



SOCIAL, POLITICAL, EARTH & ENVIRONMENTAL RESEARCH GROUP

The UNIVERSITY of OKLAHOMA

Social Dominance Orientation & Climate Change Belief

Heather Bedle, Ph.D.

Christopher R.H. Garneau, Ph.D.

The University of Oklahoma

July 2024

CONTACT: speer@ou.edu

RECOMMENDED CITATION: Bedle, H., & C.R.H. Garneau,(2024). Social Dominance Orientation & Climate Change Belief. SPEER Research Report.





Social Dominance Orientation & Climate Change Belief

Heather Bedle Ph.D., Christopher R.H. Garneau Ph.D.
University of Oklahoma

Research Report

July 2024

Abstract

Social dominance orientation (SDO) has consistently been linked to climate change denial and opposition to pro-environmental policies. However, recent research suggests that the subdimensions of SDO, namely SDO-D (dominance) and SDO-E (anti-egalitarianism), may have differential associations with climate change attitudes. This study aims to investigate the unique contributions of SDO-D and SDO-E to climate change beliefs while controlling for a wide range of socioeconomic and demographic variables. Utilizing data from an online survey, we find that SDO-E is a stronger predictor of climate change denial than SDO-D. This report highlights the importance of considering the multidimensional nature of SDO in understanding environmental attitudes.

1. Introduction

Climate change is one of the most pressing issues facing the world today, with far-reaching consequences for natural ecosystems, human health, and the global economy (IPCC, 2021). Despite the overwhelming scientific consensus on the reality and causes of climate change (Cook et al., 2016), public opinion remains divided, particularly along ideological lines (Pew Research Center, 2020). Understanding the psychological factors that shape individuals' beliefs about climate change is crucial for developing effective communication strategies and promoting support for mitigation policies (Hornsey et al., 2016).

One ideological variable that has recently gained attention in the context of environmental attitudes is social dominance orientation (SDO) - which reflects an individual's preference for group-based hierarchy and inequality (Pratto et al., 1994). Studies have consistently found a negative relationship between SDO and various measures of environmentalism, including climate change beliefs (e.g. Stanley et al., 2017; Jylhä & Akrami, 2015). However, much of this research has been limited by a lack of comprehensively controlled models making it difficult to isolate the unique contribution of SDO above and beyond other socioeconomic and demographic factors.

Previous research has consistently demonstrated a negative relationship between social dominance orientation and pro-environmental attitudes and behaviors. For example, Milfont et al. (2018) found that SDO was negatively associated with environmentalism across 25 countries, suggesting that individuals who endorse group-based hierarchy and inequality are less likely to support environmental protection. Similarly, Stanley et al. (2017) showed that SDO predicted opposition to pro-environmental

policies and reduced willingness to make personal sacrifices for the environment. These findings highlight the role of SDO as a psychological barrier to addressing environmental issues like climate change.

Recent research has identified two subdimensions of SDO: SDO-D (dominance) and SDO-E (anti-egalitarianism) (Ho et al., 2015; Ho et al., 2012). SDO-D refers to the preference for overt forms of group-based dominance and oppression, while SDO-E represents opposition to equality between social groups and a preference for subtler forms of hierarchy-enhancing ideologies and policies. These subdimensions have been shown to have differential associations with various social and political attitudes, including environmental attitudes (Ho et al., 2015; Jylhä & Akrami, 2015; Milfont et al., 2018). Specifically, SDO-E has been found to be a stronger predictor of climate change denial and opposition to pro-environmental policies than SDO-D (Jylhä & Akrami, 2015; Stanley & Wilson, 2019), suggesting that resistance to environmental action may be driven more by opposition to egalitarian social change than by overt dominance motives. Furthermore, research has shown that the relationship between SDO and climate change denial is partially mediated by system justification and perceived threat from climate change mitigation efforts (Jylhä & Akrami, 2015; Hoffarth & Hodson, 2016), indicating that individuals high in SDO may reject climate science and policy solutions as a way to protect the status quo and maintain existing social hierarchies.

