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# The core of the dark triad predict environmentalism through social dominance orientation

# O núcleo da tríade sombria prediz o ambientalismo por meio da orientação à dominância social

# El núcleo de la tríada oscura predice el ambientalismo a través de la orientación de dominancia social

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## Abstract

The present study aimed to verify the mediating role of social dominance orientation in the relationship between the core of the dark triad and environmentalism. Participants were 305 people aged between 18 and 77 years old ($M_{age} = 26.4$; $SD_{age} = 11.25$; 59.7 % women). The results indicated that among the 8 personality traits analyzed, considering the Big Five and Dark Triad models, only psychopathy was correlated with environmentalism, which was moderately correlated with social dominance orientation. Considering that the three dark traits shared empathic deficits, low agreeableness and honesty/humility, the effect of the dark triad core was tested for the prediction of environmentalism, observing direct effects. However, such direct effects did not remain statistically significant with the inclusion of social dominance orientation, configuring a complete mediation, since the dark core indirectly predicted environmentalism. Therefore, it is observed that social dominance orientation works as a mechanism that allows people with dark traits not to worry about the environment, exploiting it for their own benefit.
*Keywords*: environmentalism; personality; dark triad; social dominance orientation

## Resumo

O presente estudo objetivou verificar o papel mediador da orientação à dominância social na relação entre o núcleo da tríade sombria da personalidade e o ambientalismo. Participaram 305 pessoas com idades entre 18 e 77 anos ($M_{idade} = 26,4$; $DP_{idade} = 11,25$; 59,7 % mulheres). Os resultados indicaram que entre os 8 traços de personalidade analisados, considerando os modelos dos Cinco Grandes Fatores e da Tríade Sombria, apenas a psicopatia se correlacionou com ambientalismo, sendo que este se correlacionou moderadamente com a orientação à dominância social. Considerando que os três traços sombrios são talhados por déficits empáticos, baixa amabilidade e honestidade/humildade, testou-se o efeito do núcleo da tríade sombria da personalidade para a predição do ambientalismo, observando-se efeitos diretos. Contudo, tais efeitos diretos não se mantiveram estatisticamente significativos com a inclusão da orientação à

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dominância social, configurando uma mediação completa, posto que o núcleo da tríade sombria predisse indiretamente o ambientalismo. Logo, observa-se que a orientação à dominância social funciona como um mecanismo que possibilita pessoas com traços sombrios não se preocuparem com o meio ambiente, explorando-o em benefício próprio.
***Palavras-chave:*** ambientalismo; personalidade; tríade sombria; orientação à dominância social

**Resumen**

El presente estudio tuvo como objetivo verificar el papel mediador de la orientación a la dominancia social en la relación entre el núcleo de la tríada oscura y el ambientalismo. Participaron 305 personas con edades comprendidas entre 18 y 77 años ($M_{edad}$ = 26,4; $DE_{edad}$ = 11,25; 59,7 % mujeres). Los resultados indicaron que, entre los 8 rasgos de personalidad analizados considerando los modelos Big Five y Dark Triad, solo la psicopatía se correlacionó con el ambientalismo, que se correlacionó moderadamente con la orientación a la dominancia social. Considerando que los tres rasgos oscuros comparten déficits empáticos, baja amabilidad y honestidad/humildad, se probó el efecto del núcleo de la tríada oscura para la predicción del ambientalismo y se observaron efectos directos. Sin embargo, tales efectos directos no fueron estadísticamente significativos con la inclusión de la orientación a la dominancia social, configurando una mediación completa, ya que el núcleo oscuro predice indirectamente el ambientalismo. Por lo tanto, se observa que la dominancia social funciona como un mecanismo que permite a las personas con rasgos oscuros no preocuparse por el medio ambiente y explotarlo en beneficio propio.
***Palabras clave:*** ambientalismo; personalidad; tríada oscura; orientación a la dominancia social

A few examples of the devastating consequences that people can have on the environment include forest fires, rising global temperatures, melting polar ice caps, pollution of rivers and oceans, and the possibility of the extinction of many animal species. Brazilian biodiversity is seriously at danger due to human activity. In the Brazilian Amazonia, for example, the data shows that between 77.3 % and 85.2 % of species at risk of extinction have their habitat affected by fires (Feng et al., 2021). Yet in Brazil, for the Pantanal biome, in 2020, the largest fires in its history were recorded, with 26 % of the biome destroyed and 17 million vertebrates killed (Tomas et al., 2021). In addition, recent environmental disasters in Brazil, such as those in Brumadinho and Mariana, increase the alarming environmental issue in Brazil, which has been configured as a scenario marked by impunity against environmental crimes.

