Spring 5-10-2017

# The Effects of System Justification and Social Dominance Orientation on the Temporal Discounting of Climate Change

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## Introduction

The purpose of this thesis is to isolate and examine factors affecting an individual's perceptions of climate change and its associated risks. Some of the largest polluters including the United States (45%) and China (18%) represent a segment of the least concerned nations with the development of global climate change, compared to the global median rating of concern for global climate change (54%) (Stokes, et al., 2015). Relationships such as this are the focus of the present research.

Though research within this area of psychology is sparse, the relevance of climate change to many of our social systems promises continued research exploration. Division 34 of the APA for example has established a task force with the specific focus of the Interface Between Psychology & Global Climate Change (Swim, et al., 2011). The task force seeks to address six major questions related to human behavioral contributions to climate change, the psychosocial impacts of climate change, adaptation and coping strategies, the perception of climate change, psychological barriers that impede action, as well as the role of psychologists in climate change mitigation.

## Hypothesis

If an individual has high system justification relating to the current economic system or high social dominance orientation, then they will discount the future of climate change at a higher rate than an individual who has low system justification relating to the current economic system or lower social dominance orientation

## Key Definitions

*Independent variables*

System Justification: The justification of the status quo of one's social system, even when in contradiction with communal or individual interests (Jost & Banaji, 1994). Individuals are largely dependent on these systems, whether social, economic or political and are often driven by motivational cognitive processes to defend such systems on an unconscious level (Jost, Banaji, & Nosek 2004; van der Toorn & Jost, 2014).

Social Dominance Orientation: The motivation to maintain and protect the status quo of a system based on the hierarchical structure that exists (Häkkinen & Akrami, 2014).

*Dependent variable*

Future Discounting: The more distant in the future an event may occur (delay discounting), the lower the appraisal of its value or importance will be (Voinov & Farley, 2007). Additionally, future discounting is the tendency to devalue outcomes based on the likelihood of the outcome occurring (probabilistic discounting), as well as whom the outcome may affect (social discounting) (Kaplan, Reed, & McKerchar, 2014).

## Table Notes

BBNSS: Belief in Benevolence of the National System Scale, CC: Climate Change, CCD: Climate Change Denial, CCM: Compensatory Control Model, CFC: Consideration of Future, CO2: Carbon Dioxide, Disc: Discounting, EFT: Episodic Future Thin=king, ESJ: Economic System Justification, FCC: Future Consequence Consideration, FT: Future Thinking, GMT: Global-Mean Temperature, GSJ: General System Justification, HPRS: Hong Psychological Reactance Scale, HSBS: human supremacy beliefs-scale, HSC: High System Criticism, HSD: High System Dependence, IDTC: Interdecadal Temperature Change, LRPO: Left-Right Political Orientation, LSC: Low System Criticism, LSD: Low System Dependence, NDO: Nature Dominance Orientation, NFb: Negative Feedback, ODP: Observed Delay Procrastination, PC's: Phenomenological Characteristics, PFb: Positive Feedback, PoP: Perception of Peers, PPS: Pure Procrastination Scale, Proc: Procrastination, PSQ: Perceived Sensory Qualities, RWA: Right-Wing Authoritarianism, SCBCS: The Santa Clara Brief Compassion Scale (Compassion), SDO: Social Dominance Orientation, SDO7: Social Dominance Orientation 7 Scale, SJ: System Justification, SJT: System Justification Theory, SRM: Simple Regression Model, VAM: Visual Analogue Measure, VDP: Voluntary Delay Procrastination.

