The dark side of environmental activism

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ABSTRACT

In times of growing concerns about climate change, environmental activism is increasing. Whereas several studies have examined associations between environmental activism and the Big Five personality characteristics, the potential "dark side" of environmental activists' personality has been neglected. Accordingly, this study examined associations between environmental activism, the dark triad traits (i.e., Machiavellianism, psychopathy, narcissism) and left-wing authoritarianism (i.e., antihierarchical aggression, anticonventionalism, top-down censorship). Data came from 839 employed individuals in Germany. Results showed positive associations between environmental activism and Machiavellianism, narcissism, antihierarchical aggression, and anticonventionalism. Most of these associations remained significant after controlling for Big Five characteristics, demographic characteristics, political orientation, and right-wing authoritarianism. These findings suggest that environmental activism, in addition to its potential positive outcomes, may also have a dark side in terms of activists' personality.

1. Introduction

In times of growing concerns about climate change, an increasing number of people engage in environmental activism. Environmental activism involves collective civic actions that impact environmental issues, focus on system-level changes, and go beyond personal practices, such as recycling (Alisat & Riemer, 2015). Environmental activism can have significant effects on environmental improvement (e.g., reduction in CO2 emissions; Pacheco-Vega & Murdie, 2020). Thus, it is important to understand which individual differences are associated with this behavior. The resulting knowledge could be used for recruiting, developing, and motivating activists. Whereas several studies have examined associations between the Big Five personality characteristics and environmental activism (e.g., Soutter et al., 2020; Terrier et al., 2016), the potential "dark side" of environmental activists' personality has been neglected. The goal of this study, therefore, was to examine associations between environmental activism and two sets of aberrant personality constructs – the dark triad and left-wing authoritarianism –, above and beyond the Big Five characteristics. Overall, this study contributes to the literature by advancing knowledge on individual differences associated with environmental activism.

1.1. Dark triad traits and environmental activism

The dark triad includes three interrelated, yet distinct, personality traits (see Paulhus & Williams, 2002): First, *Machiavellianism* involves the tendencies to manipulate and deceive others, to form alliances, and to assume leadership of groups to achieve one's goals and to pursue one's interests. Second, *narcissism* entails exploitativeness and entitlement, self-absorption and arrogance, as well as leadership and authority. Finally, *psychopathy* is characterized by callousness, lack of empathy, and impulsivity (Paulhus & Williams, 2002).

I propose that Machiavellianism is positively related to environmental activism. Forming alliances and leadership are likely effective strategies in the context of environmental activism, which involves convincing other people to change their environmental attitudes and behaviors (Alisat & Riemer, 2015). Similarly, there should be a positive association between narcissism and environmental activism, particularly due to narcissists' tendencies regarding moral superiority and authority (i.e., influencing other people to prioritize the environment). Furthermore, according to the "dark-ego-vehicle principle," people with high levels of the dark triad traits tend to participate in activism not (only) to improve society or the environment, but to satisfy their ego-focused needs. That is, activism "provide[s] them with opportunities to obtain positive self-presentation (e.g., virtue signaling), gain status, dominate others, and engage in social conflicts to get their thrills"

(Bertrams & Krispenz, 2023, p. 1). Consistently, these authors showed that narcissism was positively related to anti-sexual assault activism among women. Additional support for my propositions comes from a study showing positive associations between the dark triad traits and other forms of activism, including corporate social responsibility as well as normative (e.g., joining boycotts, attending demonstrations) and nonnormative (e.g., blocking streets, destroying property) political actions (Rogoza et al., 2022). Research has also linked the dark triad traits to higher support for violent political activism (e.g., physical attacks, vandalism; Bélanger et al., 2023; Gøtzsche-Astrup, 2021; Pavlović & Wertag, 2021). Finally, a recent study found that status consumption and praise from others mediated the positive relations between the dark triad traits and organic food purchase intentions and willingness to pay for organic foods (Konuk & Otterbring, 2024). Furthermore, virtue signaling mediated the relations between narcissism and Machiavellianism, but not psychopathy, and the two organic consumption outcomes. In contrast to Machiavellianism and narcissism, I did not expect a link between psychopathy and environmental activism due to the typically non-violent nature of environmental activism (Alisat & Riemer, 2015).