Human actions provoke environmental imbalances that, in turn, are followed by numerous problems for humans themselves. For instance, hospitalizations for respiratory illnesses are associated with forest fires in Brazil (Rocha, 2016). Data from Colombia showed that exposure to mercury discharged into rivers is related to a decrease in neurocognitive abilities in children and adolescents (De la Ossa, 2021). Events related to climate change have affected people's mental health, especially those living in developing countries (Palinkas & Wong, 2020), such as Brazil. Therefore, it is necessary to identify

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individual predispositions that can explain, to some extent, pro- and anti-environmental actions and behaviors.

Within this context, psychology plays a central role, so reducing the environmental crisis depends on changes at the individual level (Zelezny & Schultz, 2000). In order to promote pro-environmental actions, it is necessary to map the sociopsychological predictors of such behaviors and attitudes related to the environment. Thus, Milfont (2021) showed that personality traits and socio-ideological attitudes would be the sociopsychological bases of environmentalism.

**Environmentalism, personality traits and socio-ideological attitudes**

Environmentalism can generally be understood as a set of procedures linked to actions aimed at reducing human impact on the natural world (Zelezny & Schultz, 2000). Taking into account the Five Factor Model (FFM), agreeableness, conscientiousness, and openness have consistently predicted environmentalism (Hirsh & Dolderman; 2007; Milfont & Sibley, 2012). Another personality model used to understand environmentalism is HEXACO, with the honesty/humility factor as the most consistent predictor (Milfont, 2021). Furthermore, personality traits explain sex differences in environmentalism, as women are more empathetic (Milfont & Sibley, 2016), kind, conscientious, honest, and humble compared to men (Desrochers et al., 2019), consequently having more pro-environmental attitudes and behaviors.

Despite the critical role of FFM and HEXACO in understanding environmentalism, it is worth highlighting the destructive effects that human beings have on nature. In this context, it is essential to explore the role of the dark side of personality in explaining low levels of environmentalism. The Dark Triad, which is composed of subclinical forms of narcissism and psychopathy as well as Machiavellianism, is a model that addresses this unpleasant aspect of the human psyche in the literature (Paulhus & Williams, 2002). According to these authors, these traits are marked by characteristics such as aggressiveness, emotional detachedness, and self-promotional inclinations that characterize people who take advantage of others and behave exploitatively. Furthermore, the core of the dark triad of personality is marked by low levels of agreeableness (Gouveia et al., 2016) and honesty/humility (Book et al., 2015), in addition to deficits in affective empathy (Wai & Tiliopoulos, 2012).

Recently, some studies found that psychopathy and Machiavellianism are negatively associated with place attachment and pro-environmental attitudes (Huang et al., 2018). Psychopathy was also found to play a role in the association between gender and environmentalism. Men have a lower environmentalism score due to higher psychopathy scores (Mertens et al., 2021). In addition, these dark attributes are associated with a "sustainable business model" (Wu et al., 2019), a low focus on biospheric values ("respect for the earth" and "harmony between species") and, as a result, not acting in for the environment (Ucar et al., 2023). Therefore, it is observed that the empathy deficit, the emotional coldness, and the need to take advantage of others for personal gain, which are at the core of a dark triad personality type, can play a significant role in understanding behavior and attitudes toward the environment. It is worth noting that personality is a distal variable in relation to behavior, with variables more proximal to environmentalism that can act as mediators, such as socio-ideological attitudes (Milfont, 2021).

Specifically, Social Dominance Orientation (SDO) is a socio-ideological attitude that describes how an individual approves of a hierarchical society and supports social inequalities (Ho et al., 2015). Social Dominance Orientation extends beyond social relationships and is also an ideological barrier to environmental engagement (Stanley et al., 2021). People with high levels of SDO see themselves as hierarchically superior to

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the environment, legitimizing myths about man's domination over nature (Milfont et al., 2017), which would ensure the maintenance of social hierarchies, ensuring that higher status groups explore and use natural resources, transferring the consequences of environmental disasters to groups with lower status (Milfont & Sibley, 2014). Therefore, people scoring higher on SDO use the environment to maintain hierarchy and perpetuate social inequalities (Stanley et al., 2021), indicating that this is a central variable for understanding actions and attitudes towards the environment, linking dark personality and environmentalism.