We address the gaps in the existing literature by (1) investigating the relationship between SDO and climate change beliefs while controlling for a wide range of socioeconomic and demographic variables, and (2) examining the differential associations of SDO-D and SDO-E with climate change skepticism. By including factors such as political affiliation, religiosity, education, age, gender, race, marital status, income, and urbanicity in our analysis, we seek to provide a more robust and nuanced understanding of the ideological underpinnings of climate change attitudes. This comprehensive approach represents a significant methodological improvement over previous studies that have examined the SDO-climate change belief link without accounting for such a diverse range of control variables (e.g. Häkkinen & Akrami, 2014; Hoffarth & Hodson, 2016; Jylhä & Akrami, 2015).

We hypothesize that both SDO-D and SDO-E will emerge as significant predictors of climate change beliefs, with SDO-E being a stronger predictor than SDO-D. Additionally, we expect that the relationship between SDO and climate change skepticism will remain significant even after controlling for other relevant socioeconomic and demographic factors. By examining these relationships, we aim to contribute to a more comprehensive understanding of the psychological barriers to climate change acceptance and action, and to inform the development of targeted communication strategies that account for ideological differences in environmental attitudes.

2. Data and Methods

2.1 Data

We use data from the SPEER23 Survey, which is an online survey conducted by the authors at the University of Oklahoma (OU). Using participant recruitment from Qualtrics, responses were collected between May 2023 and June of 2023 to generate a final sample of 2,188 U.S. adults who were not incarcerated. We approximate a national sample, utilizing quota-based sampling to reflect the U.S. population in terms of age, gender, income, education, race/ethnicity, and census region. The study's

procedures received approval from the OU Institutional Review Board (protocol #15823) ensuring adherence to standards and guidelines for human subject research. For a more detailed explanation of the data collection and survey instruments please consult the survey report by Bedle et al. (2024).

2.2 Dependent Variable

Belief in anthropogenic climate change was assessed with a single item asking participants "How certain are you that greenhouse gases, such as those resulting from the combustion of coal, oil, natural gas, and other materials, are causing average global temperatures to rise?". Responses ranged on a four-point scale from "Very certain it is not happening" to "Very certain it is happening."

2.3 Independent Variables

Participants completed a 4-item SDO scale adapted and based on work from Aichholzer et al. (2022), Ho et al. (2015), and Pratto et al. (2013). The scale included two items reflecting high SDO: Q1) "An ideal society requires some groups to be on top and others to be on the bottom," and Q2) "Some groups of people are simply inferior to other groups." These items assess SDO-D (dominance), which refers to the preference for overt forms of group-based dominance and oppression. The respondents were also asked two items reflecting low SDO and egalitarianism: Q3) "We should do what we can to equalize conditions for different groups," and Q4) "We should work to give all groups an equal chance to succeed." These items were then reverse coded to assess SDO-E (anti-egalitarianism), which represents opposition to equality between social groups and a preference for subtler forms of hierarchy-enhancing ideologies and policies. Items were rated on a 6-point Likert scale (strongly oppose to strongly favor). For the overall SDO scale, we create an additive index with high SDO items along with the reverse coded low SDO items and then use the average of each of the four items to create a composite SDO score ($\alpha = 0.74$). In addition to the composite score, we also examined the relationships between each individual SDO item and climate change beliefs to explore the differential associations of SDO-D and SDO-E with climate change skepticism. Descriptive statistics for all focal dependent and independent variables are displayed in Table 1.

Table 1. Descriptive Statistics (N=2188)

	Min	Max	Mean	S.D.
<i>Dependent Variable</i>				
Climate Change Belief	1.00	4.00	2.81	0.97
<i>Focal Independent Variables</i>				
SDO1 (D – Top/Bottom)	1.00	6.00	2.80	1.40
SDO2 (D - Inferior)	1.00	6.00	2.37	1.47
SDO3 (E – Equalize Reversed)	1.00	6.00	2.45	1.38
SDO4 (E – Equal Chance Reversed)	1.00	6.00	1.84	1.11
Composite SDO Scale	4.00	24.00	9.46	4.03

2.4 Control Variables

We control for several confounding factors. Given the preponderance of research showing a strong link between political factors and environmental attitudes (Dunlap et al., 2016; Hornsey et al., 2016; McCright et al., 2016), we include controls for political affiliation and orientation.

