

# Social Identity and the Environment: The Influence of Group Processes on Environmentally Sustainable Behaviour

Submitted by Christopher C. Duke to the University of Exeter  
as a thesis for the degree of  
Doctor of Philosophy in Psychology  
in September 2010.



This thesis is available for library use on the understanding that it is copyright material  
and that no quotation from the thesis may be published without proper  
acknowledgement.

I certify that all material in this thesis which is not my own work has been identified  
and that no material has previously been submitted and approved for the award of a  
degree by this or any other University.

Christopher C. Duke

The state of the natural environment is a topic of increasing concern, with climate change, loss of biodiversity, and diminishing natural resources all posing eminent threats to the well-being of the planet and its inhabitants. Much of this environmental degradation is caused by human behaviour that can be changed. Psychologists have realised their role in understanding and influencing pro-environmental behaviours to help (see Chapter 1). Most psychological research of environmental behaviour has focused on the individual person as the unit of analysis. While this has been helpful, less attention has been given to how group memberships, and the social influences these create, affect environmental behaviour. Because environmental behaviour often occurs within a social context, understanding the social element may be critically important to promoting environmentally sustainable behaviour (see Chapter 2). Using the social identity approach, this research investigates how various aspects of social group membership interact with individual attributes to influence environmental behaviour. Three related strands of research explore this issue (see Chapter 3 for an overview).

In Chapter 4, two studies (Studies 1 and 2) examined how group feedback in the form of social comparisons affect individual behaviour. Based on social identity theory, it was predicted that positive social comparisons would lead to more positive behaviour, and less positive comparisons to less positive behaviour, especially among individuals who identified strongly with the target ingroup. Results from both studies found some support for these hypotheses on certain (but not all) behavioural dependent measures, both at the time of manipulation and one week later. This supports the notion that individual social identification strength can moderate behavioural response to group-level feedback on environmental topics.

In Chapter 5, Study 3 considered how interaction within groups via discussion might induce group norms about environmental behaviour that over-ride the effects of intergroup comparisons. A design similar to Study 1 was used, with the addition of a small-group discussion following the feedback manipulation. Discussion content was hypothesised to predict environmental behaviour, with the feedback manipulation having less impact than in Study 1. Results found that the more participants discussed environmental behaviours, the more they engaged in them one week later. This effect was independent of pre-existing environmental values, suggesting that the effects of group interaction were not merely a reflection of existing individual orientations. Following the discussion, values were also found to be very strong predictors of behaviour, a result not found in Study 1, suggesting that group interaction not only shapes individual behaviour but also reduces the classic value-action gap. Together, these findings point to the powerful role that intra-group interaction can play in forming norms of environmental behaviour and shaping individual responses.

In Chapter 6, two studies (Studies 4 and 5) explored how comparisons within a group over time (i.e., intra-group comparisons) may function differently to comparisons between groups (i.e., inter-group comparisons), which were explored in Chapter 4. Based on the findings in Chapter 4, positive intergroup comparisons were predicted to result in more positive individual intentions, whereas negative intergroup comparisons were expected to result in reduced intentions. With respect to intra-group comparisons, however, the opposite pattern of effects was predicted. The results of Study 4 did not support these hypotheses. However, feedback from participants suggested that the experimental design may have produced reactance. To address this, Study 5 made use of a revised design, and the results of this study indicated support for the hypotheses. Importantly, in addition to negative and positive comparisons having opposing effects depending on whether these were intra- or inter-group, the processes behind these

effects also differed. The effects of intra-group comparisons were mediated by shared responsibility whereas the effects of intergroup comparisons were mediated by environmental value centrality.

These results are integrated and discussed in Chapter 7. The recurring theme of these results is that group-level feedback can interact with individual-level variables in subtle but powerful ways, leading to differing outcomes of environmental behaviour. These findings highlight the socially imbedded nature of individual environmental actions, and suggest new avenues for theoretical and practical work in the environmental domain. In particular, on the basis of the studies included in this thesis it is recommended that psychologists who are interested in understanding and changing individual environmental behaviour should incorporate an understanding of intra- and inter-group processes into their theorising and future research.