The SDO is conceived as attitudes related to competition encompassing values such as domination, power, and superiority, which involve a perception of the world as a competitive jungle (Duckitt, 2001; Duckitt & Sibley, 2016). This socio-ideological attitude is relatively stable and predicted by certain basic personality traits, such as the traits that form the Dark Triad (Lee et al., 2013; Perry & Sibley, 2012). In sum, dark traits are developed in response to a context with high competitiveness and scarce resources, and characteristics such as manipulation, selfishness, and exploitative behavior can be advantageous, facilitating the obtaining of resources in restricted contexts (Jonason et al., 2019). Therefore, the SDO would be a mechanism that would lead people with dark personality traits to have little concern for the environment, exploiting it for their own benefit.

Considering the previously mentioned, the current study aims to verify the mediating role of SDO in the relationship between the core of the dark triad of personality and environmentalism. It is hypothesized that the core of the dark triad will indirectly predict environmentalism, doing so through SDO; the latter variable will directly predict environmentalism.

## Method

### Participants

Participants were 305 from the general population, ranging in age from 18 to 77 years old ($M_{age}$ = 26.4; $SD_{age}$ = 11.25). Most of them were female (59.7 %), single (78.4 %), white (51.8 %), from a middle-class background (46.6 %), and undergraduate students (61.6 %). Details about the sociodemographic profile of the sample are found in Table 1.

Regarding sample size, we used the online calculator of Soper (2023) to estimate the minimum necessary number to test the mediation model through the Structural Equation Modeling (SEM). Taking into account that the current model encompasses three latent variables and eleven observed variables, the minimum number of participants in order to reach a level of power of .80 to detect such effects by applying the following parameters: $\alpha$ < .05, and strong effect size (> .5). The results indicated that the minimum recommended number would be 123 participants; therefore, the 305 participants in the current study are sufficient to carry out the planned analyses.

**Table 1**

*Sociodemographic characteristics*

| Variable | N = 305 | % |
|---|---|---|
| **Gender** | | |
| Female | 182 | 59.67 |
| Male | 123 | 40.32 |
| **Age** | | |
| 18-21 | 123 | 40.328 |
| 22-25 | 93 | 30.492 |
| 26-30 | 33 | 10.820 |
| 31-35 | 16 | 5.246 |
| 36-40 | 8 | 2.623 |
| 41-77 | 31 | 10.164 |
| Missing data | 1 | .328 |
| **Relationship configurations** | | |
| Single | 246 | 80.655 |
| Married | 49 | 16.066 |
| Divorced | 10 | 3.279 |
| **Social class** | | |
| Lower class | 27 | 8.852 |
| Lower-middle class | 103 | 33.770 |
| Middle class | 142 | 46.557 |
| Upper-middle classe | 31 | 10.164 |
| Upper class | 2 | .656 |
| **Education level** | | |
| Complete primary education | 2 | 0.656 |
| Complete high school | 42 | 13.770 |
| Incomplete higher education | 190 | 62.295 |
| Complete Higher Education | 41 | 13.443 |
| Complete Postgraduate | 30 | 9.836 |
| **Ethnicity** | | |
| Asian | 10 | 3.279 |
| White | 158 | 51.803 |
| Indigenous | 2 | .656 |
| Brown | 108 | 35.410 |
| Black | 27 | 8.852 |

## Measures

*New Ecological Paradigm Scale* (NEP; Dunlap et al., 2000). This measure was adapted for Brazil by Pires et al. (2016), consisting of 15 items ($\omega = .70$) that assess the degree of endorsement concerning an ecological worldview. Participants are instructed to indicate on a five-point scale (1: *Strongly Disagree* to 5: *Strongly Agree*) how much they agree with the items (e.g., "When humans interfere with nature it often produces disastrous consequences"; "Plants and animals have as much right as humans to exist"). Furthermore, two items related to attitudes towards climate change were included: "Climate change is real" and "Climate change is caused by human beings".

*Two-Dimensional MACH-IV* (TDM-IV; Monaghan et al., 2016). Measure adapted for Brazil by Monteiro et al. (2022), consists of 10 items that assess both Machiavellian views ($\omega = .59$) and tactics ($\omega = .74$). Participants are instructed to indicate their level of agreement (1: *Strongly Disagree*; 5: *Strongly Agree*) to items such as "Anyone who completely trusts anyone else is asking for trouble" and "It is hard to get ahead without cutting corners here and there".

