



# Exploring short-term longitudinal effects of right-wing authoritarianism and social dominance orientation on environmentalism<sup>☆</sup>



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## ABSTRACT

People who endorse right-wing authoritarianism (RWA) and social dominance orientation (SDO) tend to be less concerned about the environment. Yet, the extant literature has so far relied on cross-sectional data to examine the associations between RWA, SDO and environmentalism. We present cross-lagged panel analysis of the associations between RWA, SDO, pro-environmental attitudes and climate change denial using data from 674 undergraduates surveyed twice over five months. RWA and SDO were negatively related to pro-environmental attitudes while positively related to climate change denial in cross-sectional analysis. Notably, RWA predicted change in both environmental variables over time, while SDO did not. This suggests that change in general pro-environmental attitudes and climate change denial are motivated more by the desire to conform to traditional values, and less by the desire for human dominance over nature.

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## 1. Introduction

The evidence is unequivocal: climate change is real, it is influenced by human behaviour, and its negative effects will only get worse if we fail to act now (IPCC, 2014). A number of psychological studies have tried to identify the main drivers and barriers of climate change action (e.g. Swim et al., 2009), with a recent meta-analysis showing that political affiliation and ideology are the strongest predictors of climate change belief (Hornsey, Harris, Bain, & Fielding, 2016). Individuals who hold conservative political ideologies are less likely to believe in climate change than more liberal individuals. Hornsey and colleague's meta-analysis did not include two individual difference variables intrinsically linked to political affiliation and ideology: right-wing authoritarianism (RWA; Altemeyer, 1996) and social dominance orientation (SDO; Sidanius & Pratto, 1999).

Altemeyer (1996) describes RWA as a constellation of attitudes including submission to authority, preference for tradition, and antipathy towards those who oppose authority. Early research by Schultz and Stone (1994) identified a negative relationship between RWA and environmentalism, regardless of whether environmentalism was operationalized as support for a new power plant, attitudes towards river pollution, or general pro-environmental attitudes (see also Milfont & Duckitt, 2010).

Individuals who endorse SDO prefer hierarchical social systems, where 'superior' groups dominate over groups considered 'inferior'

(Sidanius & Pratto, 1999). Milfont, Richter, Sibley, Wilson, and Fischer (2013) suggest that this desire to dominate other groups in society extends to a desire for human dominance over nature. Consistent with this argument, they found that individuals who reported greater levels of SDO are more supportive of human actions that are detrimental to the environment, *especially* when environmental exploitation benefits the social elite (Jackson, Bitacola, Janes, & Esses, 2013; Milfont & Sibley, 2014). Other studies have also shown that SDO is related to climate change denial, with greater SDO levels related to higher denial (e.g., Häkkinen & Akrami, 2014; Jylhä & Akrami, 2015; Jylhä, Cantal, Akrami, & Milfont, 2016; Milfont et al., 2013, Study 4).

Taken together, research consistently shows a link between RWA and SDO and lower environmentalism. At the same time, research simultaneously considering RWA and SDO in the same study suggests that SDO is a stronger predictor of environmentalism than RWA. Specifically, SDO accounts for a statistically significant amount of additional variance over and above RWA in predicting pro-environmental attitudes and climate change denial (Milfont et al., 2013, Studies 3 and 4), and RWA becomes a non-significant predictor of climate change denial when controlling for SDO (Häkkinen & Akrami, 2014). Moreover, support for environmental exploitation that benefits the social elite observed for those scoring high in SDO is unaffected when RWA is controlled for (Milfont & Sibley, 2014).

## 2. The present study

Past research has shown that (1) political affiliation and ideology are the main predictors of climate change belief, (2) RWA and SDO—two individual difference variables intrinsically linked to political orientation—are negatively associated with climate change beliefs and

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environmentalism, and (3) SDO is a stronger predictor of environmental-related variables when compared to RWA. To the best of our knowledge, the present study is the first to examine the influence of RWA, SDO and environmentalism using panel data to investigate whether these ideological variables predict changes in environmentalism.

### 3. Method

#### 3.1. Participants and procedure

This study used data reported in Stanley, Wilson, Sibley, and Milfont (2017, Study 3). Participants were 674 students taking first-year psychology courses at Victoria University of Wellington. Participants (77% female; mean age = 18.7 years) completed an online survey for partial course credit. The survey was available to students during the second teaching week of classes in the first and second semesters, with only students who completed the measures twice, five months apart, included in the study.

#### 3.2. Measures

The key measures assessing SDO, RWA, and environmentalism were embedded in a larger, unrelated project. All measures examined here were rated from 1 (*strongly disagree*) to 7 (*strongly agree*). *Right-Wing Authoritarianism* was assessed using Altemeyer's (1996) 30-item RWA scale (e.g., "Our country desperately needs a mighty leader who will do what has to be done to destroy the radical new ways and sinfulness that are ruining us"). *Social Dominance Orientation* was assessed using the SDO<sub>7</sub> scale developed by Ho et al. (2012) and validated in New Zealand by Stanley et al. (2017) (e.g., "Having some groups on top really benefits everybody"). *Environmentalism* was assessed using two separate measures. The original 12-item version of the New Ecological Paradigm (NEP) Scale (Dunlap & Van Liere, 1978) measured general pro-environmental attitudes (e.g., "Plants and animals exist primarily to be used by humans"). Two related items measured climate change denial: "Climate change is an entirely natural phenomenon – human action does not contribute importantly to it" and "Any changes in global climate simply reflects naturally occurring variation".

