Assessing the impact of maladaptive personality traits on driving behavior

Silvana Andrea Montes

Mario Alberto Trógolo

Rubén Daniel Ledesma

RESUMO

Avaliando o impacto de traços de personalidade desadaptativos no comportamento de condução

A influência da personalidade no comportamento do condutor é bem documentada na literatura. Pesquisas anteriores neste domínio têm principalmente dependido de modelos tradicionais, particularmente os Cinco Grandes. Recentemente, novos modelos de personalidade foram desenvolvidos, como o modelo alternativo para os transtornos da personalidade (AMPD) do DSM-V. Apesar do aumento da evidência que apoia a utilidade do AMPD, sua aplicabilidade na previsão de comportamentos de condução permanece pouco estudada. Este estudo investigou as associações entre traços de personalidade desadaptativos, baseados no modelo AMPD, e diferentes estilos de condução (condução imprudente, agressiva, ansiosa, dissociativa, de redução de estresse e cuidadosa) entre 1045 condutores da Argentina. Os resultados revelaram associações significativas entre os fatores do AMPD e os estilos de condução em toda a amostra, bem como em diferentes subgrupos com base na idade e sexo. Além disso, análises de regressão linear múltipla demonstraram que os cinco domínios do AMPD (antagonismo, desinibição, desapego, afetividade negativa e psicoticismo) previram diferencialmente cada estilo de condução. Os resultados destacam o potencial do AMPD como um quadro valioso para aprimorar nossa compreensão dos comportamentos dos condutores. As implicações desses resultados para a avaliação de condutores e o desenho de intervenções são discutidas.

Palavras-chave: estilos de condução, personalidade, PID-5, traços maladaptativos, risco no trânsito.

ABSTRACT

The influence of personality on driver behavior is well-documented in the literature. Previous research in this domain has primarily relied on traditional models, particularly the Big Five. Recently, new personality models have been developed, such as the Alternative Dimensional Model for Personality Disorders (AMPD) proposed in the DSM-V. Despite increasing evidence supporting the utility of AMPD in predicting behavior across various domains, its applicability in predicting driving behaviors remains understudied. This study investigated associations between maladaptive personality traits, based on the AMPD model, and different driving styles, including reckless, aggressive, anxious, dissociative, distress reduction, and careful and patient driving among 1045 drivers from Argentina. The results revealed significant associations between AMPD factors and driving styles across the total sample, as well as in different subgroups based on age and sex. Moreover, multiple linear regression analysis demonstrated that the five AMPD domains (antagonism, disinhibition, detachment, negative affectivity, and psychoticism) differentially predicted each driving style. These findings underline the potential of the AMPD as a valuable framework for enhancing our understanding of drivers' behaviors, particularly maladaptive driving styles. The implications of these results for driver assessment and the design of road safety interventions are discussed.

Keywords: driving styles, personality, PID-5, maladaptive traits, road safety.

About the authors

S. A. M
orcid.org/0000-0002-1868-7854
Universidad Nacional de Mar del Plata (UNMdP) - Mar del Plata, Buenos Aires (B)
smontes@conicet.gov.ar

M. A. T.
orcid.org/0000-0002-2102-4701
Universidad Católica de Córdoba (UCC) - Córdoba, Córdova (CO)
mario.trogolo@gmail.com

R. D. L.
orcid.org/0000-0002-8598-4680
Universidad Nacional de Mar del Plata (UNMdP) - Mar del Plata, Buenos Aires (B)
rdledesma@gmail.com

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Motor vehicle crashes (MVCs) are a leading cause of mortality and morbidity worldwide, claiming approximately 1.3 million lives annually (World Health Organization [WHO], 2022). Although there are a myriad of factors contributing to MVCs, human behavior stands out as a critical one (Petridou & Moustaki, 2000).

