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Research Articles

Social and Ecological Dominance Orientations, Climate Change Denial, and Pro-Environmental Behaviour

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Supplementary Materials: Code, Data, Materials [see Index of Supplementary Materials]

Abstract

This study was aimed at investigating the associations between social dominance orientation (SDO), ecological dominance orientation (EDO), climate change denial and past pro-environmental behaviour. A total of 348 individuals, aged between 18 and 61 years (M = 22.27; SD = 4.80), participated in this study. The results showed that SDO predicted all forms of climate change denial and past pro-environmental behaviour, although EDO only predicted denial of guilt. Additionally, the rationalisation of own involvement dimension of climate change denial, but no other dimensions of it, predicted past pro-environmental behaviour. Moreover, gender was a predictor of five dimensions of climate change denial and past pro-environmental behaviour.

Keywords

social dominance orientation, ecological dominance orientation, climate change denial, self-protection, pro-environmental behaviour

Non-Technical Summary

Background

Human-induced climate change is having adverse effects on the ecosystem, and exhibiting pro-environmental behaviours can be effective in mitigating its effects. Although investigat-

ing the predictors of pro-environmental behaviour is critical, a recent systematic review (Tam et al., 2021) indicated that the data relating to the social psychological predictors of environmentalism are dominantly coming from countries that score very high in the Human Development Index (> .80).

Why was this study done?

The main aim of the present study was to investigate several predictors of pro-environmental behaviour in Turkey, which is a relatively underdeveloped country. Firstly, many people still deny climate change to varying degrees to deal with the psychological burden related to it. Even though it may be functional for individuals, climate change denial is one of the basic obstacles to engaging in mitigation behaviour (e.g., Lacroix & Gifford, 2018). In addition, the personal tendency to support the hierarchical structure of society, i.e., social dominance orientation [SDO] (Stanley & Wilson, 2019) and the hierarchical relationships between humans, non-human animals, and nature, i.e., ecological dominance orientation [EDO] (Uenal, Sidanius, Maertens et al., 2022) can also be related to past pro-environmental behaviour. Thus, we aimed to investigate the predictive roles of SDO, EDO and climate change denial on past pro-environmental behaviour. Furthermore, as climate change denial is one of the basic obstacles to engaging in mitigation behaviour (e.g., Lacroix & Gifford, 2018), it is crucial to understand its antecedents. Therefore, we also aimed to investigate the predictive roles of SDO and EDO on climate change denial, and to reveal the associations between EDO and climate change denial for the first time. Finally, we aimed to cross-validate climate self-protective strategies (Wullenkord, 2022) and EDO (Uenal, Sidanius, Maertens et al., 2022) scales in a non-WEIRD sample.

What did the researchers do and find?

A total of 348 university students (72.4% female) from various departments in state universities, aged between 18 and 61 years (M = 22.27; SD = 4.80), participated in this study. The participants responded to the climate self-protection scale, literal denial scale, EDO scale, SDO scale (SDO_7), and a scale measuring past pro-environmental behaviour via the online survey platform qualtrics.com. The climate self-protection and ecological dominance orientation scales were adapted into Turkish by the authors of this study. The results confirmed the original five-factor structure of the climate self-protection scale. Additionally, all sub-scales of climate self-protection were significantly correlated to literal denial, and EDO was significantly correlated to SDO, indicating the criterion validity of the adapted scales.

To test the predictive roles of SDO and EDO on climate change denial, and to test the predictive roles of SDO, EDO, literal denial and climate self-protection strategies on past pro-environmental behaviour after controlling for gender and age, a series of separate hierarchical multiple regression analyses were run.

The results showed that SDO predicted literal denial and all forms of climate self-protection strategies and past pro-environmental behaviour, but EDO only predicted denial of guilt. Additionally, the rationalisation of own involvement dimension of climate change denial, but not other dimensions of it, predicted past pro-environmental behaviour. Moreover,

gender was a predictor of five dimensions of climate change denial and past pro-environmental behaviour.

What do these findings mean?
The results indicate that the cross-validation of the scales was successful and that gender, rationalisation of own involvement and SDO were crucial factors to be considered in fostering pro-environmental behaviour.