Hypothesis 1. Environmental activism is positively related to (a) Machiavellianism and (b) narcissism.

1.2. Left-wing authoritarianism and environmental activism

The relatively new construct of left-wing authoritarianism, which complements the well-established construct of right-wing authoritarianism (Altemeyer, 1981), also consists of three interrelated, yet distinct, dimensions (see Costello et al., 2022): First, *antihierarchical aggression* entails the beliefs that rich and powerful people should be disempowered, that the established societal order should be overthrown, and that extreme actions, such as property damage and violence, are justified to achieve superordinate goals. Second, *anticonventionalism* involves the repudiation of traditional values, moral absolutism with regard to progressive values, dismissing conservative people as immoral, and a desire for homogeneity regarding political opinions within one's social group. Finally, *top-down censorship* refers to individuals' preferences regarding the use of governmental and institutional authority to suppress opposition and to ban speech that is considered intolerant and offensive (Costello et al., 2022).

I propose that beliefs reflecting antihierarchical aggression are more strongly represented among individuals who show higher levels of environmental activism, which aims at system-level changes (Alisat & Riemer, 2015). Similarly, anticonventionalist tendencies should be positively related to environmental activism, which intends to change the societal status quo to mitigate the consequences of climate change and to foster environmental sustainability. Milfont and Osborne (2023) argued that, "To enact change, individuals championing environmental causes tend to be political activists and, as such, may accept submission to perceived established authorities who champion such causes" (p. 7). Consistently, they showed that left-wing authoritarianism was positively related to universalism values (e.g., environmental protection), climate change beliefs, as well as intentions to engage in individual and collective pro-environmental actions. Further support for my propositions comes from studies showing that left-wing authoritarianism is positively related to other forms of activism, including the support of, and participation in, protests against racialized police violence (Costello et al., 2022) and intentions to pursue social justice related activities (Krispenz & Bertrams, 2023). In contrast to antihierarchical aggression and anticonventionalism, I expected no association between top-down censorship and environmental activism, because activists demonstrate against national governments and other authorities and, thus, should not be in favor of suppressing opposition.

Hypothesis 2. Environmental activism is positively related to (a) antihierarchical aggression and (b) anticonventionalism.

2. Method

2.1. Participants and procedure

Data for this study were collected as part of a larger research project with employed individuals in Germany (for an overview, see Zacher & Rudolph, 2023). Ethical approval for this study was granted by the ethics advisory board of Leipzig University (approval number: 2019.06.27_eb_17, study title: Longitudinal study on experience and behavior at work). With the exception of demographic and Big Five characteristics (i.e., control variables), which were collected at earlier time points of the longitudinal study (see below; Rudolph & Zacher, 2023), all variables used in this study were only collected in a survey at the beginning of June 2023 and have not been used in other manuscripts based on the same dataset.

A survey company was commissioned to recruit participants from a nationally representative online panel in Germany. Participants had to be at least 18 years old and be working full-time. In total, 839 participants provided complete data on the focal and control variables assessed in the June 2023 survey. Data on demographic characteristics (assessed in December 2019 and November 2021) and Big Five characteristics (assessed in December 2022) were available for 648 participants. Of these participants, 398 (61.4 %) were male and 250 (38.6 %) were female. Their ages ranged from 18 to 67 years ($M = 44.89$ years, $SD = 10.44$). In terms of education, 35 participants (5.4 %) held a lower secondary school degree, 232 (35.8 %) held an intermediate secondary school degree, 105 (16.2 %) held an upper secondary school degree, and 276 (42.6 %) held a technical college or university degree.