Personality represents as key predictor of individual differences in driving behavior and MVCs involvement (Ulleberg & Rundmo, 2003). Research in this domain has been both extensive and heterogeneous, ranging from studies examining specific traits (e.g., anger, sensation seeking; Hussain et al., 2020; Sârbescu & Maricuțoiu, 2019), to studies examining the association between various personality traits and driving behaviors using multidimensional models (e.g., Poó et al., 2013; Poó & Ledesma, 2013; Taubman – Ben-Ari & Yehiel, 2012).

The Five Factor Model (FFM) and the Alternative Five Factor Model (AFFM) represent the most extensively used framework in traffic psychology and transportation studies (Sârbescu et al., 2019). However, findings regarding their associations with driving behavior have been inconsistent. While some studies report meaningful associations between these traits and driving behaviors such as aggressive, reckless, dissociative, or anxious driving—others do not (for a review, see Beanland et al., 2014). To clarify these mixed results, several meta-analyses have been conducted. Akbari et al. (2019), analyzing 22 studies using the FFM, found significant negative correlations between agreeableness and risky driving ($r = −.27$, $p < .001$), and positive correlations between neuroticism and risky driving ($r = .16$, $p = .05$). In contrast, no significant associations were found between risky driving and extraversion, conscientiousness, and openness. Luo et al. (2023), based on 34 studies, reported negative associations between conscientiousness ($r = −.21$, $p < .01$; $r = −.26$, $p < .01$), agreeableness ($r = −.23$, $p < .01$; $r = −.37$, $p < .01$), openness ($r = −.08$, $p = .003$; $r = −.07$, $p = .002$), and risky and aggressive driving, with positive associations for neuroticism ($r = .11$, $p = .03$; $r = .26$, $p < .01$), and nonsignificant associations for extraversion ($r = .06$, $p = .10$; $r = −.06$, $p = .07$). In addition, they found that age and sex moderated these associations. Iancu et al. (2016) reported generally weak effect sizes for the association between FFM and AFFM traits and aggressive driving using data from 22 studies. Finally, Sârbescu and Rusu (2021), based on 27 studies, also found significant but small associations between anger and risky driving ($r = .12$, $p < .001$) and between impulsive-sensation seeking and risky driving ($r = .23$, $p < .001$).

Collectively, meta-analytic evidence indicates that FFM and AFFM traits explain only a small proportion of variance (approximately 5%) across different driving behaviors. While it is possible that personality may influence driving behaviors

primarily indirectly, these findings also suggest limitations in the utility of traditional personality models for capturing meaningful individual differences in driving behavior.

ALTERNATIVE DIMENSIONAL MODEL FOR PERSONALITY DISORDERS (AMPD)

Recently, a new personality model, the Alternative Dimensional Model for Personality Disorders (AMPD) was introduced with the publication of the DSM-5 (American Psychiatric Association [APA], 2013). According to the AMPD, personality disorders are defined by impairments in personality functioning and maladaptive personality traits. This model postulates five broad personality dimensions: negative affectivity, detachment, antagonism, disinhibition, and psychoticism. Negative affectivity reflects the tendency to experience frequent and intense negative emotions. Detachment entails low interest in social relations and restricted affectivity. Antagonism involves behaviors that create conflicts with others, and is characterized by exaggerated feelings of grandiosity, the belief of deserving special treatment, hostility and the use of others to satisfy personal needs. Disinhibition is characterized by impulsivity, a tendency towards immediate gratification, and risk-taking behaviors. Psychoticism encompasses odd and bizarre experiences and cognitions (APA, 2013). These traits are understood as dimensional rather than categorical, meaning that each trait is present in varying degrees in all individuals rather than being present or absent (APA, 2013).

Since its publication, a growing body of research has examined the behavioral and emotional correlates of AMPD traits. Results have shown significant associations between the AMPD factors and aggressive and risky behaviors, as well as poor psychological adjustment (Romero & Alonso, 2019). Moreover, some studies have demonstrated that AMPD factors predict various health-related behaviors and psychiatric symptoms beyond normal FFM traits (Fowler et al., 2017). These findings support the added value of the AMPD in predicting dysfunctional or maladaptive behaviors, suggesting that the AMPD model may offer valuable insights to enhance our understanding of maladaptive behaviors.