Furthermore, our analysis considers a panoply of socioeconomic and demographic factors linked to climate change and other environmental attitudes (e.g., Dietz et al., 2007; Gifford & Nilsson, 2014; Milfont et al., 2015; Pearson et al., 2017). These include age (mean-centered, with a squared term when significant to account for potential non-linear relationships), sex, race, educational attainment, household income, marital status, parental status, frequency of religious service attendance, identification as an evangelical Christian, views on the Bible, urbanicity (rural, suburban, or urban residence), and geographic region within the United States.

2.5 Analysis

To investigate the relationship between SDO and climate change beliefs, while controlling other variables, we employed ordinary least squares (OLS) regression analysis. The dependent variable for all models is the linear measure of climate change beliefs. In Model 1, we use the composite SDO scale as the focal independent variable. In Model 2, we use the four individual subscales of SDO. All regression models are fully controlled. We also include figures to provide visual representations of the findings.

3. Results

Results displayed in Table 2 show the effects of SDO on climate change belief. Results from Model 1 show that SDO is unrelated to climate change belief. Results for each component of SDO are displayed in Model 2. Results show that both dominance scales do not correlate with climate change belief. Results for egalitarian subscales of SDO, however, demonstrate that both the equalization scale ($b = -.117$) and the equal chance scale ($b = -.060$) show a reduction in climate change belief. In other words, as opposition to equality and egalitarianism increase, climate concern decreases.

Table 2. OLS Regressions for SDO and Climate Change Belief

	Model 1	Model 2
	b	b
<i>SDO Questions</i>		
SDO1 (D – Top/Bottom)	-	-.027
SDO2 (D - Inferior)	-	-.011
SDO3 (E – Equalize Reversed)	-	-.117 ***
SDO4 (E – Equal Chance Reversed)	-	-.060 ***
Composite SDO Scale	-.050	-
Adj R ²	.280	.291

Model 1: $DV = CCgg$

* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$

*Note: Model includes controls for party affiliation, age, sex, race, socio-economic status, family status, and religious variables

These results are visually depicted in Figure 2 which show the average SDO score for each subscale across increasing levels of climate change belief. While SDO scores decline across climate change belief for all subscales, the rate of decline is most noticeable for the SDO-E items, and particularly SDO 3 - which focuses on equalization within society. At the lowest level of climate change belief, SDO 3 averages are the highest amongst the subscales but are the second lowest at the highest level of climate change belief.

