



Routledge Explorations in Environmental Studies

SATIRE, HUMOR, AND ENVIRONMENTAL CRISES

Massih Zekavat and Tabea Scheel



Satire, Humor, and Environmental Crises

Satire, Humor, and Environmental Crises explores how satire and humor can be employed to address and mitigate ecological crises at individual and collective levels.

Besides scientific and technological endeavors, solutions to ecological crises must entail social and communicative reforms to persuade citizens, corporations, organizations, and policymakers to adopt more sustainable lifestyles and policies. This monograph reassesses environmental behavior and messaging and explores the promises of humorous and satiric communication therein. It draws upon a solid and interdisciplinary theoretical foundation to explicate the individual, social, and ecospheric determinants of behavior. Creative works of popular culture across various modes of expression, including *The Simpsons*, *Last Week Tonight with John Oliver*, and *The New Yorker* cartoons, are examined to illustrate the strong if underappreciated relationship between humor and the environment. This is followed by a discussion of the instruments and methodological subtleties involved in measuring the impacts of humor and satire in environmental advocacy for the purpose of conducting empirical research. More broadly, this book aspires to participate in urgent cultural and political discussions about how we can evaluate and intervene in the full diversity of environmental crises, engage a broad set of internal and external partners and stakeholders, and develop models for positive social and environmental transformations.

This book will be of great interest to students and scholars interested in environmental humanities, communication science, psychology, and critical humor studies. It can further benefit environmental activists, policymakers, NGOs, and campaign organizers.

Massih Zekavat is researcher and postdoctoral fellow at the Center for Language and Cognition Groningen, Faculty of Arts, The University of Groningen, The Netherlands, and former Alexander von Humboldt Foundation postdoctoral fellow at Europa-Universität Flensburg, Germany.

Tabea Scheel is professor in the Department of Work and Organizational Psychology, International Institute of Management and Economic Education, Europa-Universität Flensburg, Germany.

Routledge Explorations in Environmental Studies

Governance Networks for Sustainable Cities

Connecting Theory and Practice in Europe

Katherine Maxwell

Nature and Bureaucracy

The Wildness of Managed Landscapes

David Jenkins

Art, Farming and Food for the Future

Transforming Agriculture

Barbara L. Benish and Nathalie Blanc

Sustainable Places

Addressing Social Inequality and Environmental Crisis

David Adamson, Lorena Axinte, Mark Lang and Terry Marsden

Urban Aerial Pesticide Spraying Campaigns

Government Disinformation, Industry Profits, and Public Harm

Manuel Vallée

Addicted to Growth

Societal Therapy for a Sustainable Wellbeing Future

Robert Costanza

Coastal Disaster Risk Management in Bangladesh

Vulnerability and Resilience

Edited by Mahbuba Nasreen, Khondoker Mokaddem Hossain and

Mohammed Moniruzzaman Khan

A History of Radioecology

Patrick C. Kangas

Satire, Humor, and Environmental Crises

Massih Zekavat and Tabea Scheel

For more information about this series, please visit: www.routledge.com/Routledge-Explorations-in-Environmental-Studies/book-series/REES

Satire, Humor, and Environmental Crises

Massih Zekavat and Tabea Scheel

 **Routledge**
Taylor & Francis Group
LONDON AND NEW YORK

earthscan
from Routledge

First published 2023
by Routledge
4 Park Square, Milton Park, Abingdon, Oxon OX14 4RN

and by Routledge
605 Third Avenue, New York, NY 10158

Routledge is an imprint of the Taylor & Francis Group, an informa business

© 2023 Massih Zekavat and Tabea Scheel

The right of Massih Zekavat and Tabea Scheel to be identified as authors of this work has been asserted in accordance with sections 77 and 78 of the Copyright, Designs and Patents Act 1988.

All rights reserved. No part of this book may be reprinted or reproduced or utilised in any form or by any electronic, mechanical, or other means, now known or hereafter invented, including photocopying and recording, or in any information storage or retrieval system, without permission in writing from the publishers.

Trademark notice: Product or corporate names may be trademarks or registered trademarks, and are used only for identification and explanation without intent to infringe.

British Library Cataloguing-in-Publication Data

A catalogue record for this book is available from the British Library

Library of Congress Cataloging-in-Publication Data

Names: Zekavat, Massih, author. | Scheel, Tabea, author.

Title: Satire, humor, and environmental crises / Massih Zekavat and Tabea Scheel.

Description: Abingdon, Oxon ; New York : Routledge, 2023. |

Series: Routledge explorations in environmental studies |

Includes bibliographical references and index.

Subjects: LCSH: Climatic changes in mass media. | Satire. | Wit and humor.