THE PRESENT STUDY

Despite increasing evidence supporting the utility of AMPD traits in clinical, occupational, and forensic contexts (Bach & Tracy; 2022; Flechsenhar, 2024), relatively little is known about their predictive capacity regarding driving behavior. To our best knowledge, only one study by Beanland et al. (2014) has examined the impact of AMPD traits on driver behavior. They found that antagonism and negative affectivity predicted aggressive and ordinary violations, while negative affectivity,

disinhibition and, to a lesser extent, antagonism predicted driver errors and lapses. The present study expands upon Beanland et al.'s (2014) research by examining the associations between AMPD and various driving styles. According to Taubman-Ben-Ari et al. (2004), driving style refers to an individual's habitual driving behavior and can be categorized into four domains: (a) reckless and careless, (b) anxious, (c) angry and hostile, and (d) patient and careful. Later studies using factor-analytic approaches (e.g., Holman & Havârneanu, 2015; Poó et al., 2013) identified a six-factor structure of the Multidimensional Driving Style Inventory (MDSI), including reckless, angry, patient and careful, anxious, dissociative, and distress-reduction styles. These six dimensions maps onto the original four domains, while providing more nuanced distinctions—particularly within the anxious domain, which has been subdivided into anxious, dissociative, and distress-reduction styles. The reckless, angry, anxious, dissociative, and distress-reduction styles are considered maladaptive ways of driving, whereas the careful and patient style reflects an adaptive driving behavior (Taubman – Ben-Ari et al., 2004).

The aims of the present study are twofold: firstly, to examine the associations between AMPD traits and driving styles; and secondly, to identify which AMPD traits are most predictive of each driving style. Given prior research indicating that that sex and age moderate the relationship between personality traits and driving behavior (Luo et al., 2023; Poó & Ledesma, 2013), analyses were conducted both on the total sample and across subgroups by sex and age. Previous studies (Gleason et al., 2014; Romero & Alonso, 2019) have shown a stronger association between maladaptive personality traits and maladaptive driving behavior; accordingly, we hypothesized that AMPD traits would display stronger associations with maladaptive driving styles (reckless, angry, anxious, dissociative) and weaker associations with the adaptive patient and careful style.

METHOD

PARTICIPANTS

The sample comprised 1045 Argentine drivers aged between 18 and 85 years (M = 40.36; SD = 16.60). Men represented 58.7% of the sample. The majority of participants had completed at least high school (89.4 %) and reported driving regularly (71.7 % almost every day; 20.5% some days of the week). To be eligible for participation, individuals had to meet the following criteria: (a) be at least 18 years old, (b) hold a valid driver's license, and (c) have driven at least once a week in the previous month. The sample was further divided into subsamples based on sex and age, with age groups defined as young drivers (18-29) and adult drivers (30 or older), consistent with prior research (Poó & Ledesma, 2013).

Consequently, four subgroups of drivers were compared: young men (n = 187), young women (n = 169), adult men (n = 414) and adult women (n = 270).

MEASURES

Personality traits were evaluated using the Argentine version of the Personality Inventory for DSM-5 Brief Form (PID-5-BF; Krueger et al., 2012; Sánchez et al., 2020). The PID-5-BF assesses the five broad personality domains of the AMPD: negative affectivity (9 items), detachment (6 items), antagonism (4 items), disinhibition (6 items), and psychoticism (6 items). Respondents rated the extent to which each statement (e.g., "I worry about almost everything") applies to them on a Likert-type scale with five response options, ranging from 1 (*not describe me at all*) to 5 (*describes me completely*). The original PID-5-BF factor structure was replicated in Argentina; all factors demonstrated good reliability as evidenced by Cronbach's alpha ranging from .67 to .77. In the present study, internal consistency reliability coefficients ranged from .63 to .82.