## – TABLE OF CONTENTS –

ABSTRACT	2
LIST OF TABLES AND FIGURES	10
ACKNOWLEDGEMENTS	13
PUBLICATIONS RELEVANT TO THE THESIS	14
STATEMENT OF THE SUPERVISORS' CONTRIBUTIONS	15
<b>CHAPTER 1: The Environmental Dilemma</b>	16
Environmental collapse: historical lessons	17
Environmental collapse: the present dilemma	20
Environmental degradation as a behavioural choice	24
The challenge of responding to environmental threats	26
Psychological research and environmental behaviour	28
Informational models of environmental behaviour	30
Rational-economic models of environmental behaviour	31
Attitudinal models of environmental behaviour	33
Habitual models of environmental behaviour	35
Social dilemma models of environmental behaviour	37
Normative models of environmental behaviour	40
Attempts at theoretical integration	41
Conclusion	43
<b>CHAPTER 2: Environmental Behaviour as a Group-Level Outcome</b>	44
Environmental behaviour as a function of social group processes	44
Environmental behaviour is socially relative	46
Environmental issues are already integrated with existing identities	48
Environmental issues are often ambiguous	50
Environmental degradation is a shared problem	51
Social identity theory	53
Self-categorization theory	55
Prior research into social groups and environmental behaviour	57
Conclusion	61
<b>CHAPTER 3: Rationale and Structure of the Thesis</b>	63
Rationale for the present research	64
Chapter 4	65

Chapter 5	66
Chapter 6	67
Chapter 7	68
<b>CHAPTER 4: The Interaction of Environmental Group Feedback and</b>	
Social Identification Strength	69
Identity and pro-environmental behaviour	70
Social identity strength and pro-environmental behaviour	72
The present research	74
<b>Study 1</b>	75
Method	75
Participants	75
Design	75
Manipulations	75
Measures	76
Social identification	76
Ingroup environmental norms	77
Pro-environmental volunteering	77
Pro-environmental behaviours	77
Environmental values	77
Procedure	78
Results	79
Ingroup environmental norms	80
Moderation of identification and feedback valence on behaviour	80
Mediation of group norms	84
Discussion	84
<b>Study 2</b>	85
Method	85
Participants	85
Design	85
Manipulations	86
Measures	86
Social identification	86
Ingroup environmental norms	86
Negative emotions	87

	7
Calm emotions	87
Productivity emotions	87
Pro-environmental volunteering	87
Pro-environmental behaviours	87
Procedure	88
Results	88
Ingroup environmental norms	88
Emotions	89
Moderation of identification and feedback valence on behaviour	90
Mediation of group norms	95
Discussion	96
General Discussion	97
Practical implications	100
Limitations and future research	101
Conclusion	102
<b>CHAPTER 5: Small-Group Interaction and Inductive Norm Formation</b>	104
The social identity approach and small-group interaction	104
Classic investigations of small-group interaction	106
Inductive and deductive influence	108
The present research	109
<b>Study 3</b>	110
Method	110
Participants	110
Design	110
Manipulations	110
Measures	111
Social identification	111
Environmental values	112
Discussion analysis	112
Pro-environmental volunteering	112
Pro-environmental behaviours	113
Procedure	114
Results	114
Overview of typical discussion content	114

Manipulation check	117
Moderation of identification and feedback valence on behaviour	118
Moderation of discussion length and content on environmental values	121
Moderation of discussion length and content on behaviour	124
Predictive power of environmental values and behaviour	127
Discussion	129
Narrowing the value-action gap	134
Practical implications	134
Limitations and future research	136
Conclusion	138
<b>CHAPTER 6: Differential Effects of Comparisons Between Groups and</b>	
Comparisons Within Groups	139
Social identity and influence	140
The present research	144
<b>Study 4</b>	146
Method	146
Participants	146
Design	147
Manipulations	147
Measures	148
National stereotypes	148
Conservation intentions	148
Procedure	149
Results	149
Manipulation check	150
National stereotypes	150
Conservation intentions	151
Discussion	151
<b>Study 5</b>	152
Method	153
Participants	153
Design	153
Manipulations	153
Measures	153