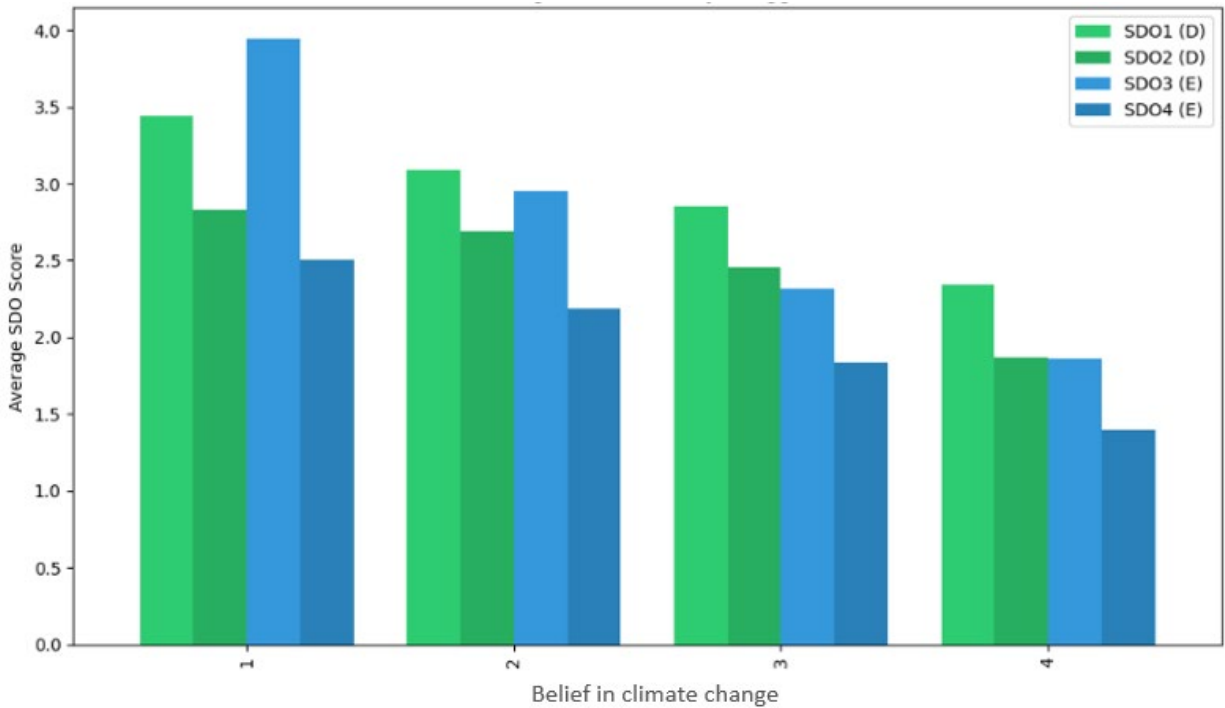


Figure 1: Climate Change Belief by SDO, where lower belief in greenhouse gas caused climate change is a 1, while higher belief is a 4.

Additionally, we provide heatmaps for geographic regions to demonstrate how the focal variables are distributed regionally. Figure 2 shows that climate change belief is strongest in the Pacific and Rust Belt states and lower in the Deep South. Figure 3 shows that the composite SDO scores are highest in the Mid-Atlantic region and lowest in the New England Region. Figure 4 shows that SDO subscales are quite varied across different regions of the United States.

How certain are you that greenhouse gases, such as those resulting from the combustion of coal, oil, natural gas, and other materials, are causing average global temperatures to rise?