Driving styles were assessed using the Argentine adaptation of the Multidimensional Driving Style Inventory (MDSI-S; Poó et al., 2013). The MDSI-S comprises 40 items that measure reckless (9 items), angry (6 items), anxious (4 items), dissociative (10 items), distress reduction (5 items), and patient and careful (6 items) driving styles. Participants rated the degree to which each item (e.g., "Swear at other drivers") described their feelings, thoughts, and behaviors while driving on a 6-point Likert scale ranging from 1 (*not at all*) to 6 (*very much*). In the present study, internal consistency reliability coefficients were as follow: .89 for reckless driving style, .77 for dissociative driving style, .74 for patient and careful driving style, .75 for anxious driving style, .80 for angry driving style, and .63 for distress reduction driving style.

A sociodemographic questionnaire was used to collect information on participants' age, sex, educational level, and country of residence, as well as driving-related variables such as possession of a driver's license, type of vehicle driven, and driving frequency.

PROCEDURE

An online survey was created and distributed via various social media platforms. No paid promotion services were used. Data collection took place between December 2022 and January 2023. Out of 1176 drivers who completed the questionnaires, 131 were excluded as they did not meet the inclusion criteria. All respondents resided in Argentina. Participation was entirely voluntary, anonymity was guaranteed, and no incentives were offered. Written informed consent was obtained. The research using the Argentine version of the Personality Inventory for DSM-5 (PID-5; Sánchez

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et al., 2020) is part of a larger project approved by the Institutional Review Board at the National University of Mar del Plata, Argentina. The study met the ethical requirements of the Social Sciences Area of Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET) and adhered to the principles of the Declaration of Helsinki.

DATA ANALYSIS

Initially, to assess whether individuals with extreme scores on PID-5 traits also show extreme scores on driving styles, high and low scores on each scale were compared (extreme scores defined as those at or above the 75th percentile). Secondly, bivariate correlations (Pearson's r) were computed to assess the strength and direction of associations between PID-5 traits and MDSI styles for the total sample and across sex and age subgroups. Given the large number of correlations examined, Bonferroni's correction was applied to reduce Type I error, setting significance thresholds at $p <$ .00016. Statistical tests for differences in correlation coefficients between subgroups were conducted using

Fisher's r-to-z transformation. Moreover, multiple linear regression models (stepwise method) were estimated, with PID-5 scales as predictors and the MDSI-S scales as criteria, to identify the PID-5 domains that best predict each driving style. These analyses were also conducted for both the total sample and the sex and age subgroups. Data analysis was performed using SPSS 23.

RESULTS

RELATIONSHIPS AMONG PID-5 AND MDSI-S SCORES

In general, individuals with extreme scores on AMPD traits also exhibited extreme scores on driving styles. A higher percentage of extreme scores in the risky and dissociative driving styles was observed among those with high levels of antagonism, disinhibition, negative affectivity, and psychoticism. Additionally, a higher percentage of extreme scores in the anxious driving style was found among individuals with high negative affectivity and psychoticism. These values are shown in Table 1.

Table 1. *Comparison of Extreme Scores on the PID-5 and MDSI Scales.*

PID-5 Traits		Driving Styles					
		Reckless	Dissociative	Angry	Careful and Patient	Anxious	Distress Reduction
Antagonism	Low	17%	20%	21%	30%	22%	22%
	High	49%	38%	35%	15%	32%	34%
Disinhibition	Low	20%	16%	20%	31%	20%	22%
	High	39%	47 %	34%	12%	36%	33%
Detachment	Low	24%	21%	23%	27%	22%	26%
	High	28%	34%	27%	25%	31%	24%
Negative Affectivity	Low	22%	18%	20%	28%	18%	23%
	High	35%	45%	36%	21%	42%	32%
Psychoticism	Low	20%	16%	21%	29%	19%	22%
	High	40%	47%	34%	19%	37%	36%

Table 2 presents the correlation coefficients between the variables for the total sample and the different subgroups. In general, all PID-5 factors and driving styles were significantly associated, except for detachment and the distress reduction style. As anticipated, PID-5 traits exhibited positive and stronger associations with maladaptive driving styles (reckless, dissociative, angry, anxious, and distress reduction; r ranging from .08 to .44, M = .28), while associations with the adaptive driving style (careful and patient) were negative and weaker (r ranging from −.09 to −.34, M = .17). Notable associations included antagonism with the reckless driving style (r = .41); disinhibition with the patient and careful driving style (r = −.34); negative affectivity with the anxious driving

style (r = .40), and psychoticism and the dissociative driving style (r = .44).