Classification: LCC P96.C58 Z45 2023 (print) | LCC P96.C58 (ebook) |

DDC 070.4/4955163—dc23/eng/20230202

LC record available at <https://lcn.loc.gov/2022053174>

LC ebook record available at <https://lcn.loc.gov/2022053175>

ISBN: 978-0-367-51768-7 (hbk)

ISBN: 978-1-032-47367-3 (pbk)

ISBN: 978-1-003-05514-3 (ebk)

DOI: 10.4324/9781003055143

Typeset in Times New Roman
by codeMantra

Contents

<i>List of Illustrations</i>	vii
<i>Acknowledgments</i>	ix
1 Introduction	1
2 Theories, Types, and Functions of Humor: A Brief Overview	14
3 Determinants of Pro-Environmental Behavior	41
4 A Modular Interdependency Model for the Potential Impact of Humor and Satire on Environmental Behavior	84
5 Humorous and Satiric Environmental Advocacy in Popular Culture	126
6 Measuring the Potential Impacts of Humor and Satire on Environmental Behavior	186
7 Conclusion and Implications	218
<i>Index</i>	229



Taylor & Francis

Taylor & Francis Group

<http://taylorandfrancis.com>

Illustrations

Figures

2.1	Four basic rhetorical functions of humor (Meyer, 2000)	23
3.1	TPB with background factors (https://people.umass.edu/aizen/tpb.background.html)	43
4.1	Frame model, its dimensions, and the three modules: individuals are located within the ecosphere and the society with its cultural, political, and economic components	86
4.2	Simplified model for pro-environmental behavior	90
4.3	Sub-model II: the economy of survival	94
4.4	Sub-model III: social—that is, political, economic, and cultural—determinants of environmental behavior	96
4.5	Sub-model III: the relationships between regulatory systems, identities, and behavior	97
4.6	Sub-model III: the relationships between political system, identities, and behavior	97
4.7	Sub-model III: the relationships between political persuasion, identities, and behavior	98
4.8	Sub-model III: the relationships between socio-economic status, identities, and behavior	98
4.9	Sub-model III: the relationships between corporeality, identities, and behavior	99
4.10	Sub-model III: the relationships between lifestyle, identities, and behavior	99
4.11	Four basic rhetorical functions of humor (Meyer, 2000)	113
5.1	“Not So Frosty The Snowman”	165
5.2	“That Scotus EPA Case”	167
5.3	“Why Oil Spills Are Good”	172
5.4	Intersectionality and climate justice [I]	178
5.5	Intersectionality and climate justice [II]	179
5.6	Intersectionality and climate justice [III]	180

Table

2.1	Four humor styles according to Martin et al. (2003)	22
-----	---	----



Taylor & Francis

Taylor & Francis Group

<http://taylorandfrancis.com>

Acknowledgments

We would like to thank Prof. Jessica Milner Davis, Monireh Dayhimnia, Prof. John Hoeks, Saba and Sara Mirhosseini, Ruwen Kayonzo Pommerenke, Emma Schäfer, Amira and Anaïs and Lela Scheel, Dr. Maria Schwab, Matthew Shobbrook, Melanie Strzelecki, Dr. Dirk Wortmann, the Alexander von Humboldt Foundation, and Stiftung Gesunde Erde Gesunde Menschen for their kind support.



Taylor & Francis

Taylor & Francis Group

<http://taylorandfrancis.com>

1 Introduction

Background

Discussions about climate change have been on the rise in political and public spheres. Many associations, organizations, NGOs, and movements are dedicated to raising awareness about environmental crises and impending catastrophes. The media also regularly features stories on ecological problems. These attempts have been successfully translated into legislation in some countries around the world. Given the scale of the problem and its rate of aggravation, pro-environmental accomplishments, however, have been so far inadequate. While many people around the world are struggling with the consequences of climate change in their daily lives as in experiencing droughts, crop failures, floods, pandemics, and diseases, collective action has failed to proportionately and effectively respond to the problem. While some people make sacrifices, others continue to capitalize on natural resources or even manipulate the general sense of crisis to boost their economic or political gains.

Some world leaders may deny climate change, yet scientific evidence and our lived experiences provide concrete, overwhelming evidence for the urgency of ecological crises (see Intergovernmental Panel on Climate Change (IPCC) reports; <https://www.ipcc.ch/reports/>). Yet, previous attempts to convince citizens, corporations, and decision-makers of this threat have not yet been fully successful. Attempts to reduce CO₂ emissions, for instance, have been rather slow and less than effective as some countries are concerned about its impacts on their economic growth. As a species, therefore, we have failed to take timely and proportionate action to address the urgency of ecological crises.