Highlights

- Social dominance orientation predicted all forms of climate change denial, but ecological dominance orientation only predicted denial of guilt.
- Social dominance orientation, but not ecological dominance orientation, predicted past pro-environmental behaviour.
- Rationalisation of own involvement dimension of climate change denial, but not other dimensions of it, predicted past pro-environmental behaviour.
- Male gender predicts past pro-environmental behaviour and all forms of climate change denial apart from avoidance.

Despite anthropogenic climate change having been well documented (IPCC, 2022), many people still deny its reality. In a large body of related literature, climate change denial is generally considered as literal denial, which refers to the rejection of the scientific fact that anthropogenic climate change is happening (e.g., Jylhä & Akrami, 2015; Jylhä et al., 2016). In recent studies, scholars have suggested that there may be different facets of denial, and that it may function as a coping mechanism to deal with climate change and its undesirable consequences. In this sense, Wullenkord and Reese (2021) defined interpretive and implicatory forms of denial as climate self-protective strategies, in addition to literal denial. Accordingly, while literal denial means the denial of facts, interpretive denial means the re-interpretation of facts, such as believing climate change will not be as severe as scientists predict or that the influence of humans on climate change is being exaggerated. However, implicatory denial means that individuals accept the scientific knowledge that climate change is real, but avoid thinking about it, legitimise their own inaction, and deny its severe outcomes in their personal life.

Even though it may be functional for individuals, studies have shown that climate change denial is one of the basic obstacles to engaging in mitigation behaviour. Therefore, it is crucial to understand the antecedents of it (e.g., Lacroix & Gifford, 2018). As the relevant literature has suggested, ideological constructs seem to be strongly associated with climate change denial. For example, plenty of studies have indicated that higher SDO is related to higher levels of literal denial (e.g., Jylhä & Akrami, 2015; Kıral Uçar

et al., 2019), with recent findings referring also to positive relations between SDO and interpretive and implicatory forms of denial (Wullenkord, 2022).

Previous research has also suggested a negative relationship between pro-environmental behavioural intentions, SDO (Milfont & Sibley, 2014), and EDO (Uenal, Sidanius, Maertens et al., 2022). However, a recent systematic review (Tam et al., 2021) indicated that data related to the social psychological predictors of environmentalism dominantly come from countries that score very high (> .80) in the Human Development Index. Thus, it seems important to extend the literature, and one of the main aims of this study was to investigate the relationships between SDO, EDO and the pro-environmental behavioural tendencies in Turkey—a developing and relatively unequal country.

Social dominance theory (Pratto et al., 1994) basically explains the maintenance of hierarchical structures and the role of a personal tendency to support such hierarchies (i.e., SDO). Although the theory was primarily focused on intergroup discrimination and societal hierarchies, the negative relationship between SDO and environmental behaviours and attitudes has been well documented through meta-analysis (Stanley & Wilson, 2019), cross-cultural studies (Milfont et al., 2018; Vilar et al., 2020), longitudinal studies (Stanley et al., 2019) and experimental studies (Milfont & Sibley, 2014). According to the social dominance theory perspective, the relationship between SDO and environmental behaviours can be explained through two mechanisms. Firstly, the need for intergroup dominance can be extended to nature and can manifest itself through a human hierarchical dominance over nature (Vilar et al., 2020). Supporting this, higher SDO is indicated to be related to lower environmental concerns and more utilization attitudes towards nature (Milfont et al., 2013). Also, as another mechanism, the exploitation of nature can maintain the existing hierarchical structure by benefiting the dominant groups, and individuals with high SDO may support the exploitation of nature because of the intergroup hierarchy enhancing motivations (Milfont & Sibley, 2014). Consistently, it has been indicated that SDO predicts environmental exploitation (e.g., mining operations) only when it benefits the dominant groups in society (Milfont & Sibley, 2014). In addition, in a cross-cultural study by Milfont et al. (2018), it was found that the relationship between SDO and environmentalism was stronger in societies that have greater inequality between groups. Thus, it might be expected that SDO would predict a decrease in pro-environmental behaviour in Turkey as well.