2.2. Measures

2.2.1. Environmental activism

Environmental activism was operationalized in three ways. First, the level of engagement in *civic environmental actions* was measured with an 18-item scale that taps participatory and leadership actions that impact environmental issues, are collective in nature, focus on system-level changes, and are distinct from personal environmental practices (Alisat & Riemer, 2015). Example items are "In the last six months, I participated in a community event which focused on environmental awareness" and "In the last six months, I took part in a protest/rally about an environmental issue" ($\alpha = 0.97$). Responses were provided on a 5-point scale ranging from 1 = *never* to 5 = *very often*. The scale authors distinguished between participatory actions and leadership actions, but these dimensions were very highly correlated in the current study ($r = 0.90$, $p < .001$) and, thus, all 18 items were combined into an overall score.

Second, two self-developed items measured *participation in environmental activism* ("In the last six months, I have participated in the actions of the organization 'Fridays For Future' [e.g., in a large demonstration]," "In the last six months, I have participated in the actions of the organization 'Last Generation' [e.g., attached my hands with glue on a highway];" 7-point scale ranging from 1 = *never*, over 4 = *3 times*, to 5 = *6 times or more often*; $\alpha = 0.93$). Third, two complementary self-developed items measured *support for environmental activism* ("I support the actions of the organization 'Fridays for Future' [e.g., large demonstrations]," "I support the actions of the organization 'Last Generation' [e.g., attaching one's hands with glue on highways];" 5-point scale ranging from 1 = *strongly disagree* to 5 = *strongly agree*; $\alpha = 0.76$). The organizations "Fridays for Future" (https://fridaysforfuture.org/) and "Last Generation" (https://letztegeneration.org/en/) were very visible environmental activist groups in Germany at the time of the study. An exploratory factor analysis showed that, consistent with expectations, the two participation and the two support items had their highest loadings on orthogonal factors.

2.2.2. Dark triad traits

Machiavellianism (α = 0.92), psychopathy (α = 0.87), and narcissism (α = 0.91) were assessed with four items each using the dirty dozen scale (Jonason & Webster, 2010; Küfner et al., 2014). Example items are "I tend to manipulate others to get my way," "I tend to lack remorse," and "I tend to want others to admire me," respectively. Responses were provided on a 5-point scale ranging from 1 = *strongly disagree* to 5 = *strongly agree*.

2.2.3. Left-wing authoritarianism

Antihierarchical aggression (α = 0.87), anticonventionalism (α = 0.77), and top-down censorship (α = 0.75) were measured with a 13-item short version of the left-wing authoritarianism scale (Costello et al., 2022; Costello & Patrick, 2023). Example items are "The rich should be stripped of their belongings and status," "The 'old-fashioned ways' and 'old-fashioned values' need to be abolished," and "Classroom discussions should be safe places that protect students from disturbing ideas," respectively. Answers were recorded on a 5-point scale (1 = *strongly disagree* to 5 = *strongly agree*).

2.2.4. Big Five personality

The Big Five characteristics were measured in a survey six months prior (i.e., December 2022) to the focal survey in June 2023 and have been included as focal constructs in a previous study (Rudolph & Zacher, 2023). They were included as control variables in this study, because they have been shown to be associated with pro-environmental behavior (Soutter et al., 2020). Extraversion (α = 0.85), conscientiousness (α = 0.78), emotional stability (α = 0.83), agreeableness (α = 0.76), and openness to experience (α = 0.78) were measured with a 21-item version of the Big Five Inventory (John et al., 1991; Rammstedt & John, 2005). Responses were provided on a 7-point scale (1 = *strongly disagree* to 7 = *strongly agree*).