	9
Environmental value centrality	153
Shared environmental responsibility	154
Procedure	154
Results	154
Manipulation check	154
Conservation intentions	155
Mediation	158
Discussion	160
General Discussion	162
Practical implications	166
Conclusion	157
<b>CHAPTER 7: General Discussion</b>	167
Chapter 4: Summary of results	169
Chapter 5: Summary of results	171
Chapter 6: Summary of results	173
Integration of results	176
Theoretical implications	177
Informational models	181
Rational-economic models	181
Attitudinal models	182
Habitual models	183
Social dilemma models	183
Normative models	183
Practical implications	184
Future research	190
Contribution of the thesis	192
Conclusion	193
APPENDIX A	195
APPENDIX B	196
REFERENCES	199

## – LIST OF TABLES AND FIGURES –

FIGURE 2.1. Percentage of Americans agreeing that “the effects of global warming have already begun” by political party and year	50
TABLE 4.1. Means and Standard Deviations of All Variables in Studies 1 and 2 by Condition	79
TABLE 4.2. Moderated Regression Table of Feedback Valence, Comparison Type, and Identification Predicting Volunteering Intentions (Time 1), Study 1.	81
FIGURE 4.1. The interaction of feedback valence and identification strength on pro-environmental volunteering intentions at Time 1, Study 1.	82
TABLE 4.3. Moderated Regression Table of Feedback Valence, Comparison Type, and Identification Predicting General Conservation (Time 2), Study 1.	83
TABLE 4.4. Moderated Regression Table of Feedback Valence, Comparison Reference, and Identification Predicting Volunteering Intentions (Time 1), Study 2.	92
FIGURE 4.2. The interaction of feedback valence and identification strength on pro-environmental volunteering intentions at Time 1, Study 2.	93
TABLE 4.5. Moderated Regression Table of Feedback Valence, Comparison Type, and Identification Predicting General Conservation (Time 2), Study 2.	94
FIGURE 4.3. The interaction of feedback valence and identification strength on general conservation behaviour at Time 2, Study 2.	95
TABLE 5.1. Means and Standard Deviations of Variables by Valence and Comparison Type, Study 3.	118
TABLE 5.2. Moderated Regression Table for Volunteering by Valence and Comparison Type (Time 1), Study 3.	119
TABLE 5.3. Moderated Regression Table for General Conservation by Valence and Comparison Type (Time 2), Study 3.	120
FIGURE 5.1. The interaction of comparison type and identification on self-reported environmental behaviours one week after discussion, Study 3.	121
TABLE 5.4. Moderated HLM Table for Values (Time 1) by Discussion Time and Content with Pre-Test Values, Study 3.	123

	11
TABLE 5.5. Moderated HLM Table for Values (Time 2) by Discussion Time and Content with Pre-Test Values, Study 3.	112
TABLE 5.6. Moderated HLM Table for Values (Time 2) by Discussion Time and Content with Values (Time 1), Study 3.	124
TABLE 5.7. Moderated HLM Table for Volunteering (Time 1) by Discussion Time and Content, Study 3.	125
TABLE 5.8. Moderated HLM Table for General Conservation (Time 2) by Discussion Time and Content, Study 3.	126
FIGURE 5.2. The interaction of environmental discussion content and discussion length on self-reported environmental behaviours one week after discussion, controlling for pre-test environmental values, Study 3.	127
TABLE 5.9. Correlation $r$ and $R^2$ Values of Value Centrality and Env. Behaviours by Presence of Discussion, Studies 1 and 3.	128
FIGURE 5.3. $R^2$ levels of environmental values (Time 1) predicting volunteering intentions (Time 1) and self-reported conservation behaviours one week later (Time 2), Studies 1 and 3.	129
TABLE 6.1. Means and Standard Deviations of All Variables in Studies 4 and 5 by Feedback Valence and Comparison Type.	149
FIGURE 6.1. Mean shared conservation intentions by feedback valence and comparison type, Study 5.	155
FIGURE 6.2. Mean environmental value centrality by feedback valence and comparison type, Study 5.	157
FIGURE 6.3. Mean shared environmental responsibility by feedback valence and comparison type, Study 5.	157
FIGURE 6.4. Mediation of value centrality on valence and environmental intentions for intergroup comparisons, Study 5.	159
FIGURE 6.5. Mediation of shared responsibility on valence and environmental intentions for intragroup comparisons, Study 5.	160
TABLE A.1. Moderated HLM Table for Volunteering with Pre-Test Values (Time 1), Study 3.	195
TABLE A.2. Moderated HLM Table for General Conservation with Pre-Test Values (Time 2), Study 3.	195
TABLE B.1. Moderated Regression Table for Volunteering (Time 1), Study 3.	196

