant for bold, attention-seeking actions, which can result in significant wins or losses. Congruently, they also aspire to power and can contribute to fluctuating organizational performance, particularly in leadership roles such as CEOs. That said, psychopathic traits (Psy) manifest in aggressive, hardline goal-achieving tactics, a lack of social responsibility, antisocial behavior, and low self-control, similarly leading to reductions in job performance and an increased likelihood of corruption.

Intriguingly, this list of negative outcomes is far from exhaustive. Numerous studies have analyzed the detrimental effects of Dark Triad traits in the workplace. Forsyth, Banks, and McDaniel [18] conducted a meta-analysis involving over 40,000 participants, exploring various aspects of work behavior associated with these traits. Furnham, Richards, and Paulhus [6] reviewed a decade of research examining the socially-averse nature of the Dark Triad personalities. Additionally, Applied Psychology: An International Review dedicated a special issue to discussing the harmful impacts of dark personality traits on organizational behavior, further highlighting the widespread concern over these destructive traits in professional settings [7].

The Dark triad has been extensively studied in relation to risk and decision-making, often linked to short-term behavior [8, 23]. These traits are associated with risk-taking tendencies and influence decision-making strategies under uncertainty, as measured by the IGT [15, 24-26]. Numerous studies have shown that the Dark Triad traits enhance decision-making efficiency, but primarily in non-managers. Managers, on the other hand, tend to adopt riskier strategies, particularly in later stages of decision-making when uncertainty decreases [26]. This suggests that while non-managers with Dark Triad traits may excel in uncertain environments, managers are more inclined to take risks once the situation stabilizes.

Contemporaneously, decision-making plays a crucial role in numerous workplace functions, making it a central focus in organizational psychology. Despite the robust body of evidence on decision-making, the interplay between Dark Triad traits and decision-making under uncertainty remains a key area for further exploration. Narcissists, driven by grandiosity, entitlement, and a need for admiration, often exhibit overconfidence in their decisions. Relatedly, individuals with high Nar often display inflated self-views and are more likely to engage in risk-taking behaviors [27]. This overconfidence can lead to both innovative and risky decisions, as narcissists may overlook potential pitfalls [28].

Moreover, individuals high in Mac are adept at manipulating others to achieve their goals and often employ a calculative and strategic approach to decision-making. Thus, Machiavellians, known for their manipulative and strategic nature, typically make decisions that maximize their own advantage, often at the expense of others, which can erode trust within organizations [29]. Their strategic decision-making acumen, while potentially advantageous in competitive contexts, can undermine trust and cooperation in social and organizational settings due to its unethical forms [18]. Next, psychopathy traits denoted as Psy is characterized by impulsive decision-making, further complicating the role of Dark Triad traits in workplace dynamics.

Notably, the relationship between Dark Triad traits and decision-making is complex and multifaceted. While each trait individually influences decision-making in distinct ways, their combination can significantly amplify their effects. For instance, a narcissistic leader with Machiavellian tendencies may make decisions that are both overconfident and strategically manipulative, heightening the risk of ethical breaches [30]. Similarly, when psychopathic impulsivity and lack of empathy combine with narcissistic grandiosity or Machiavellian cunning, the result can be reckless and manipulative decision-making with potentially harmful consequences.

This study, therefore, aims to explore the intricate connections between Dark Triad traits and decision-making. Furthermore, by reviewing and synthesizing findings from existing studies, we seek to provide a comprehensive understanding of how these traits shape decision-making processes and outcomes. Furthermore, we also examined its implications in relation to organizational behavior, ethics, and interpersonal relationships, emphasizing the need to recognize and mitigate the negative impacts of these traits in decision-

making contexts to foster healthier and more ethical work environments.

1.1. Hypotheses and Objectives

We hypothesize that individuals with higher levels of Nar will perform worse on the IGT, favoring high-risk, high-reward decks over safer, low-reward options. Also, those with higher levels of Mac are expected to exhibit strategic decision-making, initially selecting high-risk decks but shifting to safer choices as they learn the payoff structure. In contrast, individuals with higher Psy levels will likely perform poorly, showing a consistent preference for risky decks despite negative long-term outcomes. Additionally, we anticipate sex and occupational differences in both Dark Triad traits and IGT scores.