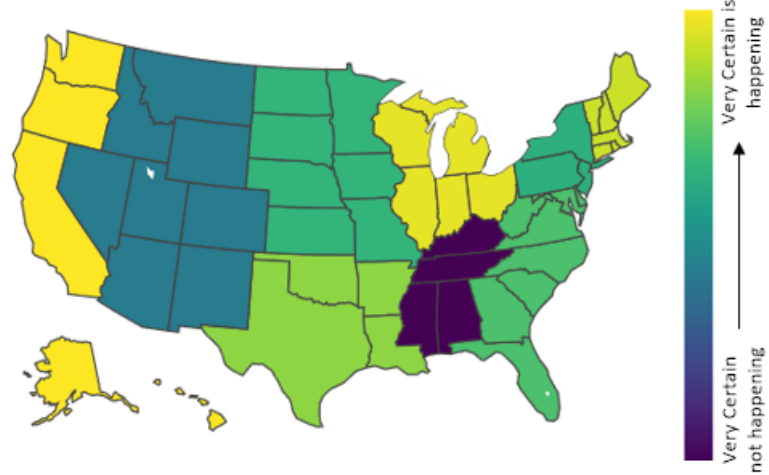


Figure 2: Map of climate change belief across US Census Divisions

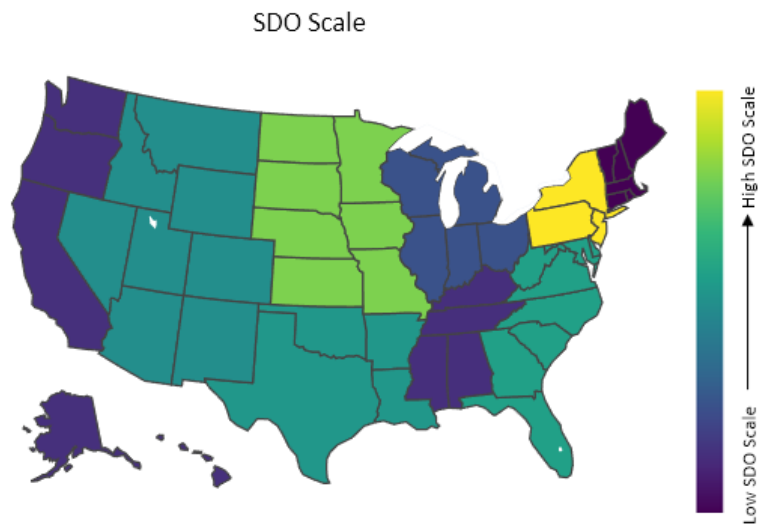


Figure 3: Map of SDO Scale across US Census Divisions

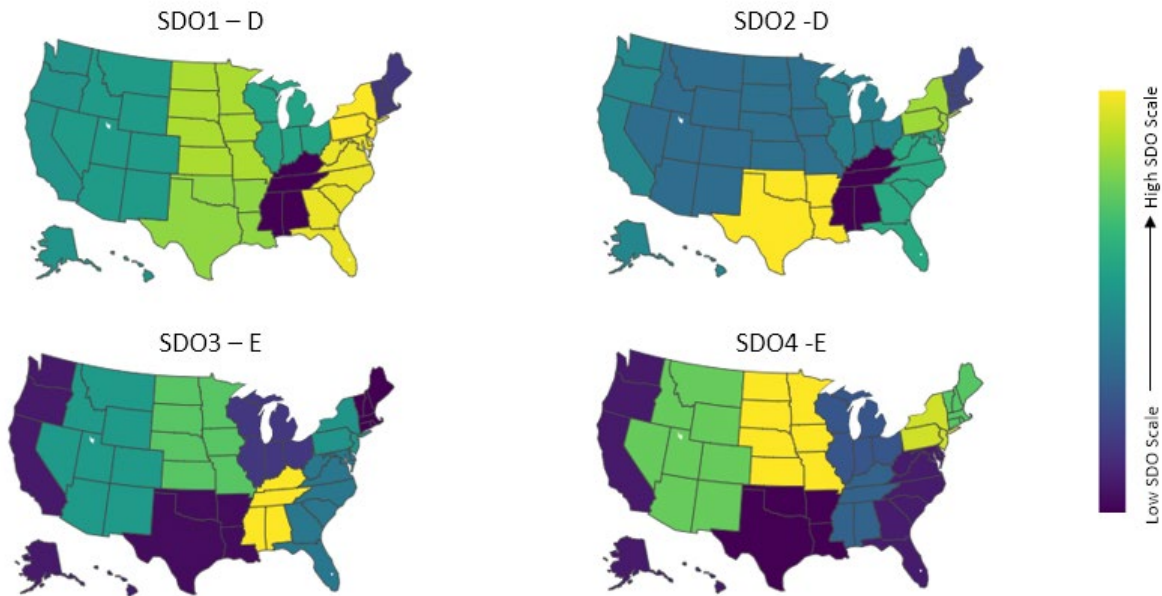


Figure 4: Map of individual SDO variables across US Census Divisions.

4. Discussion

The present study adds to scientific literature documenting the relationship between social dominance orientation and climate change beliefs by examining the different associations of SDO subdimensions (SDO-D and SDO-E) with climate change skepticism while controlling for a wide range of socioeconomic and demographic variables.