Ecocriticism, later expanded into environmental humanities, was (post)humanities' response to the crises; however, much more remains to be done in the Anthropocene of fake news and post-truth. This book investigates the potentials of humor and satire to overcome the existing barriers that withhold citizens, corporations, and political elites from taking concrete, meaningful, and proportionate pro-environmental action. This approach is particularly timely as the world emerges from the COVID-19 pandemic: positive and

2 Introduction

enjoyable communication is more likely to engage the public at a time when much of society is fatigued by serious social and economic strife.

Scientific endeavors rarely avail themselves to the full diversity of resources and potentials proffered by arts and cultures. More specifically, engaging with imagination and topics germane to the experiential, affective, visceral, emotional, tangible, and aesthetic lives of individuals, and a willingness to engage with bottom-up and participatory methodologies to understand these topics can increase the actual impact of ecological and pro-environmental attempts. Humor and satire are among the topics that have been largely ignored in both environmental humanities and scientific endeavors despite their prevalence and multilayered appeals (Boykoff, 2019). While several disciplines, like psychology, have attempted to employ humor for the well-being of humankind, very little is done in order to investigate how humor can address and alleviate climate crises as momentous challenges that threaten the well-being of all species. This interdisciplinary and transdisciplinarity¹ book aims to resort to literary and cultural studies, psychology, and communication science in order to illustrate how humor and satire can be employed to address ecological issues at individual and collective levels.

Most experts agree that attempts limited to scientific and technological fixes in technocracies are insufficient to address ecological crises and insist that solutions must entail cultural, political, social, and communicative reform to persuade people and policymakers to adopt more sustainable lifestyles and policies (Abrahamse, 2019; Center for Research on Environmental Decisions, 2009; Chatto & Feldman, 2020; Glotfelty & Fromm, 1996; Haraway, 2016; Heise, 2008; Hoffman, 2015; Kerridge & Sammells, 1998; Markley, 2012; Seymour, 2018; Walker, 2014). The uneasy relationship between ecological attempts and scientific and technological advancements has a clear ramification: science and technology are not enough to address and solve ecological problems; rather, they have caused them in the first place. This book contends that popular culture exerts an untested influence on ecological attitudes and the promotion/demotion of critical environmentalism. While consumerism can further exacerbate the ecological crises, other aspects of popular culture can be wisely employed for consciousness-raising and promoting ecological responsibility at individual and public levels. This is even more significant when considering the adaptive functions of humor and satire (Bergson, 1917; Boyd, 2004; Carrell, 2008; Carroll, 2004; Heintz & Ruch, 2018; Kozintsev, 2010; Lefcourt, 2001; Martin & Ford, 2018; McGraw & Warner, 2014; McGraw & Warren, 2010; Meeker, 1974; Morreall, 1983, 2008, 2009a, 2009b; Provine, 2000, 2012; Sørensen, 2016; Tael, 2011; Twark, 2007; Zekavat, 2017, 2022).

Statement of the Problem and Objectives

In our pioneering attempt, we contend that satire and humor can be effectively employed to intervene in ecological and environmental issues. This book explores new ways to confront, address, and respond to key

environmental and ecological challenges, while avoiding the pitfalls of naïve environmentalism as in its metaphysics, its gender and racial politics, and its troubling relationship with colonial and neo-colonial histories. It aspires to actively participate in urgent cultural and political discussions about how we can evaluate and intervene in the full diversity of ecological crises, engage a broad set of allies, partners, and stakeholders, and develop alternative models for sustainable transformations. It seeks to put forth a more realistic picture of the problem without reducing its intricacies and looks for pragmatic, partial, and contingent solutions for ecological crises. More specifically, we will contend that cultural assumptions and productions play a significant role in the way environmental issues are conceptualized, represented, communicated, and treated. Given that humor and satire are prevalent in different cultures (for example, Chen & Martin, 2007; Kazarian & Martin, 2007; Weisfeld et al., 2011), we argue they should be wisely employed to advance ecological causes.

This holistic approach seeks four primary objectives. First, it strengthens knowledge capacity and fills knowledge gaps through making theoretical investigations on the determinants of human behavior at individual and collective levels, the gaps between the presence of these determinants and absence of behavior (that is, inhibiting factors), and the interventions that humor and satire are capable of making in this model. Second, it strives to suggest alternatives to anthropocentrism by acknowledging and integrating the symbiotic relationships between various species and diffusing agency through the ecosphere, while emphasizing the role of anthropogenic disruptions in the Anthropocene and eschewing from divesting *Homo sapiens* from their agency and responsibility. While underscoring personal factors that determine behavior, this book goes beyond individual psychology to include external factors (see chapters 3 and 4 for a full discussion).