2.2.5. Right-wing authoritarianism

Authoritarian aggression (i.e., aggression toward outgroup members; α = 0.86), authoritarian subservience (i.e., obsequiousness to authority; α = 0.84), and conventionalism (i.e., strict adherence to socially conservative norms; α = 0.86) were measured with three items each using a reliable and valid short scale (Beierlein et al., 2014), which is based on a classical conceptualization of right-wing authoritarianism (Altemeyer, 1981). These variables were included as controls, because previous research has linked them to environmentalism (Stanley & Wilson, 2019). Example items are "We should take strong action against misfits and slackers in society," "We should be grateful for leaders telling us exactly what to do," and "Traditions should definitely be carried on and kept alive," respectively. Responses were provided on a 5-point scale (1 = *strongly disagree* to 5 = *strongly agree*).

2.2.6. Political orientation

Political orientation has been shown to be related to environmentalism (Milfont & Osborne, 2023). Accordingly, it was assessed as a control variable with an established single item from the National Election Survey (Jost, 2006) that asks participants to indicate their political orientation on a 9-point scale ranging from 1 = *strongly liberal* to 9 = *strongly conservative*, with the midpoint being 5 = *moderate*.

2.2.7. Demographic characteristics

Finally, sex (1 = *male*, 2 = *female*), age (in years), and educational level (1 = *lower secondary school degree* to 4 = *college/university degree*) were measured as control variables in earlier surveys that were part of the larger research project (i.e., in December 2019 and November 2021; see Zacher & Rudolph, 2023).

2.3. Analytical approach

Before testing the hypotheses, I examined whether the assumptions of multiple regression analysis were met. First, analyses of standardized residuals indicated that there were six outliers (values > 3.29 or < −3.29) for civic environmental actions, eight for participation in environmental activism, and two for support for environmental activism. Supplemental analyses without these outliers yielded virtually the same results and, therefore, I retained the outliers in the focal analyses (Aguinis et al., 2013). Second, across all regression analyses, multicollinearity was not a concern (range of tolerance values = 0.29–0.92; range of variance inflation factors = 1.08–3.43). Third, the data met the assumption of independent errors (range of Durbin-Watson values = 1.83–2.06). Fourth, the histograms and normal P-P plots of standardized residuals indicated that the data contained approximately normally distributed errors. Fifth, the scatterplots of standardized residuals indicated that the data met the assumptions of homogeneity of variance and linearity. Finally, the data met the assumption of non-zero variances.

To test the hypotheses, I conducted three hierarchical regression analyses. In the first step, the three dark triad traits and the three left-wing authoritarianism dimensions were included as predictors of the three environmental activism constructs. In the second step, the robustness of the focal associations was examined by adding the control variables to the regression equations.

3. Results

Table 1 displays descriptive statistics and intercorrelations of the study variables. Results of the regression analyses (Table 2) showed that the dark triad traits and the left-wing authoritarianism dimensions together accounted for 41 % of the variance in civic environmental actions (51 % with control variables included), 26 % of the variance in participation in environmental activism (31 % with control variables), and 19 % of the variance in support for environmental activism (35 % with control variables).

According to Hypothesis 1, environmental activism is positively related to (a) Machiavellianism and (b) narcissism. As shown in Table 2, Machiavellianism was positively associated with civic environmental actions, participation in environmental activism, and support for environmental activism. The relations between Machiavellianism and civic environmental actions and participation in environmental activism remained significant when the control variables were included, whereas the association with support for environmental activism became non-significant. Thus, Hypothesis 1a was supported for civic environmental actions and participation in environmental activism, but not for support for environmental activism. Narcissism was also positively related to the three environmental activism constructs. The relations between narcissism and civic environmental actions and support for environmental activism remained significant when the control variables were included, whereas the association with participation in environmental activism became non-significant. Thus, Hypothesis 1b was supported for civic environmental actions and support for environmental activism, but not for participation in environmental activism. Psychopathy was not significantly related to the environmental activism constructs, with the exception of a weak negative association with support for environmental activism, which became non-significant when controls were included.

