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No mercy for victims: Exploring the link between dark personality traits, aggressive video game behavior, and severe traffic violations

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Abstract

This study investigates the relationship between dark personality traits, aggressive behavior in violent video games, and severe traffic violations among 200 driving offenders from Tehran, Iran, participating in a rehabilitation program. Participants engaged in a computerized shooting decision task, where their tendency to shoot unarmed targets (innocent victims), compared to armed targets (criminals), was used as an indicator of aggressive behavior toward innocent victims. Additionally, they completed self-report measures of narcissism, Machiavellianism, psychopathy, and sadism to evaluate the impact of Dark Tetrad personality traits on their behavior. Bivariate analyses revealed associations between Dark Tetrad personality traits and aggressive behavior in the video game with serious traffic offenses. Multivariate analyses identified Machiavellianism, sadism, and aggressive behavior in video games as significant predictors of severe traffic offenses. The results suggest that dark personality traits and aggressive behavior in video games may aid in better identifying road traffic offenders with the most severe violations. Potential implications for preventing repeated traffic offenses by tailoring rehabilitation programs are discussed.

KEYWORDS

aggressive behaviors, dark personality traits, road traffic offenders, traffic violations, violent video games

1 | INTRODUCTION

According to the World Health Organization (2021), road traffic injury is the leading cause of death for children and young adults, and the eighth leading cause of death for people of all ages. In 2016, road traffic fatalities

in the United States were estimated to be 12.4 deaths per 100,000 people. In Iran, where the present study was conducted, the mortality rate of road traffic accidents was 43.8 deaths per 100,000 people in 2016, placing the country fifth in road traffic mortality in the world (Rakhshani et al., 2016). A significant proportion of traffic accidents

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involves some form of risky and aggressive behavior, such as excessive drinking, excessive speed, car chase, and rodeo. To address these behaviors and prevent traffic accidents, it is essential to understand the psychological mechanisms that may lead to them. However, to date, relatively little is known about these mechanisms. The present study aims to explore the relationship between malevolent personality traits and aggressive behaviors in video games and their prediction of serious traffic offenses. By measuring dark personality traits, such as Machiavellianism, psychopathy, and narcissism, and aggressive behaviors in video games, we aim to better understand the psychological processes underlying risky and aggressive driving and inform the development of effective interventions for preventing driving offenses and improving road safety.

The Dark Triad, composed of three distinct dimensions of dark personality traits, has been associated with various forms of aggression and antisocial behavior (Chabrol et al., 2009; Paulhus, 2014). These dimensions are narcissism (marked by grandiosity, pride, egotism, and a lack of empathy), Machiavellianism (characterized by manipulation and exploitation of others), and psychopathy (defined by callousness, thrill-seeking, and unemotionality). Several studies have examined the potential relationship between these dark personality traits and aggressive driving behaviors.

One such study, conducted by Naujoks et al. (2018), sought to explore the correlation between Dark Triad traits and aggressive driving behaviors, while taking into account additional factors such as driving anger, general aggression, impulsivity, and perceived malicious intent. The researchers gathered data from 168 community members in the United Kingdom through an online survey. The regression analysis results revealed that psychopathy, a history of aggression toward others, and driving anger were the only significant predictors of aggressive driving behaviors. Furthermore, a structural equation model showed that aggression fully mediated the impact of the Dark Triad on driving anger. This study underscores the potential role of psychopathy, general aggression, and anger in promoting aggressive driving behaviors.

Endriulaitienė et al. (2018) conducted research to examine the association between Dark Triad traits and risk-taking attitudes in driving among learner drivers in Lithuania. The study included 475 driving license candidates who provided data via self-reported questionnaires. The findings indicated a significant relationship between dark personality traits (latent factor) and riskier driving attitudes for both male and female participants. This research highlights the importance of taking Dark Triad personality traits into account in future drivers, even during their training phase.