TABLE B.2. Moderated Regression Table for Volunteering with Pre-Test Values (Time 1), Study 3.	196
TABLE B.3. Moderated Regression Table for General Conservation (Time 2), Study 3.	197
TABLE B.4. Moderated Regression Table for General Conservation (Time 2) with Pre-Test Values, Study 3.	197
TABLE B.5. Moderated Regression Table for General Conservation (Time 2) with Time 2 Values, Study 3.	198

## – ACKNOWLEDGEMENTS –

This work would not have been possible without my supervisors Thomas Morton and Joanne Smith. I am both grateful and indebted to them for their patience, guidance, and mentorship over these recent years. Their continuing help has been invaluable to both this thesis and my personal maturation as a researcher.

I am honoured to have been a part of the Social, Economic, Environmental, and Organisational Research Group (SEEORG) at the University of Exeter over the course of my postgraduate career. Amidst their guiding fellowship, I have learned and grown much. Thank you also to Victor for setting me on the right path in the early days. Thank you to Carl and Jared for demonstrating the importance of using compelling communication in disseminating both research results and the philosophy of the scientific endeavour. Thank you also to Paul and David for feedback on earlier drafts.

I am deeply indebted to my friends and family for too many reasons to list, but regarding the present work, for providing support and encouragement along the way and making the whole process far more enjoyable than it could have been.

Finally, thank you to the University of Exeter and the Overseas Research Student Awards Scheme (ORSAS) for their support in sponsoring this work through an Exeter Graduate Fellowship and Overseas Research Student Award.

## – PUBLICATIONS RELEVANT TO THE THESIS –

Study 5 forms the basis for part of the following book chapter:

Rabinovich, A., Morton, T., & Duke, C. C. (in press). Collective self and individual choice: The role of social comparisons in promoting public engagement with climate change. In L. Whitmarsh, S. O'Neill, & I. Lorenzoni (Eds.), *Engaging the public with climate change: Behaviour change and communication*. Earthscan.

A manuscript based on Study 5 was submitted for publication in the *British Journal of Social Psychology*, and has been invited for revision and resubmission:

Duke, C. C., Morton, T. A., & Smith, J. R. (under review). *Better or worse than who? Different types of comparisons lead to different paths of environmental behaviour*.

Both of these publications draw on the same study, which was designed, conducted, and analysed by the candidate under the supervision of Thomas Morton and Joanne Smith. While the book chapter was authored by Anna Rabinovich, making reference to the data from this thesis, the manuscript reporting the study was authored primarily by the candidate, as indicated by first authorship.

– STATEMENT OF THE SUPERVISORS’  
CONTRIBUTIONS TO CO-AUTHORED PAPERS –

As outlined in the candidate’s statement above, published work to date has focussed on the data reported in Study 5. In the manuscript that reports this study (currently under review), the candidate took the lead role. This includes preparing the literature review, designing and executing the study, statistical analysis and interpretation of the data, and the ultimate write-up for publication. The first supervisor contributed to the papers by advising on statistical analysis and interpretation, relevant literature, and writing style. The second supervisor also read and commented on drafts of the manuscript. The candidate is also listed as a co-author on a chapter prepared by Anna Rabinovich. This chapter summarises the results of a larger project on social identity processes on environmental behaviour, one section of which summarises key findings from the candidate’s work. Co-authorship on this work acknowledges the candidate’s contribution to this larger research project and their role in preparing the summary of their specific findings. Moreover, the theoretical framing of the empirical work presented in this thesis and the arrangement of the papers was a product of concerted discussions of the thesis content between the candidate and the supervisors.

Dr. Thomas Morton

Dr. Joanne Smith