Subgroup analyses revealed that the association between antagonism and reckless driving was stronger for adult men than adult women (Fisher's z = 1.95, p = .05), while the association between disinhibition and careful driving was stronger for adult women than adult men (Fisher's z = 2.98, p = .002). No significant differences were observed in the correlations between personality traits and driving styles among the young subgroups.

REGRESSION ANALYSES

The results of multiple regression analysis (Table 3) revealed significant predictors for each driving style across the total sample and sex and age subgroups. For the reckless driving style, antagonism, disinhibition, and psychoticism emerged as significant predictors. While antagonism and disinhibition were the strongest predictors in men (young and adult), psychoticism played a prominent role in predicting reckless driving among young women. In adult women, only Antagonism emerged as a significant predictor. Negative affectivity, antagonism, and disinhibition were significant predictors of the angry driving style for the overall sample, with negative affectivity consistently predicting angry driving across all subgroups. However, some differences were observed between subgroups. In particular, psychoticism predicted angry driving in young drivers only, and disinhibition predicted angry driving among men only.

Psychoticism, disinhibition, and negative affectivity contributed significantly to the prediction of the dissociative driving style in the total sample. Disinhibition was the sole predictor across all subgroups, with stronger predictive power observed for men. Negative affectivity only predicted dissociative driving among adult drivers, whereas psychoticism was a better predictor among young drivers.

Table 2. *Pearson's correlation between maladaptive personality traits and driving styles.*

PID-5 Traits	Sample	Reckless	Angry	Dissociative	Anxious	Distress reduction	Careful and Patient
				Driving Styles			
Antagonism	Total	.41**	.27**	.28**	.19**	.25**	-.22%
	Young men	.37**	.30**	.32**	.10	.25**	-.11
	Young women	.30**	.22**	.29**	.07	.13	-.05
	Adult men	.37**	.19*	.24**	.25**	.26**	-.07
	Adult women	.23**	.25**	.18**	.19**	.14*	-.23**
Disinhibition	Total	.37**	.31**	.41**	.29**	.18**	-.34**
	Young men	.41**	.36**	.46**	.32**	.22**	-.27**
	Young women	.23**	.08	.34**	.19*	.20**	-.29**
	Adult men	.36**	.34**	.43**	.32**	.19**	-.21**
	Adult women	.26**	.20**	.36**	.25**	.00	-.43**
Detachment	Total	.07*	.08*	.16**	.14**	-.03	-.08**
	Young men	.15*	.21*	.22**	.30**	-.01	-.17*
	Young women	-.06	-.17*	.07	.11	-.02	-.16*
	Adult men	.11*	.07	.18**	.09	.01	-.04
	Adult women	.10	.14	.16**	.15*	-.11	-.06
Negative affectivity	Total	.24**	.30**	.41**	.40**	.23**	-.11**
	Young men	.22**	.33**	.40**	.33**	.22**	-.05
	Young women	.12	.08	.28**	.35**	.18*	.14
	Adult men	.30**	.28**	.41**	.41**	.28**	-.04
	Adult women	.18**	.32**	.37**	.31**	.12	-.14*
Psychoticism	Total	.30**	.21**	.44**	.33**	.24**	-.18**
	Young men	.26**	.15*	.47**	.39**	.27**	-.11
	Young women	.26**	.13	.47**	.35**	.28**	-.03
	Adult men	.25**	.14*	.37**	.22**	.21**	-.06
	Adult women	.21**	.24**	.38**	.24**	.11	-.22**

*p < .05 (two- tailed). ** p < .01 (two-tailed)

For the anxious driving style, negative affectivity and psychoticism emerged as significant predictors, with negative affectivity primarily predicting anxious driving in adult drivers, while psychoticism predicted anxious driving also among young drivers.