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*Narcissistic Personality Inventory-13* (NPI-13; Gentile et al., 2013). The items of this measure were translated by Monteiro (2017), and this version of the NPI consists of 13 items ($\omega$ = .81), aiming to measure individuals' narcissism level. Participants are instructed to indicate their agreement (1: *Strongly Disagree*; 5: *Strongly Agree*) to items such as "I like to look at myself in the mirror" and "I will usually show off if I get the chance".

*Levenson Self-Report Psychopathy* (Levenson et al., 1995). Measure adapted for Brazil by Hauck-Filho and Teixeira (2014), consisting of 26 items ($\omega$ = .82), which are answered on a four-point scale, with participants instructed to indicate their agreement (1: *Strongly Disagree*; 4: *Strongly Agree*) to items such as "Making a lot of money is my most important goal" and "I don't plan anything very far in advance".

*Big Five Inventory-20* (BFI-20; Gouveia et al., 2021). This instrument consists of 20 items, aiming to capture the individual's self-perception of the five major personality factors. In this case, participants indicated to what extent they agree (1: *Totally Disagree*; 5: *Totally Agree*) with each item describing their personality, such as "Likes to cooperate with others" (Agreeableness; $\omega$ =.70), "Can be moody" (Neuroticism; $\omega$ =.77), "Has an active imagination" (Openness; $\omega$ = .75), "Generates a lot of enthusiasm" (Extraversion; $\omega$ = .81) and "Does things efficiently" (Conscientiousness; $\omega$ = .74).

*Social Dominance Orientation 7 Scale* (SDO7; Ho et al., 2015). Adapted to Brazil by Vilanova et al. (2022), consisting of 16 items ($\omega$ = .89). The participants indicated their level of agreement (1: *Strongly Disagree*; 7: Strongly Agree) to items such as "No group should dominate in society" and "Some groups are simply inferior to others groups".

**Procedure**

Data were collected through an online questionnaire using the snowball sampling procedure, and all the participants were recruited through social networks. Before completing the instruments, participants were required to read and agree to the Free and Informed Consent, in which they were informed about the study's objectives, the anonymous and voluntary nature of participation, and that they could decline the research at any time without incurring losses. Finally, the prerogatives provided for in Resolution No. 510/16 of the Brazilian National Health Council regarding regulating research with human beings were respected. The Ethics Committee of a higher education institution in the Northeast Region of Brazil approved this study (CAAE 31360920.1.0000.5181).

**Data analysis**

The data were analyzed using SPSS and AMOS programs. The first was used to generate descriptive (e.g., mean, standard deviation) and inferential analyses, specifically Pearson correlation analysis, to understand the general pattern of association among the variables. The second software was used to run Structural Equation Modeling (Maximum Likelihood estimator) in order to test a mediational model. To attest to the quality of the model, the following indicators of model fit to the data were followed (values for an acceptable model in parentheses, Hair et al., 2015): $\chi^2/df$, Comparative Fit Index (above .90), Tucker-Lewis Index (above .90), and Root Mean Error of Approximation (below .08).

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## Results

Firstly, correlations were calculated in order to investigate the general patterns of relations among the variables. Concerning the eight personality traits, only psychopathy ($r = -.17$; $p < .01$) was significantly correlated with environmentalism (i.e., the composite score of the NEP items and climate change items). Furthermore, the SDO was significantly correlated with environmentalism (moderate correlation: $r = -.53$; $p < .001$). All the results of the correlation analysis can be found in detail in Table 2.

**Table 2**
*Relationships between environmentalism, dominance orientation, and personality*

|         | M    | SD  | 1      | 2      | 3      | 4     | 5      | 6     | 7     | 8      | 9   |
|---------|------|-----|--------|--------|--------|-------|--------|-------|-------|--------|-----|
| 1. Env. | 4.33 | .44 |        |        |        |       |        |       |       |        |     |
| 2. SDO  | 2.21 | .99 | -.53** |        |        |       |        |       |       |        |     |
| 3. M    | 2.46 | .52 | -.08   | .23**  |        |       |        |       |       |        |     |
| 4. N    | 2.69 | .67 | .00    | .04    | .25    |       |        |       |       |        |     |
| 5. P    | 1.82 | .39 | -.17** | .32**  | .57**  | .32** |        |       |       |        |     |
| 6. EX   | 3.56 | .96 | -.01   | -.02   | -.07   | .31** | -.05** |       |       |        |     |
| 7. C    | 4.22 | .64 | .02    | .00    | -.20** | .18** | -.34** | .36** |       |        |     |
| 8. AG   | 4.21 | .67 | .05    | -.16** | -.36** | -.04  | -.36** | .45** | .31** |        |     |
| 9. OP   | 3.92 | .77 | -.01   | -.02   | -.11*  | .23** | -.10*  | .42** | .40** | .30**  |     |
| 10. N   | 3.57 | .93 | .06    | -.03   | .16**  | .12*  | .30**  | -.13* | -.06  | -.16** | .02 |