Grounded on the social dominance theory (Pratto et al., 1994), a relatively recent research perspective has focused on the relationship between EDO and environmental attitudes and behaviours (Uenal, Sidanius, Maertens et al., 2022). In the original form of the social dominance theory (Pratto et al., 1994), there were three basic dimensions of hierarchical organisation—age, sex and arbitrary sets (e.g., ethnicity). This new perspective (Uenal, Sidanius, Maertens et al., 2022): (1) added an 'anthropocentric hierarchical axis' (labelled EDO) as the fourth dimension to complete and extend the original hierarchical structure; and (2) argued that EDO should be treated as an independent psychological

construct that can directly predict the hierarchical attitudes, behaviours, and perceptions toward non-human animals and the natural environment. Supporting these, it was found that EDO was a unique predictor of the support for climate change mitigation policies (Uenal, Sidanius, Maertens et al., 2022) and pro-environmental behaviour (Uenal, Sidanius, Maertens et al., 2022; Uenal, Sidanius, & van der Linden, 2022), after controlling for the effects of SDO. However, these studies were conducted in relatively developed countries (USA, Germany, and the UK), and studying the relationships between SDO, EDO and pro-environmental attitudes in a relatively non-WEIRD sample from Turkey was thought to be beneficial. Furthermore, the relationships between EDO and literal, interpretive and implicatory denial have not yet been explored. Thus, we extended the initial research (Uenal, Sidanius, Maertens et al., 2022; Uenal, Sidanius, & van der Linden, 2022) into Turkey and it was expected that EDO would be a unique negative predictor of pro-environmental behaviour after controlling for the effect of SDO. In addition, we aimed to examine the association between EDO with climate change denial. It was expected that EDO would also be positively associated with different forms of climate change denial, based on those studies indicating a positive relationship between SDO and climate change denial (e.g., Jylhä & Akrami, 2015).

Present Study

Based on the literature mentioned above, we aimed to cross-validate climate self-protective strategies (e.g., Wullenkord, 2022) and EDO (e.g., Uenal, Sidanius, Maertens et al., 2022) in a non-WEIRD sample. Further, we wanted to examine the relationships between EDO and climate change denial for the first time. Ultimately, we investigated the predictive power of these recent structures on past pro-environmental behaviour, together with SDO, gender and the well-documented predictors of it (e.g., Milfont et al., 2018; Wullenkord, 2022). Thus, the hypotheses of the present study are as follows:

- **H1**: The factorial structure of climate self-protective strategies can be replicated in the Turkish sample (**H1a**), and the self-protective strategies and literal denial are positively correlated with each other (**H1b**).
- **H2**: SDO (**H2a**) and EDO (**H2b**) positively predict climate change denial.
- **H3**: Male gender positively predicts climate change denial and negatively predicts past pro-environmental behaviour.
- **H4**: Climate change denial negatively predicts past pro-environmental behaviour.
- **H5**: SDO negatively predicts past pro-environmental behaviour.
- **H6**: EDO negatively predicts past pro-environmental behaviour over and above SDO.

Method

Participants

Participants were recruited using convenience sampling. At the start, 558 individuals began participating in this study, but 140 (25.1%) of them did not finish the survey. Additionally, 70 (16.7%) of the remaining participants were excluded because they did not correctly respond to the attention check item. Therefore, the final sample consisted of 348 university students (72.4% female) from various departments in state universities, aged between 18 and 61 years (M = 22.27; SD = 4.80). Of these, 19.5% were in Year 1, 23.9% in Year 2, 18.7% in Year 3 and 37.9% in Year 4. In terms of socioeconomic status, 17.8% evaluated themselves as having low socioeconomic status (i.e., lower-middle income, poor or very poor), with 52.9% in the middle and 29.3% having high socioeconomic status (i.e., good income, rich or very rich).

Research Instruments

The Climate Self-Protection Scale was developed by Wullenkord and Reese (2021). For use in this study, for the first time, the scale was translated into Turkish by the authors and the translation was checked by three experts in social psychology. The original scale had 26 items and five factors: (1) rationalisation of own involvement; (2) avoidance; (3) denial of personal outcome severity; (4) denial of global outcome severity; and (5) denial of guilt. The scale ranged from 1 (*Strongly disagree*) to 6 (*Strongly agree*), with a higher value indicating a stronger construct.