Disinhibition negatively predicted the careful and patient driving style across the total sample and sex and age subgroups, across all subgroups, while negative affectivity positively predicted this style, particularly among women. Antagonism, psychoticism, negative affectivity, and detachment predicted the distress reduction driving style. Psychoticism was the main predictor in young men and women, while antagonism and negative affectivity were significant predictors in adult men and women, respectively. Overall, the PID-5 traits accounted for 10% to 25% of the variance in driving styles for the total sample, with variations in contribution observed across subgroups.

DISCUSSION

This study aimed to investigate the relationship between AMPD personality traits and driving styles, as well as to identify which traits are most influential in predicting each driving style, both in the total sample and across subgroups based on sex and age. Initially, it was observed that drivers with more extreme AMPD scores also demonstrated more pronounced maladaptive personality styles. In line with these findings, correlation analyses revealed a robust association between maladaptive personality traits and the driving styles.

Multiple regression analysis indicated that the AMPD domains explained significant proportion of variance in different driving styles: 21% for reckless driving, 25% for dissociative driving, 14% for angry driving, 13% for careful and patient driving, 18% for anxious driving, and 10% for distress reduction driving. These findings are comparable to previous research using the AFFM model (Poó & Ledesma, 2013), particularly regarding the prediction of reckless driving. However, notable differences emerged in the prediction of other driving styles. Specifically, while AFFM traits showed stronger predictive power for angry and patient and careful styles in Poó and Ledesma's (2013) study, the present study found PID-5 traits to be stronger predictors of dissociative and anxious driving styles. Compared to previous FFM-based research (Taubman – Ben-Ari & Yehiel, 2012), our findings suggest that AMPD traits have greater predictive utility for all maladaptive driving styles (i.e., reckless, anxious, angry, and dissociative), but more limited predictive power for adaptive styles (i.e., patient and careful)). This indicates that AMPD traits are particularly well-suited to capturing maladaptive behavioral tendencies behind the wheel.   Our findings also revealed distinct patterns in how specific AMPD traits predicted different driving styles. The reckless driving style was primarily predicted by antagonism and disinhibition. Antagonism, characterized by a disregard for social norms and admiration seeking, may lead individuals to ignore traffic rules and drive recklessly to show-off. These findings are consistent with prior research linking antagonism to norm-violating and confrontational driving (for a review, see

Sârbescu, & Rusu, 2021). Disinhibition, characterized by impulsivity and a propensity for immediate gratification, has also been associated with risky behaviors such as speeding, distracted driving, and increased crash risk (Li et al., 2023).

The dissociative driving style was predicted by psychoticism, disinhibition, and negative affectivity. Psychoticism, which involves cognitive dysregulation and dissociative experiences (e.g., maladaptive daydreaming), may divert attention and result in errors and cognitive gaps while driving. Disinhibition, characterized by boredom proneness and susceptibility to distraction by external stimuli, may also divert attention from driving task, resulting in higher attention-related driving errors and dissociative driving (Ledesma et al., 2010). Negative affectivity includes traits such as perseveration and depressivity, which can foster rumination and impair attention and concentration (Farrin et al., 2003), potentially leading to dissociative driving. The angry style was best predicted by negative affectivity, antagonism, and disinhibition. Negative affectivity includes emotional reactivity, irritability, and hostility, which may fuel anger while driving —a key precursor of aggressive driving (Bogdan et al., 2016). Hostility, which is also a component of antagonism, may also explain the observed association between this trait and aggressive driving. Disinhibition, reflecting impulsivity and low frustration tolerance, may exacerbate feelings of irritation when faced with traffic events that block or delay individuals' needs and goals, potentially increasing aggressive driving.