Another study by Sümer et al. (2019) investigated the influence of the Dark Triad on aggressive driving and motor vehicle collisions (MVC). The researchers tested a double mediation model in which driving anger and vengeance acted as mediators for the relationships between personality traits and driving violations. These driving violations, in turn, mediated the link between driving anger/vengeance and risky driving outcomes (MVC). The study involved 485 Turkish drivers who completed assessments of personality, aberrant driving behaviors, vengeance, and driving anger. The

findings demonstrated that narcissism was a crucial predictor of aggressive driving, while Machiavellianism emerged as the strongest predictor of driving vengeance. Machiavellianism also directly and indirectly predicted MVC through driving vengeance and violations. Once again, these results confirm the connection between Dark Triad traits and driving offenses.

It is important to consider that other dark personality traits, like everyday sadism, may also influence driving offenses, beyond the three traits constituting the Dark Triad (Buckels et al., 2013; Paulhus & Jones, 2015). While no studies have explicitly examined the connection between sadism and driving offenses, recent research on the Dark Tetrad—which encompasses everyday sadism in addition to the Dark Triad—has associated everyday sadism with aggressive behaviors. Evidence indicates that everyday sadism correlates with harmful actions, such as animal cruelty and a preference for violent video games (Buckels et al., 2013; Gonzalez & Greitemeyer, 2018; Greitemeyer, 2015; Greitemeyer & Sagioglou, 2017; Greitemeyer et al., 2019). Although the link between sadism and driving offenses remains unexplored, these findings imply that sadism could potentially contribute to hazardous driving behavior.

To summarize, the current literature suggests that there may be links between the Dark Tetrad traits and aggressive behaviors that could increase the likelihood of traffic offenses. Psychopathy has been shown to indirectly contribute to traffic offenses by enhancing impulsivity and anger (Naujoks et al., 2018), and Machiavellianism has been associated with driving vengeance (Sümer et al., 2019). Additionally, narcissism may heighten driving risks by creating a sense of superiority and a lack of empathy for others' injuries (Sümer et al., 2019). Finally, although there is currently no direct evidence linking sadism to traffic offenses, it might be argued that sadists might be more prone to engage in risky driving behavior due to their attraction to violent video games (Gonzalez & Greitemeyer, 2018; Greitemeyer, 2015; Greitemeyer & Sagioglou, 2017; Greitemeyer et al., 2019).

It is important to note that previous studies on the relationship between malevolent personality traits and driving behavior have several limitations that need to be addressed in future research. First, the data on driver behavior were obtained solely from self-reports and questionnaires, which may be vulnerable to socially desirable response tendencies (Af Wählberg, 2010; Lajunen & Summala, 2003). Future research should include measures to control for social desirability bias, or objective measures of traffic offenses, to address this potential bias. Second, the lack of a general aggressive behavior measure may limit the interpretation of the findings. Future studies should investigate whether the Dark Tetrad is associated with driving behavior through its overlap with general aggression and the link between general aggression and traffic offenses. Finally, to gain a better understanding of the relationship between the Dark Tetrad traits and driving behavior, it is necessary to conduct more studies on the independent associations between these traits and specific driving tendencies.

The present study aimed to investigate the relationship between dark personality traits, general aggression, and traffic offenses among

a sample of 200 Iranian drivers who had been convicted of traffic offenses, ranging from minor to severe. Validated self-report questionnaires were used to assess the Dark Tetrad personality traits of Machiavellianism, psychopathy, narcissism, and everyday sadism (Moshagen et al., 2020). General aggression was measured through a computerized task in which participants played a violent video game and were instructed to “shoot” armed targets presented as criminals and “not shoot” unarmed targets presented as innocent victims (Arnoult et al., 2023; Correll et al., 2002). Traffic offenses were assessed based on the severity of legal sanctions and penalties in Iran. The study aimed to determine whether malevolent personality traits were associated with general aggression in the video game and whether they predicted the severity of traffic offenses beyond the effect of general aggression. The results of this study could potentially identify personality risk factors for serious traffic offenses among Iranian drivers.