## Results

| Study / Relation to CC | Sample Size | Theories of Interest | Method of Evaluation | Conditions | Assessment Instruments | Results |
|---|---|---|---|---|---|---|
| Hennes et al. (2016)<br>CC Specific<br>***Support*** | 57 | SJT | Recall of climate science facts | HSD vs. LSD Manipulation | 4-item recall questionnaire | Those with HSD answered incorrectly more than those with LSD. (Q3. HSD 21.4% correct, LSD 64% correct) |
| Häkkinen et al. (2014)<br>CC Specific<br>***Support*** | 135 | SDO | CC Denial | SDO, RWA, LRPO | 17-item scale measuring different forms of CC denial | SDO was a predictor of denial with a covariance of (r = .53). LRPO was significant (r = .35), and RWA (r =.33) was not. |
| Kaplan et al. (2014)<br>CC Specific<br>***Support*** | 206 | Disc. | Disc. rate of concern and willingness to take action | Delay discounting, social discounting & probabilistic discounting | Level of concern and level of willingness to act measured on a VAM | Participants expressed greater rates of discounting concern than rates of discounting their willingness to take action in the delay (M = .82) and (M =.196), the social (M = .084) and (M =.439) and the probabilistic (M = 1.25) and (M = 4.45) conditions, respectively. |
| van der Toorn et al. (2014)<br>Not CC specific<br>***Support*** | 58 | SJT | National Attachment | High vs. Low System Criticism Manipulation | 9-point Likert scale measuring Identification with America | Less favorable evaluations of identification with the status quo among the HSC condition (M = 4.04) compared to the LSC condition (M = 4.36). |
| Qian & Lu, (2010)<br>CC Specific<br>***Refute*** | Climate Change Models (~1850-present) | Periodic Oscillation in GMT | Reconstruct GMT series | Solar radiation, sea surface temperatures & CO2 levels | GMT | Based on previous variability in GMT and their relation to the natural variability of natural forcings, researchers predict global cooling in the 2030's and warming in the 2060's |
| Knight et al. (2014)<br>Not CC Specific<br>***Mixed*** | 72 | SJT | SJ measured after control manipulation | Control/no control loss & high/low reactance | CCM, HPRS, BBNSS | High reactance individuals in the control loss condition demonstrated more SJ (M = 5.0) than those in the no control loss condition (M = 2.0). Among low reactance individuals SJ remained stable (M = 4.5) for both conditions. |
| Zhu et al. (2016)<br>CC Specific<br>***Mixed*** | Climate Data (1970's) | Human caused and natural variability in IDTC | Climate Data Reanalysis | Anthropogenic forcings and natural decadal variability | Interdecadal Temperature Change | Anthropogenic forcings accounted for 52.3-62.1% of IDTC and natural decadal variability accounted for 37.9-47.7% of the IDTC. |

## Discussion and Conclusions

The findings indicated that individuals with high system justification discounted climate change more than those with low system justification. There was a significant relationship between system justification and social dominance orientation, as well as a demonstration of social dominance orientation being a significant predictor of climate change denial. Among supporting research findings, Hennes et al. (2016) best supported the thesis hypothesis by demonstrating that those with high system dependence misremembered climate science facts more than those with low system dependence thus demonstrating biased recall which could result in a devalued appraisal. Another study by Kaplan et al. (2014) demonstrated the discrepancy between an individuals ratings of concern and ratings of willingness to act on an environmental-loss discounting task. The results were reflected across all three tests on temporal, social and probability discounting. Relating to social dominance orientation Häkkinen and Akrami (2014) found SDO to be a significant predictor of climate change denial and Martin et al. (2015) were able to connect these previous findings with the thesis hypothesis to a greater extent by demonstrating a significant relationship between social dominance orientation and economic system justification.

Research focused on the influence of anthropogenic forcings on climate systems demonstrated mixed findings. Qian & Lu (2010) found that climate system data demonstrated a strong influence of natural periodic oscillations in our climate system that are predicted to induce a global cooling period in the 2030's and a warming period in the 2060's. In partial contradiction, research by Zhu et al. (2016) found that anthropogenic forcings accounted for 52.3-62.1% of interdecadal temperature change and natural decadal variability accounted for 37.9-47.4% of the interdecadal temperature change. These findings demonstrate the unsettled nature of the belief that virtual unanimity exists in the scientific community regarding the primary effect of anthropogenic forcings on climate change. Additionally, Jylhä and Akrami (2015) had mixed findings which found that system justification and climate change denial were mediated by group based dominance variables (SDO and nature dominance). They also found that when testing social dominance orientation and general system justification as predictors for denial, social dominance orientation was a predictor while general system justification was not.

Research within this area can be used to help inform environmental regulation for consumer goods and services, the adoption of increased infrastructure efficiencies, the implementation of economic instruments and incentives, as well as emissions permitting, among other programs.

## Future Study

Future research in this area could utilize the irregular 2017 winter storm episodes in Southern California as a natural experiment to see how extreme weather episodes such as extreme rain may influence the discounting of climate change. The irregular precipitation events may increase the discounting of climate change contributing to unrepresentative perceptions of the state of Southern California's drought.

## Acknowledgements

I would like to acknowledge my senior thesis advisor Steven Schandler, Ph.D., Professor of Psychology.

## Key References

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