The study's main objective is to explore the relationship between Dark Triad traits and decision-making performance on the IGT. We aim to provide insights into the cognitive and affective (*i.e.*, emotional) mechanisms underlying decision-making in individuals with elevated Dark Triad traits, thus expanding the understanding of how these personality traits influence real-life decisions under risk and uncertainty. Additionally, by addressing these hypotheses, the study seeks to illuminate the complex interactions between Dark Triad and affective decision-making, offering valuable contributions to research in personality psychology and decision-making.

2. MATERIALS AND METHODS

In this research, we assessed Dark Triad traits using the Short Dark Triad (SD3) questionnaire [23]. A total of 3,112 bank employees aged 22 to 64 (2,561 females, age data available for 1,980 participants, mean age = 36 ± 7.7 years) completed the questionnaire (Russian adaptation - [31]). Participants rated their agreement with 27 items (9 per trait: Mac, Nar, and Psy), on a scale from 1 ("strongly disagree") to 5 ("strongly agree"). The final score for each trait was averaged, producing a range from 1 (low) to 5 (high).

Of these participants, 1,613 (aged 22 to 64, 1,348 females, age data available for 962 participants, mean age = 38 ± 7.9 years) completed both the SD3 and the IGT [32]. The IGT measures decision-making and risk-taking strategies under uncertainty, particularly in individuals with ventromedial prefrontal cortex impairment. Equally, participants were instructed to maximize their winnings by repeatedly choosing from four decks of cards, where each choice led to a gain or loss. "Bad" decks offered higher wins ($100) but resulted in long-term losses, while "good" decks provided smaller wins ($50) but yielded a net gain over time. Interestingly, participants made 100 choices, with the final index calculated as the difference between choices from "good" and "bad" decks.

Furthermore, we informed participants about the study's nature and had them complete tests as part of an online research initiative that included various personality and cognitive tasks. In addition, to participate, individuals had to meet specific inclusion criteria: (1) be 18 or older, (2) hold either a managerial or non-managerial position within the bank, and (3) agree to complete the study's questionnaires and tasks. Recruitment invitations were sent *via* internal email lists to bank employees.

We analyzed the data using Jeffreys's Amazing Statistics Programme (JASP), applying several statistical techniques. In our report, descriptive statistics summarized demographic information and the main variables, while the correlation analysis explored the relationships between Dark Triad traits and IGT performance. On top of that, the regression analysis evaluated the predictive power of these traits on decision-making outcomes. Non-parametric tests were used because some variables did not follow a normal distribution. Despite efforts to achieve a representative sample, we acknowledge potential limitations, such as sampling bias—since participants were drawn from a single organization, they may not reflect the broader population—and self-report bias, as the reliance on self-reported measures like the SD3 could introduce response inaccuracies.

3. RESULTS

Table **1** presents the mean scores for Mac, Nar, and Psy traits (SD3) across bank positions, compared to normative data from a Russian sample [31]. Our findings reveal that participants in the current study had significantly higher Nar scores and lower Mac scores than the normative sample. Notably, sales and premium client managers displayed the highest Psy scores among all groups, substantially higher than the normative results. A Wilcoxon test confirmed these differences as statistically significant (W=37.47, p<.001 for Mac; W=120.89, p<.001 for Psy). These elevated psychopathic traits in sales and client managers raise concerns, as they may impair communication efficacy and reduce empathy—critical qualities for roles that require understanding and responding to customers' needs.

Table **2** presents the mean IGT scores for employees from two different bank departments. Managers outperformed non-managers in terms of good IGT indices (choices from decks C and D) and overall performance, while non-managers preferred the bad decks (A and B). A Mann-Whitney test revealed statistically significant differences in the following areas: the number of choices from Deck B (U = 284135.5, p = .002, r = - .091), the number of choices from Deck C (U = 342759.5, p = .001, r = - .096), the number of choices from Deck D (U = 335734.5, p = .012, r = .074), and the overall performance index (CD - AB) (U = 351938, p < .001, r = .126).

We also examined sex differences, as shown in Table **3**. Men exhibited higher Mac and Psy scores compared to women. Mann-Whitney tests confirmed these differences as statistically significant (U=878330, p<.001, r=-.245 for Mac; U=833875, p<.001, r=-.182 for Psy). However, we found no significant differences in Nar scores between genders (U=725137.5, p=.304, r=-.028).