Exploratory factor analysis was required to determine the factorial structure of this version. The Kaiser–Meyer–Olkin coefficient was 0.90, and Bartlett's test of sphericity was statistically significant ($\chi^2(325) = 5664.25$, $p < .001$), indicating that the scale was appropriate for factor analysis (see Supplementary Table 1 in Kıral Uçar et al., 2025 for the results of the exploratory factor analysis). Therefore, a principle component analysis was performed, followed by a varimax rotation. The principle component analysis identified five factors with eigenvalues > 1.0, and the scree-plot confirmed the five-factor solution. Supporting H1a, apart from Item 25 (*I don't need to make climate change a matter of conscience*), all the items were loaded as in the original scale. Item 25 was loaded strongly on both the rationalisation of own involvement (λ = .50) and denial of guilt (λ = .47) factors. However, in terms of interpretability, it was decided to leave it on the denial of guilt factor, as in the original scale. The rationalisation of own involvement factor included seven items (e.g., *My personal influence on climate change is negligible*) and accounted for 32.89% of the total variance, with an eigenvalue of 8.55. The avoidance factor consisted of eight items (e.g., *When I get worried about climate change, I try to think of something else*) and explained 15.17% of the total variance, with an eigenvalue of 3.94. The denial of personal outcome severity factor, which had four items (e.g., *Nothing will happen to me as a consequence of climate change because Turkey is a safe country*)

explained 9.33% of the total variance, with an eigenvalue of 2.43. The denial of global outcome factor severity had three items (e.g., *I believe that climate change won't be as severe as expected in the future*) and accounted for 6.03% of the total variance, with an eigenvalue of 1.57. Last, the denial of guilt factor included four items (e.g., *I have a guilty conscience because I know that I should behave more sustainably*) and explained 4.09% of the total variance, with an eigenvalue of 1.06. The factor loadings of the items ranged from .67 to .86 for rationalisation of own involvement, from .54 to .86 for avoidance, from .70 to .81 for denial of personal outcome severity, from .66 to .82 for denial of global outcome severity and from .47 to .84 for denial of guilt. Cronbach's alpha was computed as .91, .90, .84, .86 and .75 for rationalisation of own involvement, avoidance, denial of personal outcome severity, denial of global outcome severity and denial of guilt, respectively, which indicate higher levels of scale reliability.

Literal denial was assessed using a five-item scale developed by McCright and Dunlap (2011) (sample item—*There is no scientific consensus that climate change is occurring*). The scale was used based on the unifactorial Turkish version (Nartova-Bochaver et al., 2022) as a six-point Likert scale ranging from 1 (*Strongly disagree*) to 6 (*Strongly agree*). Cronbach's alpha was satisfactory for this study ($\alpha = .83$).

The Ecological Dominance Orientation Scale is a one-item iconographic scale developed by Uenal, Sidanius, Maertens et al. (2022). The participants were asked to indicate their preference for human–environment relations using a slider ranging from 1 (*Less hierarchical*) to 7 (*More hierarchical*), with a higher value indicating a stronger construct. The two ends of the scale were illustrated with an appropriate image. The scale was adapted to Turkish by the authors of this study. It was found that EDO was significantly correlated to SDO (see Table 1), indicating criterion validity.

The *Social Dominance Orientation Scale* SDO_7 is a 16-item scale (Ho et al., 2015) ranging from 1 (*Strongly disagree*) to 6 (*Strongly agree*), with a higher value indicating a stronger construct. The scale was adapted into Turkish by Kaynak et al. (2021). Cronbach's alpha was satisfactory for this study ($\alpha = .91$).

Past Pro-Environmental Behaviours within the last three months were assessed using seven items (including major activities, such as using public transportation, energy saving, using nature-friendly products) (Kıral Uçar, 2020). The scale ranged from 1 (*Not suitable at all*) to 6 (*Totally suitable*). Cronbach's alpha was acceptable ($\alpha = .66$).

In terms of demographics, gender, age, department and perceived economic status were obtained. Anonymized raw data and syntax for all the analyses conducted in this study can be found at Kaynak Malatyalı et al. (2023).