2 | METHOD

2.1 | Participants

The participants in this study were 200 driving offenders from Tehran, Iran, who were enrolled in a court-ordered traffic safety education and rehabilitation program. The program involved fear exposure education, financial penalties, and in some cases, clinical interviews. Of the participants, 156 were men and 44 were women ($M_{age} = 41.7$, standard deviation [SD] = 9.9). The first author, a trained psychologist, invited the participants to take part in the study during the rehabilitation program. All participants were tested individually, and data were collected using a laptop.

2.2 | Materials and procedure

The traffic violations included a range of illegal driving behaviors, such as running red lights, speeding over 50 km/h (31 miles/h), driving under the influence of alcohol or drugs, and not obeying

police commands. Following Iranian regulations, the violations were summed into a global score ranging from 0 (minimum violation) to 100 (maximum violation). Two participants did not have a total offense score, leaving 198 participants in the final sample. The mean total offense score was 34.1 (SD = 17.4, min = 8, max = 97). Most participants (91.4%) had a total offense score below 50, but a minority had extreme scores approaching the maximum of 100 (4.5% of participants had a score of 97 out of 100).

A Farsi version of the dark core scale was employed to assess the Dark Tetrad personality traits (Moshagen et al., 2020). Participants completed four subscales: narcissism (9 items, e.g., “People see me as a natural leader,” $\alpha = .65$, $M = 2.47$, $SD = 0.97$), Machiavellianism (10 items, e.g., “Whatever it takes, you must get the important people on your side,” $\alpha = .74$, $M = 2.78$, $SD = 0.74$), psychopathy (7 items, e.g., “People often say I'm out of control,” $\alpha = .66$, $M = 2.09$, $SD = 0.65$), and sadism (10 items, e.g., “Sometimes, I get so angry I want to hurt people,” $\alpha = .84$, $M = 1.56$, $SD = 0.63$). All items were assessed on a scale from 1 (totally disagree) to 5 (totally agree). The Farsi versions of the different subscales available in Open Science Framework (<https://osf.io/9hwmwy/>) and were built using a translation-back-translation procedure.

Following completion of the Dark Tetrad questionnaire, participants were asked to play a computerized shooting decision task presented as a video game. The task consisted of 80 trials and was adapted from previous studies conducted by Correll et al. (2002) and Mange et al. (2012). Each trial presented an unrecognizable target in one of four random positions within a building window (see Figure 1). In 40 of the trials, the target held a gun, while in the other 40, the target held an innocuous object of similar size, such as a soft drink bottle. Participants were instructed to shoot criminals (targets holding a gun) and not to shoot innocent victims (targets holding an innocuous object) as quickly as possible. Participants responded by pressing the “M” key on the right side of the keyboard to shoot or the “X” key on the left side of the keyboard to not shoot the target. A warning (the letter X in red characters) appeared if participants were too slow or made an incorrect decision within the 170–850 ms time frame. The task began with six training trials randomly selected by a computer program. The number of incorrect decisions made by



FIGURE 1 Example of an armed trial (left panel) and an unarmed trial (right panel) of the shooting decision task. [Color figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.wiley.com)]

participants, such as pressing the “shoot” key on unarmed trials or the “don't shoot” key on armed trials, was recorded. The tendency to shoot more unarmed targets compared to armed targets (shooting bias) was used as a proxy for aggressive behavior toward innocent victims in the video game, as the instructions emphasized the importance of not shooting innocent targets. Higher scores on this measure indicate a careless attitude toward harming innocent victims. Recent research using a similar task indicates that shooting biases are associated with greater hostility toward targets and impulsive (automatic) behavioral tendencies (Arnoult et al., 2023).