Third, it proposes an alternative approach to pro-environmental communication. Focusing on humor makes it possible to propose an alternative to the prevalent dystopian and alarming messages to change environmental behavior. This alternative approach relies on the potentials of humor and satire to promote and facilitate pro-environmental behavior in a positive manner. Fourth, it facilitates a green, just, inclusive, and sustainable transition. The proposed model and methods can be employed to co-create pro-environmental messages with citizens, groups of interest, and pertinent stakeholders. They can be tailored to prominent local environmental challenges, the communities that have greater shares in causing and perpetuating them, the communities that suffer the most from them, and their contexts. The bottom-up approach in initiating just and inclusive transformations based on participation and engagement will embark societal and behavioral transformations that will benefit everyone and leave no one behind. Since humor and satire are ubiquitous in everyday lives of people, both citizens and public outlets including the media, NGOs, governing bodies, and systems of education can integrate these findings to raise consciences and mobilize collective action.

4 *Introduction*

Transition toward sustainability as envisioned in the European Green Deal (EGD), European Climate Pact (European Commission, 2020a, 2020b), and United Nations' Sustainable Development Goals (SDGs, UN, 2021) inevitably requires the engagement and participation of both policy-makers and the full diversity of citizens and stakeholders. As citizens are immersed in their communities, their behaviors are regulated by both internal and external factors, and their intersubjective relationships are mediated and regulated by social and cultural norms. Individuals are molded by biology and culture; they also (re)shape culture and their environment. All this is made possible by our embeddedness in the ecosphere. As a result, any sustained behavioral change inevitably requires transformations at individual and psychological levels, on the one hand, and at collective, societal, cultural, and political levels, on the other.

Such transformations are most effective when endorsed and enacted upon by all citizens. While the success of a transformative project depends on universal engagement and participation, all citizens do not enjoy similar privileges nor do they face comparable impediments and barriers. This adds another layer of subtlety and complexity to ecological attempts. People of different genders, sexual orientations, age groups, races, ethnicities, social classes, nationalities, and faiths fare differently in different contexts and have access to disparate sets of resources. However, a sustainable transformation is not possible without the participation and engagement of a wide diversity of citizens. In other words, a sustained green transformation inevitably requires equality, inclusion, justice, reckoning with, and amending injustices (see Romanello et al., 2021). Ecological issues cannot be separated from other contingent and contiguous issues; moreover, the notion of justice extends to environmental justice as underprivileged, underrepresented, and suppressed communities are more likely to be affected by ecological crises, and their members are more susceptible to their impacts.

Such a transition requires ambitious, holistic, and interdisciplinary research and innovation to instigate and maintain behavioral, cultural, social, and political sustainable transformations by considering contingencies among different communities. In other words, instead of prescribed (hypocritical) panaceas, transformations to a more sustainable, healthier, safer, and fairer world should rely on contingent solutions that, instead of excluding certain communities and deepening inequalities, cherish and encourage diversity and inclusion to ensure optimal citizen engagement and participation. Pro-environmental attempts, therefore, should entail subjective, social, and ecospheric implications to mitigate the footprints of *Homo sapiens* at individual and collective levels. Every community is to make sacrifices proportionate to its capabilities and to the damages it has caused; all citizens are to be informed, empowered, and motivated to take action, and all must equally and equitably enjoy the benefits of the transformation.

This book aims to address sustainable transformations at individual and collective levels through investigating the enabling psychological, social,

and ecospheric determinants of behavior. It identifies the inhibiting factors that encumber pro-environmental behavior even when the determinants of behavior are present (that is, intention-action, attitude-behavior, and similar gaps), and discovers and fine-tunes ways through which humor and satire can influence these determinants and breach the gaps. By employing a holistic and interdisciplinary approach, exploring novel ways to engage citizens and stakeholders, and through proposing effective communicative strategies to tailor pro-environmental messages to their contexts, this book strives to develop means of empowerment for everyone. The different approach, the ubiquity of humor in everyday life, and its social and psychological impacts suggest concrete solutions to the objectives that UN SDGs and the EGD envision.

Putting citizens first and bringing them together in their full diversity can ensure a just and inclusive transition toward sustainability. Paying special attention to what has been ignored in determining behavior, this book considers psychological factors alongside intersecting denominational factors including, but not limited to, gender, sexual orientation, age, race, ethnicity, religion, nationality, class experience as social and political determinants of behavior. Instead of merely blaming citizens for aggravating ecological crises, we acknowledge and explicate the complexities involved in the etiology of these challenges. We believe that no single universal panacea can be prescribed to solve ecological crises. While middle-class citizens can be encouraged to support environmental causes like organic farming through making economic sacrifices, for instance, lower classes or refugees might not be able to afford to support ecological causes in the same way. This, however, should not exclude them by any means.