Hypothesis 2 suggests that environmental activism is positively related to (a) antihierarchical aggression and (b) anticonventionalism. In support of these propositions, both antihierarchical aggression and anticonventionalism were positively related to civic environmental actions and participation in environmental activism, even when the control variables were included (Table 2). Anticonventionalism was also positively related to support for environmental activism, with and without control variables. In contrast to expectations, antihierarchical aggression was negatively related to support for environmental activism, and this association become non-significant when the control variables were included. Top-down censorship was not consistently

Table 1
Descriptive statistics and correlations.

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1. Machiavellianism	1.77	0.86	(0.92)																				
2. Psychopathy	1.85	0.89	0.77**	(0.87)																			
3. Narcissism	1.98	0.92	0.65**	0.58**	(0.91)																		
4. Antihierarchical aggression	2.13	0.96	0.31**	0.31**	0.26**	(0.87)																	
5. Anticonventionalism	2.20	0.87	0.32**	0.31**	0.29**	0.47**	(0.77)																
6. Top-down censorship	3.27	0.82	−0.07*	−0.09**	0.01	0.06	0.22**	(0.75)															
7. Civic environmental actions	1.73	0.82	0.52**	0.44**	0.46**	0.43**	0.43**	−0.07*	(0.97)														
8. Participation in env. activism	1.29	0.88	0.42**	0.38**	0.36**	0.32**	0.35**	−0.02	0.61**	(0.93)													
9. Support for env. activism	2.07	1.12	0.24**	0.17**	0.25**	0.15**	0.40**	0.09*	0.53**	0.35**	(0.76)												
10. Political orientation	4.92	1.28	0.14**	0.17**	0.06	0.01	−0.13**	−0.06	−0.02	0.05	−0.31**	–											
11. Authoritarian aggression	3.14	1.08	0.00	0.02	0.05	0.13**	−0.01	0.31**	−0.11**	0.00	−0.29**	0.30**	(0.86)										
12. Authoritarian subservience	2.88	0.96	0.15**	0.12**	0.16**	0.19**	0.10**	0.25**	0.05	0.09*	−0.16**	0.23**	0.62**	(0.84)									
13. Conventionalism	2.89	0.97	0.03	0.01	0.05	0.26**	−0.06	0.17**	0.06	0.10**	−0.24**	0.30**	0.59**	0.60**	(0.86)								
14. Extraversion	4.24	1.32	−0.08*	−0.15**	0.07	0.00	0.04	0.13**	0.00	−0.02	−0.02	−0.05	0.05	0.08*	0.02	(0.85)							
15. Conscientiousness	5.29	1.12	−0.36**	−0.38**	−0.24**	−0.19**	−0.20**	0.21**	−0.29**	−0.28**	−0.16**	−0.07	0.15**	0.09*	0.11**	0.32**	(0.78)						
16. Emotional stability	4.91	1.36	−0.25**	−0.23**	−0.23**	−0.16**	−0.17**	0.06	−0.16**	−0.14**	−0.15**	−0.01	0.06	−0.02	0.03	0.37**	0.39**	(0.83)					
17. Agreeableness	4.41	1.13	−0.31**	−0.36**	−0.13**	−0.02	−0.02	0.10**	0.01	−0.03	0.07	−0.22**	−0.09*	−0.07	−0.02	0.34**	0.22**	0.38**	(0.76)				
18. Openness to experience	4.62	1.22	−0.13**	−0.22**	−0.02	−0.10**	0.02	0.10**	−0.02	−0.10*	0.11**	−0.13**	−0.06	0.01	0.00	0.29**	0.44**	0.05	0.18**	(0.78)			
19. Sex (1 = male, 2 = female)	1.39	0.49	−0.10**	−0.17**	−0.10*	−0.04	−0.06	0.09*	−0.13**	−0.09**	−0.09*	−0.03	0.03	0.03	0.03	0.12**	0.13**	−0.14**	0.05	0.13**	–		
20. Age	44.89	10.44	−0.26**	−0.23**	−0.23**	−0.25**	−0.24**	0.11**	−0.27**	−0.21**	−0.24**	−0.04	0.11**	0.02	0.09**	0.08*	0.28**	0.27**	0.13**	0.20**	0.00	–	
21. Educational level	2.96	1.00	0.03	0.02	0.07	−0.10*	0.04	−0.05	0.11**	0.02	0.15**	−0.04	−0.12**	−0.11**	−0.16**	−0.02	0.03	−0.01	−0.10**	0.12**	−0.01	−0.05	–