We calculated the shooting rates for two types of trials—those involving armed criminals and those involving unarmed innocent victims—based on the number of correct and incorrect shooting decisions made during the shooting decision task. Shooting rates were expressed as a proportion or percentage of correct decisions made in each trial type. Higher shooting rates in the armed trials indicate a greater inclination to shoot the criminals (correct decisions), while higher shooting rates in the unarmed trials suggest a greater inclination to shoot the innocent victims (incorrect decisions). Subsequently, we derived a shooting bias index that represents the mean difference between the shooting rates of the two trial types ($M = -0.83$, $SD = 0.24$). A higher score on this index implies a stronger tendency to shoot innocent victims compared to criminals, which we interpreted as an indication of aggressive behavior toward innocent victims in the video game.

3 | RESULTS

Because the predictor variables (Dark Tetrad personality traits and shooting bias) and outcome variable (driving offenses) showed nonnormal distributions (Shapiro–Wilk $ps < 0.001$), we used robust regression analyses with M-estimation, as implemented in the MAAS library in R. Robust methods that employ the M-estimator are particularly useful when data contain outliers or skewness, as these can substantially affect the results of standard statistical tests (Huber, 1981). By downweighting the influence of outliers and using estimation procedures that are less sensitive to deviations from normality (Wilcox, 2012), these methods provide more reliable and

valid statistical analyses, especially when normality assumptions are not met (Erceg-Hurn & Mirosevich, 2008).

The results of bivariate robust regression analyses, presented in Table 1, indicate that all dark traits examined in the study were significantly associated with one another, except for the relationship between narcissism and sadism. Notably, psychopathy, Machiavellianism, and sadism were positively and significantly associated with a shooting bias toward innocent victims, suggesting that individuals with higher levels of these dark traits are more prone to aggressive behavior toward innocent targets, even in a video game context. Moreover, the results showed that all four dark traits and the shooting bias index were positively and significantly associated with driving offenses, which aligns with previous research suggesting that a dark personality and aggressive behaviors are risk factors for serious traffic offenses.

To determine which Dark Tetrad personality traits retain a significant predictive association with shooting bias after controlling for the other malevolent traits, we conducted a multiple robust regression analysis using psychopathy, Machiavellianism, sadism, and narcissism as predictor variables. The analysis revealed that psychopathy was the only variable that had a statistically significant positive association with shooting bias ($\beta = .032$, $t = 2.460$, $p = .014$). This suggests that individuals with higher levels of psychopathy are more likely to exhibit aggressive behavior toward innocent targets in a video game context. In contrast, the other predictor variables, including Machiavellianism ($\beta = .004$, $t = 0.432$, $p = .666$), narcissism ($\beta = .001$, $t = 0.213$, $p = .832$), and sadism ($\beta = .006$, $t = 0.473$, $p = .637$), did not have statistically significant associations with shooting bias in this analysis.

To evaluate whether dark personality traits retain a significant predictive association with serious driving offenses after controlling for the effects of general aggression, we conducted a multiple robust regression analysis. We included the four malevolent traits and the shooting bias index as predictors of serious driving offenses. Our aim was to assess the relative importance of each trait in predicting driving offenses, independent of the effects of general aggression. The results of this analysis are reported in Table 2.

As shown in Table 2, the results of the robust multiple-regression analysis showed that Machiavellianism ($\beta = 3.522$, $p < .001$) and

TABLE 1 Bivariate robust regression coefficients.

	Driving offences	Shooting bias	Psychopathy	Machiavellianism	Narcissism	Sadism
Driving offences	—	9.092*	5.619*	4.960*	1.388*	5.373*
Shooting bias		—	0.037*	0.017*	0.008*	0.022*
Psychopathy			—	0.369*	0.186*	0.645*
Machiavellianism				—	0.168*	0.186*
Narcissism					—	0.020*
Sadism						—

Note: Entries are Betas (β) coefficients, $N = 196$.

* $t > 1.96$, $p < .05$.

TABLE 2 Robust multiple-regression analysis predicting serious traffic offenses.