The careful and patient style was negatively predicted by disinhibition. Thus, the lower the impulsivity, distraction, and risk-taking tendencies associated with disinhibition, the greater the tendency to be calm, attentive, and adopt safe driving practices. Negative affectivity also contributed to patient and careful driving, but its contribution was positive. This finding may seem counterintuitive considering the emotional lability and tendency to experience intense negative emotions, such as hostility, that characterize negative affectivity. However, it also includes facets such as anxiousness, implying feelings of fear and apprehension, which may promote fear-related behaviors, such as exaggerated safety or overly cautious driving behaviors (Clapp et al., 2011). The anxious driving style was predicted by negative affectivity and, to a lesser extent, psychoticism. Negative affectivity includes traits such as nervousness, insecurity, and anxiouness, which aligns with feelings of apprehension and alertness among drivers who endorse an anxious driving style. The association between psychoticism and anxious driving is less clear. However, psychoticism has been associated with high traffic risk perception and low driving self-efficacy (Zhang et al., 2019) and drivers with an anxious driving style lack self-confidence in their own driving skills, which in turn is associated with elevated risk perception (Taubman – Ben-Ari et al., 2004). Thus, psychoticism may

influence anxious driving indirectly, through its impact on drivers' self-assessment of driving skills and perceived risk.

Table 3. Results of multiple linear regression analysis predicting driving styles.

PID-5 Domains	Total sample (n = 1045)		Young men (18-30; n = 187)		Young women (18-30; n = 169)		Adult men (> 30; n = 414)		Adult women (> 30; n = 270)	
	R2	β	R2	β	R2	B	R2	β	R2	β
Reckless style	.21**		.22**		.16**		.19**		.10**	
Antagonism		.28**		.25**		.20*		.25**		.15*
Disinhibition		.20**		.32**		.12		.20**		.14
Detachment		-.02		.02		-.18*		.02		.03
Negative affectivity		-.03		-.07		-.11		.11		.01
Psychoticism		.10**		.042		.28**		-.03		.10
Dissociative	.25**		.30**		.28**		.23**		.21**	
Antagonism		.05		.09		.13		.03		.01
Disinhibition		.19**		.24**		.14*		.25**		.17*
Detachment		.01		.01		-.11		.05		.01
Negative affectivity		.14**		.07		-.04		.18**		.18*
Psychoticism		.23**		.27**		.44**		.10		.20**
Angry	.14**		.21**		.12**		.14**		.14**	
Antagonism		.16**		.16*		.15		.06		.18**
Disinhibition		.16**		.25**		.07		.28**		-.05
Detachment		.01		.14		.24**		-.01		.07
Negative affectivity		.19**		.23**		.08*		.19*		.25**
Psychoticism		-.05		.21*		.21*		-.15		.05
Careful and Patient	.13**		.10**		.17**		.06**		.20**	
Antagonism		-.05		-.03		.03		.00		-.05
Disinhibition		-.36**		-.31**		-.40**		-.28**		-.45**
Detachment		-.01		-.11		-.10		-.01		.06
Negative affectivity		.14**		.14		.30**		.11		.15*
Psychoticism		-.05		.11		-.01		.02		-.10
Anxious	.18**		.21**		.16**		.20**		.12**	
Antagonism		.02		-.11		-.03		.11*		.09
Disinhibition		.07		.13		.01		.12*		.05
Detachment		.04		.17*		.01		-.01		.07
Negative affectivity		.29**		.13*		.22*		.40**		.22**
Psychoticism		.09*		.22*		.22*		-.15		.06
Distress	.10**		.13**		.11**		.11**		.07**	
Antagonism		.17**		.15		.02		.19**		.15*
Disinhibition		-.01		.07		.10		-.01		-.16*
Detachment		-.11**		-.16*		-.14		-.06		-.15*
Negative affectivity		.10**		.03		-.04		.23**		.12
Psychoticism		.14**		.22*		.31*		.01		.13

**p < .01; *p < .05

Lastly, the distress reduction driving style was mainly predicted by antagonism and psychoticism. Grandiosity, a facet of antagonism, has been linked to compulsive fantasy and daydreaming (Brenner et al., 2022). This fantasy-prone tendency may create pleasurable thoughts that contribute to distress reduction while driving. Similarly, psychoticism

involves imaginative and dissociative experiences, which could reduce distress during driving.