Note. Env. = environmental. Descriptive statistics of and correlations among variables 1–13 are based on $N = 839$; due to missing data, descriptive statistics of and correlations involving variables 14–21 are based on $N = 648$. Reliability estimates (α) are shown in parentheses along the diagonal.

* $p < .05$.
** $p < .01$.

Table 2
Results of regression analyses.

	Civic environmental actions		Participation in environmental activism		Support for environmental activism	
	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)
Focal predictors						
Intercept	0.53 (0.11)**	0.06 (0.27)	0.11 (0.13)	−0.22 (0.35)	0.75 (0.18)**	1.91 (0.43)**
Machiavellianism	0.26 (0.04)**	0.25 (0.05)**	0.21 (0.05)**	0.22 (0.07)**	0.19 (0.07)**	0.11 (0.08)
Psychopathy	−0.01 (0.04)	0.03 (0.05)	0.06 (0.05)	0.05 (0.06)	−0.13 (0.06)*	0.06 (0.07)
Narcissism	0.16 (0.03)**	0.12 (0.04)**	0.10 (0.04)*	0.06 (0.05)	0.15 (0.05)**	0.12 (0.06)*
Antihierarchical aggression	0.17 (0.03)**	0.18 (0.03)**	0.12 (0.03)**	0.09 (0.04)*	−0.09 (0.04)*	−0.01 (0.05)
Anticonventionalism	0.22 (0.03)**	0.22 (0.03)**	0.19 (0.04)**	0.24 (0.04)**	0.49 (0.05)**	0.32 (0.05)**
Top-down censorship	−0.12 (0.03)**	−0.05 (0.03)	−0.05 (0.03)	0.01 (0.04)	0.01 (0.05)	0.18 (0.05)**
Control variables						
Sex (1 = male, 2 = female)		−0.09 (0.05)		−0.04 (0.07)		−0.16 (0.08)*
Age		−0.004 (0.003)		−0.002 (0.003)		−0.02 (0.004)**
Educational level		0.10 (0.03)**		0.04 (0.03)		0.10 (0.04)**
Extraversion		−0.01 (0.02)		0.004 (0.03)		−0.06 (0.03)
Conscientiousness		−0.07 (0.03)*		−0.10 (0.04)**		−0.06 (0.04)
Emotional stability		0.003 (0.02)		−0.002 (0.03)		−0.02 (0.03)
Agreeableness		0.11 (0.03)**		0.09 (0.03)**		0.11 (0.04)**
Openness to experience		0.04 (0.02)		−0.01 (0.03)		0.12 (0.04)**
Authoritarian aggression		−0.14 (0.03)**		−0.07 (0.04)		−0.20 (0.05)**
Authoritarian subservience		−0.03 (0.04)		−0.03 (0.05)		−0.07 (0.05)
Conventionalism		0.15 (0.04)**		0.14 (0.05)**		0.02 (0.05)
Political orientation		0.01 (0.02)		0.05 (0.03)*		−0.13 (0.03)**
R^2	0.41	0.51	0.26	0.31	0.19	0.35
F	95.46**	35.81**	47.49**	15.99**	32.01**	18.95**
N	839	648	839	648	839	648

Note. Unstandardized regression estimates with standard errors (in parentheses) are presented.
* $p < .05$.
** $p < .01$.

related to the environmental activism constructs. Specifically, its negative association with civic environmental actions became nonsignificant after accounting for the control variables. In contrast, top-down censorship was positively related to support for environmental activism, but only when the control variables were included.