	Beta coefficient	Standard error	t Value	p Value	95% confidence interval for β coefficients	
					Lower	Upper
Machiavellianism	3.278	0.931	3.522	0.001	1.454	5.102
Narcissism	0.243	0.654	0.371	0.710	-1.039	1.525
Psychopathy	2.303	1.256	1.833	0.067	-0.159	4.764
Sadism	2.506	1.183	2.123	0.034	0.193	4.819
Shooting bias	7.077	2.533	2.771	0.006	2.072	12.082

Note: Entries are Betas (β) coefficients, $N = 192$.

sadism ($\beta = 2.123$, $p = .034$) had a significant positive association with serious driving offenses, after controlling for the effects of general aggression and the other dark personality traits. The coefficient for psychopathy was positive, but did not reach statistical significance ($\beta = 1.833$, $p = .067$). Narcissism had a nonsignificant association with serious driving offenses ($\beta = .371$, $p = .710$). Additionally, the shooting bias index was also found to have a significant positive association with serious driving offenses ($\beta = 2.771$, $p = .006$). The overall model was significant ($F(5, 192) = 13.92$, $p < .001$) and explained 26.4% of the variance in serious driving offenses.

4 | DISCUSSION

The present study aimed to investigate the relationship between Dark Tetrad personality traits, aggressive behavior in violent video games, and serious traffic offenses among driving offenders participating in a rehabilitation program. The results of multiple robust regression analyses revealed significant associations between specific Dark Tetrad traits and both shooting bias in a video game context and severe driving offenses. In particular, psychopathy was significantly associated with shooting bias toward innocent targets in the video game, independently of other malevolent traits. Additionally, Machiavellianism, sadism, and general aggression were identified as significant predictors of serious driving offenses. These findings suggest that Dark Tetrad personality traits (especially Machiavellianism and sadism) and aggressive behavior in video games may play an important role in identifying individuals at higher risk for severe traffic violations, emphasizing the need for targeted interventions in rehabilitation programs for such offenders.

Consistent with previous studies, pairwise analyses indicated a positive and significant correlation between serious traffic offenses and the malevolent traits of Machiavellianism, psychopathy, narcissism, and sadism. This finding is in line with prior research that associated psychopathy with impulsivity and anger in drivers (Naujoks et al., 2018), as well as Machiavellianism with driving vengeance (Sümer et al., 2019). The present data also supports the idea that narcissism may be a risk factor for driving offenses by promoting a sense of superiority and a lack of empathy for others' injuries (Sümer et al., 2019). Recent studies that showed a positive

relationship between sadism and attraction to violent video games (Gonzalez & Greitemeyer, 2018; Greitemeyer, 2015; Greitemeyer & Sagioglou, 2017; Greitemeyer et al., 2019) suggest that sadistic individuals' interest in violent video games may lead to greater engagement in risky driving behavior in real life. Moreover, the findings that all dark traits, except narcissism, were identified as significant predictors of general aggression in a violent video game decision task support the idea that malevolent personality traits may predispose individuals to aggressive behavior in general and, more specifically, serious traffic offenses. Consequently, these findings strengthen the argument that dark personality traits are associated with aggressive behavior in general and serious traffic offenses in particular.

It is worth noting that in a robust multiple-regression analysis that included all four malevolent traits, psychopathy was found to be the only significant predictor of shooting bias in violent video games. This result is consistent with prior research that has demonstrated the strong relationship between psychopathy and aggressive behavior in general (Paulhus et al., 2021), as well as research indicating that shooting bias in violent video games reflects impulsive and hostile reactions (Arnoult et al., 2023), and that psychopathy is significantly associated with violent video gaming (Jahic et al., 2021). Additionally, the fact that aggressive behavior in violent video games was linked to both psychopathy and serious traffic offenses in this study aligns with a wealth of research documenting a connection between violent video game play and aggression (Anderson et al., 2010).