The associations between maladaptive personality traits and driving styles differed in some cases across driver subgroups. For example, disinhibition uniquely predicted reckless driving among men, particularly young men; negative affectivity uniquely predicted patient and careful driving among women; and psychoticism uniquely predicted angry driving among young drivers. These findings hold significant implications for practice, highlighting the need for interventions tailored to each subgroup. For example, interventions targeting reckless driving among young men should prioritize reducing impulsivity and risk-taking tendencies associated with disinhibition. Traditional fear-inducing road-safety media campaigns that emphasize the negative outcomes of risky driving behaviors may have little impact on this group, given young people's tendency to rely more on experiential than on rational information processing strategies when making risky decisions (Reyna & Farle, 2006). Additionally, young drivers, especially men, tend to underestimate the probability of being involved in traffic crashes (WHO, 2022). In contrast, such campaigns may be more effective for women, who may be more responsive to fear appeals that emphasize the emotional and social consequences of unsafe driving, in line with the observed positive association between negative affectivity and patient/careful driving in this subgroup. In sum, our findings support the AMPD as a robust personality framework for investigating driver behavior. Compared to past research relying on traditional personality models, the AMPD traits demonstrated similar predictive power for certain maladaptive driving styles, such as reckless driving, and greater predictive capacity for others, particularly anxious and dissociative styles, across both the total sample and different subgroups of drivers. This suggests that the AMPD framework may enhance our understanding of maladaptive driving behaviors, providing valuable insights for designing interventions aimed at improving road safety.

The current research has limitations that worth mentioning. Firstly, due to its correlational design, causal inferences cannot be made. Secondly, data were collected through an online survey, which may introduce biases such as such as self-selection and underrepresentation of certain population groups (Bethlehem, 2010). Indeed, adult men were overrepresented in the sample, which may limit the generalizability of the findings. Thirdly, our reliance on self-report measures raises concerns about social desirability and other self-serving biases.

Given evidence suggesting susceptibility of certain Personality Inventory for DSM-5 (PID-5) scales to socially desirable and acquiescence responses (Ashton et al., 2017), future studies using informant-based reports of PID-5 traits and objective driving measures (e.g., driving simulator or on-road studies) would be valuable to support the results herein. Fourthly, maladaptive personality traits were assessed at the domain level, potentially overlooking the influence of specific facets within each broad trait, which may affect the interpretation of the findings. For instance, although disinhibition significantly predicted reckless, angry, and dissociative driving, these associations may vary depending on specific facets within this domain. Previous research has indeed shown that distinct facets of the same broad maladaptive personality domain predict different aberrant driving behaviors (Beanland et al., 2014). Future studies utilizing a comprehensive measure of the AMPD model, examining both broad trait dimensions and specific facets, could provide a more nuanced understanding of the association between PID-5 traits and driving styles. Finally, potential mediators and moderators in the relationship between maladaptive personality traits and driving styles were not explored in this study. For instance, although negative affectivity and detachment did not significantly predict reckless driving, these traits have been associated with greater negative emotions and impulse control difficulties (Hyatt et al., 2021), which in turn predict reckless driving (Trógolo et al., 2014). Exploring such mediating pathways could provide more comprehensive insight into the underlying mechanisms involved.

Despite these limitations, the present study underscores the potential of the AMPD model for investigating the influence of personality on driver behavior. However, given the scarcity of studies applying this model in traffic psychology and behavior, further research is needed to strengthen the evidence supporting the utility of the AMPD in research, driver assessment, and practice.

CONTRIBUTION OF EACH AUTHOR

We certify that all authors participated sufficiently in the work to be publicly accountable for its content. Each author's contribution can be attributed as follows: Silvana A. Montes: Conceptualization, Methodology, Investigation, Formal data analysis, Writing-original draft preparation, Data tabulation, Visualization; Mario A. Trógolo: Investigation, Methodology, Formal data analysis, Writing-original draft preparation, Validation; Rubén D. Ledesma: Methodology, Writing-review & editing, Supervision, Validation.

DECLARATION OF CONFLICTS OF INTEREST

The authors declare that they do not have conflicts of interest regarding the presente manuscript.

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