With regard to the control variables, women, older participants, and less educated participants reported lower support for environmental activism than men, younger people, and more educated participants (Table 2). Agreeableness was positively related to the three environmental activism constructs, conscientiousness was negatively related to civic environmental actions and participation in environmental activism, and openness was positively related to support for environmental activism. Authoritarian aggression was negatively related to civic environmental actions and support for environmental activism, and political orientation was negatively related to support for environmental activism (i.e., more right-wing oriented people reported lower support for environmental activism). Surprisingly, conventionalism was *positively* related to civic environmental actions and participation in environmental activism, and there was a weak *positive* relationship between political orientation and participation in environmental activism, which was also evident in the bivariate correlations (for both civic environmental actions [$r = 0.14$, $p < .01$] and participation in environmental activism [$r = 0.17$, $p < .01$]; Table 1).

4. Discussion

Previous studies have proposed and found positive relations between political activism and the dark triad traits (Bertrams & Krispenz, 2023; Rogoza et al., 2022) and left-wing authoritarianism (Costello et al., 2022; Krispenz & Bertrams, 2023). This study advances this literature by demonstrating positive associations between environmental activism and two of the dark triad traits (i.e., Machiavellianism, narcissism) and two dimensions of left-wing authoritarianism (i.e., antihierarchical aggression, anticonventionalism). Most of these relations remained significant when demographics, Big Five personality characteristics, right-wing authoritarianism, and political orientation were controlled. Given that environmental activism is considered a meaningful activity

by many (Lubell, 2002), these findings contribute to research suggesting that certain aberrant personality characteristics, in addition to their potential negative consequences, may also lead to favorable outcomes (Volmer et al., 2016; Wille et al., 2013).

The findings provide further empirical support for the "dark-ego-vehicle principle," which suggests that people with high levels of the dark triad traits may use activism as a means to satisfy their ego-focused needs, including positive self-presentation, status gain, dominance over others, and excitement seeking (Bertrams & Krispenz, 2023). At the same time, people with high levels of Machiavellianism and narcissism may actually be more effective in the context of environmental activism, which aims to change attitudes and behavior of other individuals, organizations, and governments. The people possess strengths with regard to forming alliances, leadership of groups, authority, and using moral superiority to influence others (Paulhus & Williams, 2002). Accordingly, the findings may not only uncover a "dark side" of environmental activism, but also suggest that environmental activism may be a "bright side" of certain dark triad traits. In contrast to Machiavellianism and narcissism, psychopathy was not significantly associated with environmental activism. Previous research has shown that psychopathy is positively related to people's support for violent political activism, including physical attacks (e.g., Gøtzsche-Astrup, 2021; Pavlović & Wertag, 2021). A potential explanation for the null findings may be that environmental activism is typically non-violent (Alisat & Riemer, 2015) and, thus, may be rather unattractive for people with high levels of psychopathy.

Findings of the current study further extend recent research showing positive associations between left-wing authoritarianism and environmental values, attitudes, and intentions (Milfont & Osborne, 2023). Specifically, the current study showed that antihierarchical aggression and anticonventionalism were also positively related to support of, and behavioral engagement in, environmental activism. These results are consistent with Milfont and Osborne's (2023) claim that environmental activists are likely to accept submission to established authorities who champion environmental causes. Interestingly, Milfont and Osborne (2023) found in their studies that the negative associations between an overall index of right-wing authoritarianism and environmental values,

attitudes, and intentions were stronger than the positive associations between left-wing authoritarianism and these outcomes. In the current study, dimensions of right-wing authoritarianism were less strongly and less consistently related to environmental activism than the dimensions of left-wing authoritarianism. Indeed, antihierarchical aggression and anticonventionalism may represent strengths (rather than weaknesses, or a "dark side") of environmental activists, who aim to change current systems and the status quo of living and working to achieve environmental improvements (e.g., reduction in CO2 emissions; Alisat & Riemer, 2015; Pacheco-Vega & Murdie, 2020). In the long run, these system changes may benefit humanity and future generations facing the detrimental consequences of climate change. As expected, top-down censorship was not consistently associated with environmental activism. However, the positive relationship between top-down censorship and support for environmental activism (but not actual engagement in activism) may suggest that supporters of environmental activists are less tolerant of people who criticize this form of activism (Costello et al., 2022).