#### 3.3. Analytical approach

We run a latent cross-lagged model in Mplus 7.3 (Muthén & Muthén, 1998–2010) with all Time 1 latent variables predicting Time 2 latent variables, allowing correlations between latent variables within the same time point, and indicators of each latent variable to covary over time. All models were run with maximum likelihood estimation with robust standard errors (i.e., MLR estimator in Mplus).

### 4. Results

Table S1 in the Supplementary Material presents descriptive statistics, Cronbach's alpha and correlations among the measures. Supporting previous studies, RWA and SDO were negatively correlated with NEP, while positively related to climate change denial, even with a time lag. Inspection of the strength of the associations shows that RWA and SDO had comparable first-order correlations with environmentalism.

The latent cross-lagged model in Fig. 1 showed overall good fit to the data ( $\chi^2(6932) = 14.818.83, p < 0.001; sRMR = 0.072; CFI = 0.764; RMSEA = 0.041, 90\% CI [0.040, 0.042]$ ). The model shows an expected bidirectional association between RWA and SDO, with RWA predicting subsequent changes in SDO ( $\beta = 0.181, p < 0.001, 95\% CI [0.097, 0.265]$ ) and vice versa ( $\beta = 0.112, p = 0.009, 95\% CI [0.028, 0.195]$ ). There is also a unidirectional association between NEP and climate change denial, with endorsement of NEP predicting subsequent reduction in denial ( $\beta = -0.104, p = 0.030, 95\% CI [-0.198, -0.010]$ ) but

denial not predicting change in NEP ( $\beta = -0.027, p = 0.531, 95\% CI [-0.111, 0.057]$ ).

More importantly, the model shows that RWA predicted subsequent changes in climate change denial ( $\beta = 0.157, p = 0.002, 95\% CI [0.055, 0.259]$ ), and was a marginally significant predictor of changes in NEP ( $\beta = -0.072, p = 0.066, 95\% CI [-0.148, 0.005]$ ). Therefore, higher levels of RWA predict subsequent increase in climate change denial and subsequent marginal decrease in pro-environmentalism. In contrast and unresponsive of our predictions, SDO did not predict residual change in NEP ( $\beta = -0.037, p = 0.386, 95\% CI [-0.121, 0.047]$ ) or climate change denial ( $\beta = -0.068, p = 0.160, 95\% CI [-0.162, 0.027]$ ).

Notably, the model shows that all variables are relatively stable over time, with standardized stability coefficients ranging from 0.59 to 0.71. The lack of expected significant paths from SDO to residualised environmental variables could be due to variance accounted for by the stability coefficients leaving little variance for the cross-variable associations to predict. To explore this possibility, we run separate path models with Time 1 ideological variables predicting Time 2 environmentalism, and another with prospective environmentalism predicting subsequent ideology (i.e., without controlling for stability). These findings (see Supplementary Material) demonstrate that both RWA and SDO predict subsequent scores on the NEP, but only Time 1 RWA is a significant predictor of Time 2 climate change denial. This supports the findings of our original model, suggesting that RWA is more consistently linked to environmentalism over time. The reverse model, where Time 1 environmental variables predict Time 2 ideological predictors, showed that both NEP and climate change denial significantly predict later scores on both RWA and SDO. These surprising findings should be explored in future studies.

Research has also highlighted gender differences in RWA, SDO (Sidanius & Pratto, 1999) and environmentalism (e.g. Zelezny, Chua, & Aldrich, 2000). More recently, Milfont and Sibley (2016) showed that SDO explains the gender difference in environmentalism over time. Given these findings, we run an additional multi-group model to examine whether the main findings were influenced by gender differences. Results from this multi-group analysis showed the associations reported in the main model hold for males and females (see Supplementary Material).

### 5. Discussion

The present study adds to the discussion of potential ideological foundations underpinning environmental exploitation and climate change denial. We present the first longitudinal investigation of the associations between RWA, SDO and environmentalism. The within- and across-time correlations confirmed the results of past research showing a negative association between environmentalism and both RWA and SDO (e.g., Milfont et al., 2013, Study 3). The correlation results showed that individuals who reported greater levels of RWA and SDO have lower scores on pro-environmental attitudes but higher scores on climate change denial.

However, although the first-order correlations showed that the magnitude of the associations were comparable for RWA and SDO, the latent cross-lagged model showed that RWA was a stronger predictor of change in both anti-environmental attitudes and climate change denial when compared to SDO. In fact, SDO was not a statistically significant longitudinal predictor when RWA was present in the model, which contradicts results from cross-sectional studies using regression to control for the effect of RWA. As an initial test of one possible explanation for this, namely that too much variance is accounted for in the residualised model, we showed that RWA remains the stronger and more consistent longitudinal predictor of environmentalism (see Fig. S1 in Supplementary Material). Further longitudinal studies will need to examine and replicate this unexpected finding.

While our research cannot confirm causality, we have shown that RWA predicts subsequent changes in environmentalism, but not vice

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