*Notes.* Env.: Environmentalism; SDO: Social Dominance Orientation; M: Machiavellianism; N: Narcissism; P: Psychopathy; EX: Extraversion; CO: Conscientiousness; AG: Agreeableness; OP: Openness; NE: Neuroticism. *$p < .05$; **$p < .001$ (one-tailed).

Further, we tested the direct and indirect effects of dark personality traits and socio-ideological attitudes in predicting environmentalism (Figure 1). Considering that the three dark traits have in common a tendency towards manipulation, insensitivity and exploitative behavior, a latent variable was modeled with the three traits as observable variables, thus forming the core of the dark personality (independent variable). Thus, the dark core of personality was modeled to predict the SDO (formed by two observed variables: dominance and anti-egalitarianism facets), which in turn directly explain environmentalism (modeled by the five facets of the NEP scale and two items assessing attitudes towards climate change). It is worth noting that the FFM was considered in the current study for control purposes. As none of the personality traits of this model correlated with environmentalism, we chose not to include it in the model testing.

Using bootstraps with 5.000 resamples, direct effects of dark personality on environmentalism were initially observed ($\lambda = -.22$; $90\%\text{CI} = -.33/-.10$, $p < .05$). After inserting the SDO as a mediator, we observed indirect effects of dark traits on environmentalism ($\lambda = -.25$; $90\%\text{CI} = -.36/-.17$, $p < .001$). The mediation was full rather than partial, given that the direct effect of dark personality on environmentalism was no longer statistically significant ($\lambda = .03$, $90\%\text{CI} = -.08/.16$, $p = .65$) with the inclusion of

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SDO, which directly predicted the outcome ($\lambda$ = .36, 90% CI = .25/.48, $p$ < .001). Finally, the tested model showed acceptable fit indicators ($\chi^2/df$ = 1.87, CFI = .95, TLI = .93, RMSEA = .054).