Our findings suggest that SDO-E (anti-egalitarianism) is a more of a predictor of climate change skepticism than SDO-D (dominance). This aligns with previous research (Jylhä & Akrami, 2015; Stanley & Wilson, 2019) and indicates that resistance to climate action may stem from opposition to egalitarian social change and a preference for maintaining hierarchy rather than overt dominance motives. Individuals high in SDO-E may view climate change mitigation efforts as a threat to the existing social and economic order (Hoffarth & Hodson, 2016) and find the emphasis on social justice and equity in climate change policies and campaigns particularly aversive (Jylhä & Akrami, 2015).

These results are also consistent with those of Milfont et al. (2018) who conducted a cross-national study examining the association between SDO and environmentalism in 25 countries. They found that SDO was negatively related to pro-environmental attitudes across nations, and that this association was stronger in societies with greater inequality and weaker performance on environmental issues. Our results similarly show that in the U.S., the negative relationship between SDO and climate change attitudes is more pronounced among the general population compared to results from previous studies using student samples. This could suggest that in the broader U.S. population, where inequality is higher and ideological divides may be sharper than amongst students, SDO exerts a stronger influence on climate change views - aligning with the cross-national patterns identified by Milfont et al. (2018).

5. Conclusion

This 2023 US survey provides evidence for the differential associations of SDO subdimensions with climate change beliefs in the United States, highlighting the critical role of anti-egalitarian attitudes in driving climate change skepticism. By controlling for a wide range of socioeconomic and demographic variables, we demonstrate the unique contribution of SDO to climate change attitudes, above and beyond other predictors. These findings have implications for understanding and addressing the ideological barriers to environmental action, suggesting that targeted interventions and communication strategies, such as emphasizing the co-benefits of climate change mitigation efforts for social stability, economic growth, and national security, may be effective in engaging individuals high in SDO-E.

Our research contributes to the broader literature on the psychological factors underlying environmental attitudes and behaviors, underscoring the importance of considering ideological variables alongside individual differences and integrating insights from social dominance theory and other relevant frameworks to develop more comprehensive models. Future research should build on these findings, investigating the mediating mechanisms underlying the SDO-climate change belief link and exploring the effectiveness of different approaches to engaging individuals across the ideological spectrum in collective efforts to address the urgent threat of climate change.

References

- Aichholzer, J., Plescia, C., & Kritzinger, S. (2022). A new measure of social dominance orientation: Introducing the Dominance and Anti-Egalitarianism Scale (DAES). *Journal of Personality Assessment*, 1-11.
- Bedle, H., Beutel, A.M., Garneau, C.R.H. (2024). SPEER23 Survey Report: Investigating Climate, Weather, and Energy Attitudes in the United States through the Lens of Social and Psychological Factors.
- Clarke, E. J., Ling, M., Kothe, E. J., Klas, A., & Richardson, B. (2019). Mitigation system threat partially mediates the effects of right-wing ideologies on climate change beliefs. *Journal of Applied Social Psychology*, 49(6), 349-360.
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd ed.). Lawrence Erlbaum Associates.
- Cook, J., Oreskes, N., Doran, P. T., Anderegg, W. R., Verheggen, B., Maibach, E. W., ... & Rice, K. (2016). Consensus on consensus: a synthesis of consensus estimates on human-caused global warming. *Environmental Research Letters*, 11(4), 048002.
- Dietz, T., Dan, A., & Shwom, R. (2007). Support for climate change policy: Social psychological and social structural influences. *Rural sociology*, 72(2), 185-214.
- Dunlap, R. E., McCright, A. M. & Yarosh, J. H. (2016). The political divide on climate change: partisan polarization widens in the US. *Environ. Sci. Pol. Sustain. Dev.* 58, 4–23.
- Feygina, I., Jost, J. T., & Goldsmith, R. E. (2010). System justification, the denial of global warming, and the possibility of "system-sanctioned change". *Personality and Social Psychology Bulletin*, 36(3), 326-338.
- Gifford, R., & Nilsson, A. (2014). Personal and social factors that influence pro-environmental concern and behaviour: A review. *International Journal of Psychology*, 49(3), 141-157.
- Häkkinen, K., & Akrami, N. (2014). Ideology and climate change denial. *Personality and Individual Differences*, 70, 62-65.
- Ho, A. K., Sidanius, J., Kteily, N., Sheehy-Skeffington, J., Pratto, F., Henkel, K. E., ... & Stewart, A. L. (2015). The nature of social dominance orientation: Theorizing and measuring preferences for intergroup inequality using the new SDO₇ scale. *Journal of Personality and Social Psychology*, 109(6), 1003-1028.
- Ho, A. K., Sidanius, J., Pratto, F., Levin, S., Thomsen, L., Kteily, N., & Sheehy-Skeffington, J. (2012). Social dominance orientation: Revisiting the structure and function of a variable predicting social and political attitudes. *Personality and Social Psychology Bulletin*, 38(5), 583-606.
- Hoffarth, M. R., & Hodson, G. (2016). Green on the outside, red on the inside: Perceived environmentalist threat as a factor explaining political polarization of climate change. *Journal of Environmental Psychology*, 45, 40-49.