While psychopathy was initially the strongest predictor of serious traffic offenses in bivariate analyses, its effect was reduced when accounting for aggression toward innocent targets in a violent video game. This suggests that psychopathy may facilitate serious traffic offenses through its influence on general aggression, consistent with a mediation model. These findings shed light on an interesting mechanism linking dark traits to driving offenses and emphasize the importance of considering general aggression when predicting driving behavior. Moreover, the multivariate model indicated that Machiavellianism and sadism were also independent predictors of driving offenses, indicating that individuals prone to aggressive behaviors and who display traits of Machiavellianism and sadism may be particularly likely to engaging in serious traffic offenses.

The current study has some strengths and limitations. One strength is that it used actual driving records instead of relying on self-reported data, which can be biased or inaccurate. This made the results more reliable and accurate. The findings are consistent with earlier studies that used self-reported data, which strengthens and broadens the applicability of the findings.

Another strength of the present study is the control for general aggression in the analyses, which allows for a more precise examination of the relationship between dark personality traits and driving behavior, while accounting for potential confounding variables. As we have seen, this is particularly important as general aggression may contribute to explaining some of the relationships between dark personality traits (psychopathy) and dangerous driving behaviors. Controlling for general aggression helps to clarify the unique contribution of dark personality traits to driving behavior, beyond the effects of general aggression.

Finally, another strength of the present study is the use of robust regression analysis, which increases the validity and reliability of the statistical analyses (Wilcox, 2012). The use of robust regression allowed us to handle the problem of extreme observations on our measures, without removing these crucial data from the sample. Robust analyses should be encouraged as they can improve the accuracy, generalizability, and reproducibility of findings, especially when dealing with nonnormally distributed variables or outliers.

Despite its positive points, the present study is not without limitations. One major limitation is the use of a cross-sectional design, which precludes the ability to establish causal relationships between dark personality traits and driving behavior. Longitudinal designs are needed to investigate the directionality and temporal sequencing of these associations.

Moreover, the sample used in the study may not be representative of all traffic offenders, as it was composed of people from a single country (Iran). It is possible that cultural, social, and legal factors may influence the relationship between dark personality traits and driving behavior in different ways in other countries. Future research should use larger and more diverse samples to increase the external validity of the findings and to test the generalizability of the results across different populations. In addition, it is important to note that the measures employed to assess malevolent traits in this study may not fully capture the complexities and nuances of dark personality traits, as noted by Moshagen et al. (2018). For instance, the self-report measure used in this study only assesses basic components of Machiavellianism, psychopathy, narcissism, and sadism. Therefore, future research may benefit from using more comprehensive measures to assess a wider range of malevolent traits.

The present study has several potential implications, both for research and practice. From a research standpoint, the study contributes to the growing body of literature on the relationship between dark personality traits and risky behaviors, specifically in the context of driving offenses. The study also highlights the potential mediating role of general aggression in the relationship between psychopathy and serious traffic offenses. These findings could inform future research that aims to examine the mechanisms through which malevolent personality traits influence driving behavior.

From a practical standpoint, the study has implications for the development of targeted interventions in rehabilitation programs for driving offenders. The identification of specific personality traits associated with serious traffic offenses can help to inform the development of interventions that address these traits and their underlying mechanisms. For example, interventions that focus on reducing aggressive tendencies or impulsivity may be particularly effective for individuals with high levels of psychopathy. Additionally, interventions that target the unique characteristics of individuals with high levels of Machiavellianism or sadism may be warranted.

In conclusion, the present findings highlight the importance of identifying and targeting dark personality traits and aggressive behavior in the rehabilitation process of traffic offenders, to reduce the risk of future traffic violations and improve public safety on the roads. Future research should further investigate the mechanisms underlying these relationships, using longitudinal designs and diverse samples, as well as comprehensive measures of dark personality traits and driving behavior to increase the external validity of the findings and to further our understanding of the complex interplay between dark personality traits and driving behavior.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data, R code, and research materials that support the findings of this study are openly available in Open Science Framework at <https://osf.io/9hmwy/>, reference number DOI 10.17605/OSF.IO/9HMWY.

ETHICS STATEMENT

The study was approved by a local ethical committee in Iran (Allameh Tabatabai University).

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