Table 1. Mean Mac, Nar, and Psy scores (SD3) for bank positions, compared to the normative data (*Source*: Russian sample [31]).

Position in the bank	N	Mac	Nar	Psy
Head of the bank office in three regions (customer service)	171	3.06	3.22	2.21
Head of the mortgage department	218	3.23	3.25	2.20
Mortgage department employee	683	3.06	3.26	2.19
Sales manager	306	3.06	3.21	2.40
Premium clients manager	508	3.18	3.25	2.33
Head and deputy head of bank office in Moscow region (customer service)	995	3.05	3.34	2.16
Teal project manager	231	2.99	3.19	2.04
All sample	3112	3.08	3.27	2.22
Normative data	571	3.27	2.78	2.11

Table 2. Mean IGT scores for bank positions.

Position in the Bank	N	A	B	C	D	CD-AB
Mortgage department employee (non-managers)	650	19.87	34.95	19.01	25.98	-9.84
Head and deputy head of bank office in Moscow region (managers)	962	19.35	32.83	20.61	27.44	-4.13
All sample	1613	19.56	33.68	19.96	26.85	-6.43

Table 3. Mean SD3 scores for men and women.

Sex	N	Mac	Nar	Psy
Women	2561	3.04	3.27	2.19
Men	551	3.31	3.29	2.34

In our analysis of IGT scores (see Table 4), we found no significant differences between sexes, although the Mann-Whitney test indicated a nearly significant difference for choices made from Deck D (p=.06).

In the results from Tables 5 and 6, Mac and Psy exhibit a strong correlation with each other, while Nar shows the weakest connection to the other dark triad traits. Additionally, we observed a significant negative correlation between good deck D choices (IGT) and Mac scores, further underscoring the complex interactions among these traits.

Table 4. Mean IGT scores for men and women.

Sex	N	A	B	C	D	CD-AB
Women	1348	19.47	33.80	19.86	26.95	-6.45
Men	264	20.03	33.12	20.49	26.32	-6.34

Table 5. Intercorrelation of Mac, Nar, and Psy with current data [31].

Authors/Study	Mac and Nar	Nar and Psy	Psy and Mac
Egorova *et al.*, 2015	0.31	0.42	0.35
Jones *et al.*, 2014, study 2	0.22	0.31	0.40
Jones *et al.*, 2014, study 3	0.29	0.42	0.47
Azizly *et al.*, 2016	0.27	0.33	0.47
Malesza, Ostaszewski, 2016	0.24	0.45	0.32
Westhead, Vincent, Egan, 2015	0.35	0.37	0.58
Egan, Hughes, Palmer, 2015	0.34	0.42	0.53
Zeigler-Hill *et al.*, 2016, study 1	0.14	0.04	0.38
Zeigler-Hill *et al.*, 2016, study 2	0.21	0.12	0.41
Current study	0.22	0.13	0.50

Table 6. SD3 and IGT correlation matrix, Spearman's ρ (p<.01).**

-	Mac	Nar	Psy	Iowa_A	Iowa_B	Iowa_C	Iowa_D	Iowa_CD-AB
Mac	1	-	-	-	-	-	-	-
Nar	.224**	1	-	-	-	-	-	-
Psy	.504**	.129**	1	-	-	-	-	-
Iowa_A	.026	.023	.004	1	-	-	-	-
Iowa_B	.01	.023	.004	-.185**	1	-	-	-
Iowa_C	.028	.024	.027	.037	-.429**	1	-	-
Iowa_D	-.070**	-.040	-.064**	-.410**	-.510**	-.105**	1	-
Iowa_CD-AB	-.029	-.014	-.017	-.396**	-.762**	.437**	.767**	1

Our findings reveal a low to moderate correlation among Mac, Nar, and Psy (refer to Tables **5** and **6**). As shown in Table **5**, these results align with the typical patterns observed in the intercorrelations of dark triad traits.

Furthermore, to predict IGT performance based on SD3 scores, we conducted a simple linear regression analysis. Significant regression equations emerged for preferences related to Deck D: For Mac, we found $F_{(1, 1607)}=6.925$, $p=.009$, with an R^2 of .004. The participants predicted preference for Deck D, measured by the number of choices, equals 30.838 - 1.297 × Mac scores. For Nar, the regression yielded $F_{(1, 1607)}=4.545$, $p=.033$, with an R^2 of .003, indicating that the predicted preference for Deck D equals 32.293 - 1.637 × Nar scores. For Psy, we calculated $F_{(1, 1607)}=4.952$, $p=.026$ with an R^2 of .003, resulting in a predicted preference for Deck D of 30.412 - 1.628 × Psy scores.