Table 1

Intercorrelations and Descriptives

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Gender	1	-.03	.23**	.29**	.15**	.28**	-.05	.16**	.21**	.43**	-.20**
2. Age		1	-.15**	-.19**	-.09	-.05	-.19**	-.09	.01	-.04	.13*
3. EDO			1	.31**	.20**	.17**	.07	.19**	.16**	.30**	-.07
4. SDO				1	.39**	.32**	.16**	.34**	.22**	.35**	-.22**
5. Literal denial					1	.42**	.22**	.52**	.66**	.40**	-.24**
6. Rationalization of own involvement						1	.32**	.42**	.40**	.41**	-.28**
7. Avoidance							1	.36**	.21**	.00	-.12*
8. Denial of personal outcome severity								1	.61**	.34**	-.15**
9. Denial of global outcome severity									1	.40**	-.23**
10. Denial of guilt										1	-.17**
11. Past PEB											1
M	—	22.27	2.91	2.11	1.54	2.08	2.62	1.47	1.56	2.82	4.57
SD	—	4.80	1.86	0.78	0.62	1.01	1.02	0.76	0.86	1.03	0.76

Note. Gender 1 = Female, 2 = Male; EDO = Ecological Dominance Orientation; SDO = Social Dominance Orientation; PEB = Pro-Environmental Behavior.
*$p < .05$. **$p < .01$.

Procedure

The Ethics Committee of the corresponding author`s university authorised the research. The participants were then recruited online, and the questionnaires were distributed via email lists, social media and in classes. The participants were briefly informed about the purpose of the study and completed an informed consent form before responding.[1]

Results

Correlational Analysis

The correlation analysis (see Table 1) revealed that, in line with H1b, all types of climate self-protection strategies were positively related to literal denial. Additionally, all types of climate self-protection strategies and literal denial were negatively related to past pro-environmental behaviour, whereas SDO was negatively related to past pro-environmental behaviour and EDO was not related to it, SDO was positively related to all types of climate self-protection strategies, and EDO had a similar correlational pattern, apart from for avoidance, which was unrelated.

1) We also applied pro-environmental behavioural intentions and social desirability scales but did not use these variables in this study.

Regression Analysis

First, to test the predictive role of gender, age, SDO and EDO on climate change denial, a series of separate hierarchical multiple regression analyses were run for each climate self-protection strategy dimension and literal denial. In these analyses, age and gender were added in the first step. The results indicated that gender predicted literal denial, rationalisation of own involvement, denial of personal outcome severity, denial of global outcome severity and denial of guilt, but not avoidance (see Table 2), mostly supporting H3. That is, male participants had higher scores on all forms of climate change denial, except for avoidance. Age only predicted the avoidance dimension of climate self-protection strategies in which older participants were less likely to avoid climate change. In the second step, SDO and EDO were added to the model. The results supported H2a and partially supported H2b, in which SDO predicted literal denial and all forms of climate self-protection strategies, but EDO only predicted denial of guilt after controlling for age and gender. That is, while SDO was associated with an increase in literal denial, rationalisation of own involvement, avoidance, denial of personal severity, denial of global outcome severity and denial of guilt, EDO was only linked to an increase in denial of guilt after controlling for age and gender. Additionally, gender no longer predicted literal denial and denial of personal severity after controlling for EDO and SDO. The final model explained 16% of the variance in literal denial, 15% of the variance in rationalisation of own involvement, 6% of the variance in avoidance, 13% of the variance in denial of personal outcome severity, 8% of the variance in denial of global outcome severity and 26% of the variance in denial of guilt.

Table 2

Regression of Climate Change Denial on Age, Gender, SDO and EDO

	Model 1			Model 2		
Variable	***B***	***SE***	***p***	***B***	***SE***	***p***
Literal Denial						
Gender	**.20**	**.07**	**.006**	.04	.07	.631
Age	-.01	.01	.133	-.001	.01	.917
SDO				**.28**	**.04**	**< .001**
EDO				.03	.02	.126
	$R^2 = .03$, $F(2, 345) = 5.04$, $p = .007$			$R^2 = .16$, $F(4, 343) = 16.07$, $p < .001$		
Rationalization of Own Involvement						
Gender	**.64**	**.12**	**< .001**	**.45**	**.12**	**< .001**
Age	-.01	.01	.419	.002	.01	.843
SDO				**.33**	**.07**	**< .001**
EDO				.03	.03	.345
	$R^2 = .08$, $F(2, 345) = 15.44$, $p < .001$			$R^2 = .15$, $F(4, 343) = 14.60$, $p < .001$		