Hornsey, M. J., Harris, E. A., Bain, P. G., & Fielding, K. S. (2016). Meta-analyses of the determinants and outcomes of belief in climate change. *Nature Climate Change*, 6(6), 622-626.

IPCC. (2021). *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Masson-Delmotte, V., P. Zhai, A. Pirani, S. L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M. I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T. K. Maycock, T. Waterfield, O. Yelekçi, R. Yu and B. Zhou (eds.)]. Cambridge University Press.

Jylhä, K. M., & Akrami, N. (2015). Social dominance orientation and climate change denial: The role of dominance and system justification. *Personality and Individual Differences*, 86, 108-111.

McCright, A. M., Charters, M., Dentzman, K. & Dietz, T. Examining the effectiveness of climate change frames in the face of a climate change denial counter-frame. *Top. Cogn. Sci.* 8, 76–97 (2016).

Milfont, T. L., Milojev, P., Greaves, L. M., & Sibley, C. G. (2015). Socio-structural and psychological foundations of climate change beliefs. *New Zealand Journal of Psychology*, 44(1), 17-30.

Milfont, T. L., Richter, I., Sibley, C. G., Wilson, M. S., & Fischer, R. (2013). Environmental consequences of the desire to dominate and be superior. *Personality and Social Psychology Bulletin*, 39(9), 1127-1138.

Milfont, T. L., Bain, P. G., Kashima, Y., Corral-Verdugo, V., Pasquali, C., Johansson, L. O., ... & Einarsdóttir, G. (2018). On the relation between social dominance orientation and environmentalism: A 25-nation study. *Social Psychological and Personality Science*, 9(7), 802-814.

Pearson, A. R., Ballew, M. T., Naiman, S., & Schuldt, J. P. (2017). Race, class, gender and climate change communication. In *Oxford research encyclopedia of climate science*.

Pew Research Center. (2020). Two-Thirds of Americans Think Government Should Do More on Climate. Retrieved from <https://www.pewresearch.org/science/2020/06/23/two-thirds-of-americans-think-government-should-do-more-on-climate/>

Pratto, F., Sidanius, J., Stallworth, L. M., & Malle, B. F. (1994). Social dominance orientation: A personality variable predicting social and political attitudes. *Journal of Personality and Social Psychology*, 67(4), 741-763.

Pratto, F., Çidam, A., Stewart, A. L., Zeineddine, F. B., Aranda, M., Aiello, A., ... & Henkel, K. E. (2013). Social dominance in context and in individuals: Contextual moderation of robust effects of social dominance orientation in 15 languages and 20 countries. *Social Psychological and Personality Science*, 4(5), 587-599.

Stanley, S. K., & Wilson, M. S. (2019). Meta-analysing the association between social dominance orientation, authoritarianism, and attitudes on the environment and climate change. *Journal of Environmental Psychology*, 61, 46-56.

Stanley, S. K., Wilson, M. S., Sibley, C. G., & Milfont, T. L. (2017). Dimensions of social dominance and their associations with environmentalism. *Personality and Individual Differences*, 107, 228-236.