This study, despite the relatively large sample and the use of well-established measures, has a number of limitations that could be addressed in future research. First, the focal constructs in this study were all self-reported and collected at a single time point, which may raise concerns about artificially inflated correlations due to common method variance (Siemsen et al., 2010). However, the fact that not all self-reported constructs in this study were strongly and significantly inter-related (e.g., narcissism and conventionalism) and the statistical control for affective personality traits (i.e., extraversion, neuroticism) may somewhat alleviate concerns about common method variance. Future studies could collect more objective indicators of environmental activism or peer-reports of dark triad traits and left-wing authoritarianism. Moreover, to better understand the temporal precedence and causal direct of effects, future studies should make use of longitudinal designs with multiple measurement waves over time.

Second, this initial study on aberrant personality characteristics and environmental activism suggests that positive associations exist, but cannot explain why and under which conditions they exist. Thus, future research should examine potential explanatory mechanisms (i.e., mediators) and individual and contextual boundary conditions (i.e., moderators) of the relationships between dark triad traits, left-wing authoritarianism, and environmental activism. For example, it would be interesting to examine how other people involved in environmental activism (e.g., in organizations such as "Fridays for Future") react to activists with higher levels of Machiavellianism, narcissism, antihierarchical aggression, and anticonventionalism. It may be possible that people with higher levels of these personality traits receive certain social rewards (e.g., attention, praise from others) for their civic engagement. Furthermore, research could examine in which contexts (e.g., small vs. large activist groups) aberrant individual differences have stronger or weaker effects on environmental activism.

Third, a number of surprising results in this study necessitate further research. In particular, future studies could aim to understand the paradoxical finding that both anticonventionalism, a facet of left-wing authoritarianism, and conventionalism, a facet of right-wing authoritarianism, positively predicted civic environmental actions and participation in environmental activism. Moreover, the role of political orientation in predicting environmental activism could be clarified in future research. In the current study, political orientation weakly positively predicted participation in environmental activism (i.e., a more right-wing political orientation was associated with higher activism), but negatively predicted support for environmental activism (i.e., a more right-wing political orientation was associated with lower support for activism). It may be possible that the relationship between individual differences in political orientation and environmental activism is non-linear.

In conclusion, this study contributes to the literature on individual differences in environmental activism by exploring associations with the dark triad traits and dimensions of left-wing authoritarianism. Findings suggest that environmental activism may have a "dark side" or weakness in terms of certain personality characteristics of activists (i.e., Machiavellianism, narcissism, antihierarchical aggression, anticonventionalism). At the same time, the results may also be interpreted as environmental activism representing a "bright side" or strength of individuals scoring high in certain aberrant personality characteristics. In any case, the findings of this study suggest a number of intriguing opportunities for future research on personality and environmental activism. In terms of practical implications, the results could be used to inform recruitment efforts (e.g., how to frame invitations to join environmental associations) and interventions aimed at developing and motivating environmental activists (e.g., workshops in which motives linked to certain personality characteristics are critically reflected).

CRediT authorship contribution statement

Hannes Zacher: Conceptualization, Methodology, Investigation, Formal analysis, Resources, Data curation, Writing – original draft, Writing – review & editing, Project administration.

Declaration of competing interest

The author has no relevant financial or non-financial interests to disclose. The author has no conflicts of interest to declare that are relevant to the content of this article. The author certifies that he has no affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript. The author has no financial or proprietary interests in any material discussed in this article.

Data availability

Data will be made available on request.

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