**Figure 1**
*Mediation model for environmentalism*
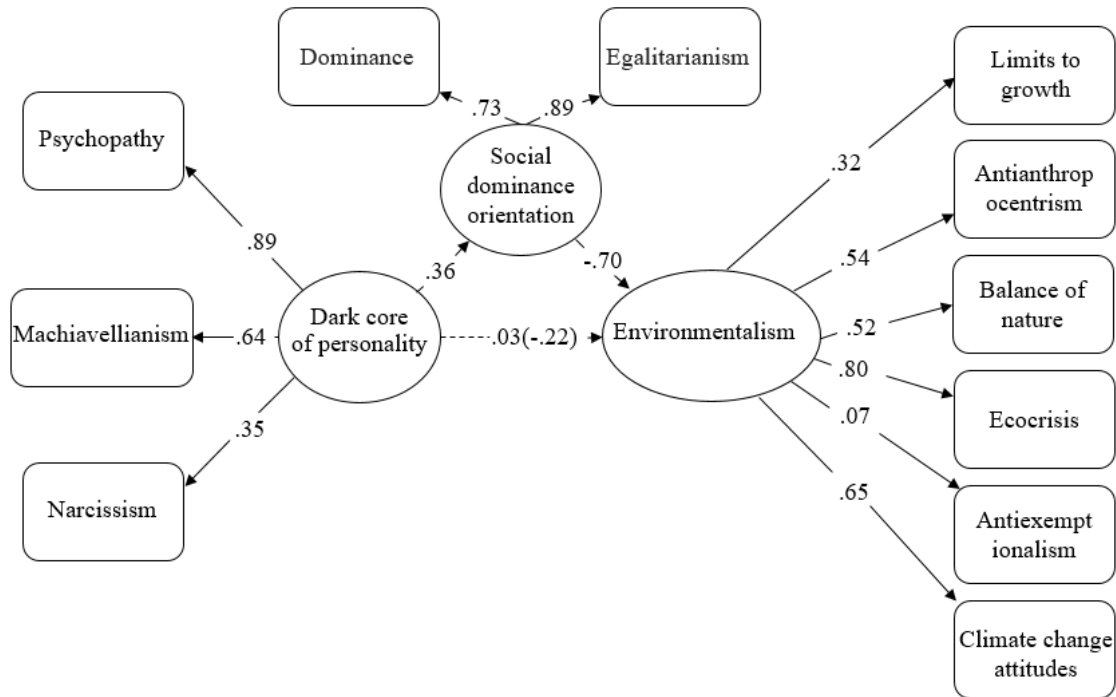


## Discussion

The climate change and anti-environmental actions in Brazil are still an open question. Brazil still has little sewage treatment, and some of its rich biodiversity is seriously threatened due to human action (Feng et al., 2021; Tomas et al., 2021). It is essential to understand the social and psychological underpinnings of behavior and attitudes toward the environment to reduce environmental issues on an individual level (see Zelezny & Schulz, 2000). In the current study, we showed evidence of the direct influence of socio-ideological attitudes and the indirect effects of the dark core of personality on environmentalism.

Even though the BPF model has been extensively discussed in the literature (Hirsh & Dolderman, 2007; Milfont et al., 2012), none of these five factors were found to be relevant to environmentalism. On the other hand, in the regression model, the direct effect of the dark triad personality's core on environmentalism prediction was verified, suggesting that aversive personality traits are harmful in interpersonal relationships and person-environment relationships. Such evidence adds to previous data in the literature (Huang et al., 2018; Ucar et al., 2023; Wu et al., 2019), indicating that people with dark traits do not care about the environment, exploiting it for their own benefit without worrying about its preservation. The traits that form the dark side of the human personality have in common low levels of agreeableness (Gouveia et al., 2016) and honesty/humility (Book et al., 2015), as well as empathetic deficits (Wai & Tiliopoulos,

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2012); these shared aspects are predictors of environmentalism (Hirsh & Dolderman; 2007; Milfont & Sibley, 2012, 2016).

Therefore, due to the aspects that describe the core of the dark triad of personality, it is clear that people with high levels of this set of traits cannot care about the natural environment and other animals. However, it is worth highlighting that the magnitude of the relationships between personality and environmentalism is smaller than socio-ideological attitudes due to the distal nature of personality. Thus, when SDO is included in the model, dark personality no longer directly predicts environmentalism, having indirect effects, attesting to the complete mediation of SDO, confirming the role that this variable has as a direct predictor of environmentalism, in line with previous studies (Milfont et al., 2017; Stanley et al., 2021).

As observed, it is worth noting that the SDO consisted of an underlying mechanism that enables people with a dark personality to adopt anti-environmental attitudes and behaviors. Here, dark traits are useful in contexts of scarcity and high competitiveness, enabling the individual to extract resources in restricted contexts (Jonason et al., 2019). This mechanism leads people with this personality profile to have a greater orientation towards social dominance, characterized as a socio-ideological attitude that involves perceiving the world as a competitive jungle and expressing values such as domination, power, and superiority (Duckitt, 2001; Duckitt & Sibley, 2016). This pattern of elements, in turn, results in lower levels of environmentalism, seeing nature as superior and having the right to dominate it and use it for one's own benefit (Milfont et al., 2013; Milfont & Sibley, 2014).

Thus, it is clear that the SDO would play a role as a mechanism that would enable people with dark traits to dominate nature and exploit it to obtain resources. It is also worth noting that because they see themselves as superior to nature, combined with being extremely individualistic (Paulhus & Williams, 2002), people with dark traits choose not to change their daily routine (e.g., saving water and energy, reducing the use of vehicles) in favor of the environment.

It is important to highlight some potential limitations in this study. Firstly, we relied on Brazilian convenience samples (mostly of university students), which restricted the generalizability of the current findings. Second, we did not control the effects of social desirability. For future studies, it is important to include larger and more heterogeneous samples (e.g., a more equitable distribution about education level, ethnicity, and socioeconomic class), in addition to testing the role of other aversive personality traits (e.g., sadism, greed, spitefulness) and using behavioral measures to assess pro/anti-environmental behavior. Therefore, it is clear that the possibilities for study were not exhausted here, with a broad possibility of research to predict behaviors and attitudes towards the environment and, based on the mapping of predictors, propose intervention strategies to promote environmentalism.

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