4. DISCUSSION

This study aimed to investigate the prevalence of dark triad traits among bank employees, including both managers and non-managers, while also comparing these traits across sex and job titles. Additionally, we sought to evaluate the relationship between these traits and performance on the IGT.

Our findings revealed that our sample exhibited higher Nar scores and lower Mac scores compared to normative data. This discrepancy may arise from the bank's human resources branding and corporate culture, which emphasizes achievement, leadership, teamwork, and customer focus [33]. The emphasis on achievement and leadership likely contributes to elevated Nar scores, while a strong focus on teamwork and customer service may lead to lower Mac scores. Furthermore, the high Psy scores observed in sales and premium client managers warrant further investigation. It is essential to determine whether the job environment drives individuals toward darker personality traits or if those with higher subclinical Psy are naturally drawn to such roles. We hypothesize that employees in these positions often engage with the most challenging customers, potentially influencing their psychological profiles.

Numerous studies examining sex and gender differences have demonstrated that men and individuals with high masculinity typically score higher on the Short Dark Triad (SD3) than women and those exhibiting high femininity [6, 34]. Our findings align with this trend for Mac and Psy scores, although we did not observe similar differences for Nar. Since previous research by Egorova *et al.* [31] and Kornilova & Krasavtseva [26] also found no significant sex differences in Nar, we propose that these outcomes may reflect a cultural specificity regarding narcissistic personality traits in Russia. Interestingly, some researchers have argued that Nar is so distinctive that it warrants the classification of a "dark dyad," consisting only of Mac and Psy, rather than the traditional dark triad [35-37].

Consequently, the intercorrelation among dark triad traits merits further consideration. Our results reveal low to moderate correlations between Mac, Nar, and Psy, aligning with findings from other studies that exhibit similar correlation patterns [6, 18, 31, *etc.*]. Nar shows the weakest intercorrelation with the other two traits, which may support the notion of it being an independent trait. However, the existence of correlations across multiple studies suggests that the interconnectedness of these three dark personality variables cannot be overlooked.

In addition to examining internal correlations within the dark triad, we proposed a strong link between dark personality traits and impulsive, risky behavior in decision-making under uncertainty. The IGT enabled us to evaluate the affective decision-making process across varying levels of uncertainty, which started high at the beginning of the task and decreased toward the end.

We did not find significant sex differences in IGT performance; both men and women exhibited comparable levels of performance. However, our findings suggested a quasi-significant trend indicating that women tend to select more choices from the D deck, favoring the good deck. This observation contrasts with existing literature, which generally indicates that men perform better in the IGT [38-42]. Some studies have critiqued the notion of sex differences in IGT performance [43], suggesting that women pay attention to both win-loss frequencies and the long-term pay-off of card decks, while men tend to focus primarily on long-term pay-off.

We identified significant differences in IGT performance between managers and non-managers. Managers demonstrated less risky and more effective

decision-making, leading to superior overall performance compared to their non-managerial counterparts. Given that decision-making is a critical component of managerial work, this skill likely enhances their productivity in uncertain situations. Analogously, Kornilova and Krasavtseva [26] reported similar findings in their research.

Additionally, it is essential to clarify the relationships that exist between dark personality traits and decision-making strategies under uncertainty. We conducted correlation and regression analyses to enhance our understanding of these effects and their potential underlying mechanisms. Our results revealed a significant negative correlation between good deck choices and both Mac and Psy, suggesting that as dark triad scores decrease, good deck choices increase. We propose that dark triad traits may heighten the discomfort associated with uncertainty. For instance, narcissistic CEOs often prefer bold actions that garner attention, leading to significant gains or losses [21]; as a result, they may prioritize short-term profits over long-term stability. Furthermore, higher scores in Mac and Psy are linked to increased intolerance for uncertainty [26, 44, 45].