	Model 1			Model 2		
Variable	***B***	***SE***	***p***	***B***	***SE***	***p***
Avoidance						
Gender	-.13	.12	.267	-.25	.13	.053
Age	**-.04**	**.01**	**< .001**	**-.04**	**.01**	**.002**
SDO				**.20**	**.08**	**.007**
EDO				.01	.03	.717
	R^2 = .04, F (2, 345) = 7.39, p = .001			R^2 = .06, F (4, 343) = 5.85, p < .001		
Denial of Personal Outcome Severity						
Gender	**.27**	**.09**	**.003**	.09	.09	.310
Age	-.01	.01	.104	-.004	.01	.664
SDO				**.29**	**.05**	**< .001**
EDO				.03	.02	.120
	R^2 = .03, F (2, 345) = 5.92, p = .003			R^2 = .13, F (4, 343) = 12.30, p < .001		
Denial of Global Outcome Severity						
Gender	**.41**	**.10**	**< .001**	**.29**	**.11**	**.007**
Age	.002	.01	.806	.01	.01	.305
SDO				**.18**	**.06**	**.004**
EDO				.04	.03	.112
	R^2 = .05, F (2, 345) = 8.35, p < .001			R^2 = .08, F (4, 343) = 7.74, p < .001		
Denial of Guilt						
Gender	**.98**	**.11**	**< .001**	**.75**	**.11**	**< .001**
Age	-.01	.01	.581	.01	.01	.485
SDO				**.28**	**.07**	**< .001**
EDO				**.09**	**.03**	**.001**
	R^2 = .18, F (2, 345) = 38.45, p < .001			R^2 = .26, F (4, 343) = 30.05, p < .001		

Note. Gender 1 = Female, 2 = Male; SDO = Social Dominance Orientation; EDO = Ecological Dominance Orientation.
Significant regression (p < .05) coefficients were emphasized.

Finally, to test the associations between gender, age, SDO, EDO, literal denial, climate self-protection strategies and past pro-environmental behaviour, a hierarchical multiple regression analysis was run.[2] As can be seen from Table 3, age and gender (added in the first step) significantly predicted past pro-environmental behaviour. That is, in line with H3, male participants and younger participants reported engaging in less past pro-environmental behaviour. In addition, SDO, but not EDO (added in the second step), significantly predicted past pro-environmental behaviour after controlling for age and gender. In other words, in line with H5, but not H6, SDO, but not EDO, predicted lower levels of past pro-environmental behaviour. In the third step, climate self-protection strategies and literal denial entered the model and, only rationalisation of own involvement significantly predicted past pro-environmental behaviour. That is, partially

2) Similar results for pro-environmental behavioural intentions were obtained and presented in Supplement Table 2 of Kıral Uçar et al. (2025).

supporting H4, participants with higher scores on rationalisation of their own involvement in climate change reported engaging in less pro-environmental behaviour in the last three months. Additionally, the significant predictive roles of SDO and age on past pro-environmental behaviour disappeared in the third step, after controlling for climate self-protection strategies and literal denial. The final model explained 14% of the variance in past pro-environmental behaviour.

Table 3

Regression of Past PEB on Age, Gender, SDO, and Climate Change Denial

	Model 1			Model 2			Model 3		
Independent Variable	***B***	***SE***	***p***	***B***	***SE***	***p***	***B***	***SE***	***p***
Gender	**-.34**	**.09**	**< .001**	**-.27**	**.09**	**.004**	**-.20**	**.10**	**.046**
Age	**.02**	**.01**	**.020**	.02	.01	.069	.02	.01	.055
SDO				**-.16**	**.06**	**.004**	-.10	.06	.093
EDO				.01	.02	.607	.02	.02	.431
Literal denial							-.09	.09	.326
Rationalization of own involvement							**-.14**	**.05**	**.004**
Avoidance							-.02	.04	.573
Denial of personal outcome severity							.11	.07	.131
Denial of global outcome severity							-.12	.07	.084
Denial of guilt							.02	.05	.728
	R^2 = .06, F (2, 345) = 10.17, p < .001			R^2 = .08, F (4, 343) = 7.28, p < .001			R^2 = .14, F (10, 337) = 5.43, p < .001		

Note. Gender 1 = Female, 2 = Male; SDO = Social Dominance Orientation; PEB = Pro-Environmental Behaviour. Significant regression (p < .05) coefficients were emphasized.