CONCLUSION

Implications for Theory and Practice

This study explored differences in SD3 and IGT performance based on sex and job position. Our findings confirm the established pattern that men score higher on dark triad traits than women. Moreover, while sales and premium client managers utilized Mac strategies more frequently, the overall sample of bank employees exhibited lower levels of Mac compared to existing Russian normative data. These results indicate that occupational roles can significantly influence the manifestation of dark triad traits.

We also observed notable differences in IGT performance between managers and non-managers, with no significant sex differences detected. The negative correlation between good deck choices and both Mac and Psy, along with regression analysis indicating that lower dark triad scores predict increased good deck choices, suggests that individuals with reduced dark triad traits tend to make more effective emotional decisions. These insights enhance our understanding of how personality traits impact decision-making in professional environments and highlight the practical value of personality assessments in organizational contexts.

Key Lessons Learned

This research highlights the intricate relationship between affective decision-making processes and personality traits. Our findings demonstrate that dark triad traits, particularly Mac and Psy, correlate with poorer decision-making performance on the IGT. Additionally, occupational roles can influence the expression of these traits, thereby affecting decision-making outcomes. Although the IGT serves as a valuable instrument for examining affective decision-making, researchers must account for its high variability across studies and individuals when interpreting the results.

In conclusion, this study sheds light on the intricate relationship between dark triad traits, sex differences, and decision-making performance among bank employees. Our findings reveal that managers tend to make more effective decisions compared to non-managers, with dark triad traits particularly Mac and Psy negatively impacting performance on the IGT. While we observe higher levels of Machiavellianism among sales and premium client managers, the overall sample shows lower scores compared to normative data, suggesting that occupational roles can influence the expression of these traits. Additionally, our research highlights the absence of significant sex differences in IGT performance, challenging existing literature. These insights underscore the importance of considering personality traits in organizational settings, as they play a crucial role in shaping decision-making processes and outcomes.

Limitations of This Research

Several limitations of this study warrant attention. First, the validity of the SD3 scale raises concerns; despite its common use, it exhibits weak convergent validity, and both Psy and Mac show inadequate poor discriminant validity [46]. These issues are prevalent among short measures of the dark triad and may have influenced our results. Second, the IGT is known for its high inter-study and inter-individual variability in performance, which, combined with the absence of a standardized sensitivity measure, can lead to healthy participants exhibiting impaired decision-making [47]. Lastly, our sample comprised only bank employees, which may restrict the generalizability of our findings to other professions or the broader population.

Future Research Recommendations

Additionally, toelaborate on our findings and address identified limitations, future research should prioritize several key areas: First, researchers should enhance measurement tools by employing or developing longer, more robust assessments of dark triad traits that provide improved convergent and discriminant validity. Second, including participants from diverse occupational backgrounds and cultural contexts can enhance the generalizability of the results. Third, utilizing additional or alternative tasks that incorporate integrated sensitivity measures can help validate findings and reduce the high variability associated with the IGT. Finally, conducting longitudinal studies will allow researchers to explore how dark triad traits and decision-making performance evolve over time in response to varying occupational experiences.

This study, therefore, recommends implementing comprehensive personality assessments in organizational settings to better understand how dark triad traits influence decision-making and performance. However, it is essential to acknowledge limitations, including the reliance on the SD3 scale, which lacks strong convergent and discriminant validity, and the exclusive focus on bank employees, which may hinder the generalizability of the findings to other professions. Future research should aim to enhance measurement tools by utilizing longer and

more robust assessments of dark triad traits, including participants from diverse occupational and cultural backgrounds, and exploring additional decision-making tasks with integrated sensitivity measures to corroborate findings and reduce variability associated with the IGT.

AUTHOR'S CONTRIBUTION

It is hereby acknowledged that all authors have accepted responsibility for the manuscript's content and consented to its submission. They have meticulously reviewed all results and unanimously approved the final version of the manuscript.

LIST OF ABBREVIATIONS

Mac = Machiavellianism

D = Dark Factor of Personality

JASP = Jeffreys's Amazing Statistics Programme

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Not applicable.

HUMAN AND ANIMAL RIGHTS

Not applicable.

CONSENT FOR PUBLICATION

Informed consent was obtained from the participants.

AVAILABILITY OF DATA AND MATERIALS

The data of current study are available from corresponding author, [N.V.], on a reasonable request.

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CONFLICT OF INTEREST

The authors declare no conflict of interest, or otherwise.

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