Discussion

We cross-validated climate self-protective strategies (e.g., Wullenkord & Reese, 2021) and EDO (e.g., Uenal, Sidanius, Maertens et al., 2022) in a non-WEIRD sample, and investigated the associations between EDO, SDO, climate change denial and past pro-environmental behaviour. The findings showed that the factorial structure of climate self-protective strategies can be replicated in a Turkish sample (Wullenkord & Reese, 2021) (H1a) and, in line with previous findings, the self-protective strategies and literal denial were positively correlated with each other (Wullenkord, 2022) (H1b). Also supporting previous studies (e.g., Jylhä & Akrami, 2015; Jylhä et al., 2016), SDO positively predicted all dimensions of climate change denial (H2a), although EDO only predicted the denial of guilt dimension (H2b). Contrary to our expectations, EDO did not predict pro-environmental behaviour

over and above SDO (H6). These findings show that SDO can be distinguished from EDO in predicting climate change denial in a non-WEIRD Turkish sample.

Unexpectedly, none of the climate change denial dimensions, except for rationalisation of own involvement, predicted past pro-environmental behaviour (H4). However, consistent with previous findings, reinterpreting their own effect on climate change as not being crucial seems to have been significant for individuals' pro-environmental engagements (e.g., Wullenkord & Reese, 2021). In addition, as expected, SDO negatively predicted individuals' past pro-environmental engagements (Milfont et al., 2018) (H5a), but contrasting with the studies of Uenal, Sidanius, Maertens et al. (2022); Uenal, Sidanius, and van der Linden (2022), EDO did not significantly predict past pro-environmental behaviour (H6). Also, EDO predicted only one of the six dimensions of climate change denial (denial of guilt). Although the predictive power of EDO has been well documented in a number of studies, it is a newly proposed construct that has not yet been tested in non-WEIRD samples. Based on the findings (Milfont et al., 2018)—that the relationship between SDO and environmentalism might be stronger in societies that have greater inequality between groups—from a sample from Turkey, a country with significant social inequalities, SDO may continue to be a more distinctive variable in predicting pro-environmental behaviour. However, these findings may be specific to the current sample. Therefore, more investigation is needed.

In this study, the SDO_7 was used (Ho et al., 2015), whereas Uenal, Sidanius, Maertens et al. (2022) and Uenal, Sidanius, and van der Linden (2022) used the SDO_6 (Pratto et al., 1994) or the short form of SDO_7 (Ho et al., 2015). In future studies to be conducted in Turkey, it would be useful to test the hypotheses using these different SDO scales. In addition, as can be seen from the regression findings presented in Table 3, when climate change denial dimensions are included in the model, the predictive power of the SDO completely disappears. Future studies should examine whether these different dimensions of climate change denial mediate the relationship between SDO and pro-environmental behaviour.

Finally, in line with previous findings (e.g., Milfont & Sibley, 2016; Wullenkord, 2022) and our expectations (H3), the female participants tended to have lower levels of all forms of climate change denial, apart from avoidance and higher levels of past pro-environmental behaviour. Our study is important in terms of replicating consistent, but small, gender differences in pro-environmental engagement (Milfont & Sibley, 2016) in a non-WEIRD sample.

This study had some limitations. First, it was a cross-sectional study, and so no causal inferences could be made. The sample was relatively small (N = 348) and consisted mostly of female university students (72.4%). Therefore, a larger and more representative sample should be investigated.

In conclusion, our study on a non-WEIRD sample indicated that gender, rationalisation of own involvement and SDO are crucial factors that should be considered in foster-

ing pro-environmental behaviour. Interventions that emphasise that each individual's actions matter in mitigating climate change, including an approach to reducing SDO, may be beneficial.

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Ethics Statement: This research was approved by the Research Ethics Board at Çanakkale Onsekiz Mart University. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study.

Supplementary Materials

Type of supplementary materials	Availability/Access
Data	
Study data.	Kaynak Malatyalı et al. (2023)
Code	
SPSS code.	Kaynak Malatyalı et al. (2023)
Material	
Explanatory memo.	Kaynak Malatyalı et al. (2023)
Other	
Supplementary materials with factor loadings, descriptions of scale items results, and regressions.	Kıral Uçar et al. (2025)

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