Communicative efforts, therefore, should be tailored to each target community and context for successfully bringing about behavioral change. They should address specific local environmental challenges and engage with carefully identified target communities. This cannot be prescriptive, we will still try to convey how humorous, satiric, or comic creative works that might include shows, theater, stand-up comedy events, cartoons, advertisements, social media campaigns, drawings, paintings, and reading sessions can contribute to such an inclusive and targeted approach. These attempts intend to provide stakeholders with appropriate tools and information and facilitate connecting these processes with decision-making bodies.

We will pay particular attention to the inclusion and participation of vulnerable groups, which are not necessarily identical across different national and regional contexts. Gender roles, for instance, seem to be prominent barriers against the allocation of a fair share of power and ecological resources and an important determinant of behavior across many national boundaries. Yet, different countries are hardly comparable when it comes to other topics like refugees, asylum seekers, and the less than privileged. Considering these contingencies and striving to connect to different communities can facilitate equitable and inclusive sustainable transformations.

The primary objective of this book is to propose more effective, just, and inclusive ways of changing behavior at individual and collective levels. Until now, most scientific projects were not able to bring about drastic behavioral changes in consumers. This is partly due to disciplinary conventions and the demands of scientific methods that mandate delimiting the focus of investigation to a single topic. Moreover, methodological conveniences have driven most research to primarily focus on individuals. This, however, has sometimes led to putting unrealistic and implausible demands on citizens for carrying all the burden of initiating and maintaining the transformation and compensating for its costs. Furthermore, several such attempts have ignored other important determinants of environmental behavior and the plethora of contingencies in the circumstances of individuals by their sheer focus on the psychology of the individual and disregard of the embeddedness of individuals in the society and ecosphere. All these have led to over-demanding and hypocritical prescriptions that place the responsibility on citizens, threatening an apocalypse will descend upon the world unless they comply.

While some citizens anxiously toil to minimize their footprint, they witness that politicians fail to take proportionate action or, at some cases, even deny the severity of the situation, and some corporations occasionally shun responsibility altogether as in the falsification of emission data by the automotive industry in the case of Volkswagen emissions scandal. Other citizens refuse to accept scientific findings and adamantly insist that climate change is fake news. Such discouraging revelations are amplified by witnessing coterminous injustices that might further dismay committed citizens. One way that can ease the burden on citizens and help realize the concrete results of their efforts, commitment, and abstinence is to persuade organizations and politicians to act more responsibly.

Relocating the subject in the society and ecosphere, we endeavor to consider contingencies, shed light on injustices, and provide a strategy for citizens to voice their discontent with current practices, policies, corporate, social, political, racial, gender, economic, and geopolitical injustices and discriminations. This will not only empower citizens but also perpetuate a rhetoric of trust and hope as promulgated by the light-hearted nature of humor. Such an alternative approach can draft a broad spectrum of communities to support the EGD and SDG targets (for example, #3: good health and well-being, #12: responsible consumption and production, #13: climate action) and to engage in co-creating and co-implementing transition pathways. Therefore, this book encompasses theoretical, applied, qualitative, and quantitative research to explicate the variables that make it possible to design and communicate effective messages for different contexts and tailor them to different target groups. The humor and satire, for instance, that can successfully persuade men with prominent masculinity features are less likely to have the same impact on women (Abel & Flick, 2012). Children and young adult environmental humor should usually be different from the one addressed to an adult audience (Martin & Ford, 2018). Humor also varies across cultural boundaries, for instance between Eastern and

Western cultures (Jiang et al., 2019), and even between neighboring countries that speak the same language like Germany and Austria (Scheel et al., 2016). Likewise, the type of humor and satire that might persuade upmarket consumers to invest in clean energy or buy organic products is unlikely to persuade the down and out to change their consumer habits. In other words, theoretical retrospections and the development of a comprehensive model will make it possible to tailor environmental messages to the requirements and circumstances of different communities for addressing specific local environmental challenges. This is particularly significant in the age of rhizomatic decentralization and social media.

Besides multifaceted, interdisciplinary approaches to behavior and its transformation across literary and cultural studies, social and environmental psychology, and engaging with significant pertinent issues like justice, this book also studies and improves on information provision and communication of science. Information provision has been a major strategy for environmental campaigns, yet it is hardly sufficient to instigate and perpetuate pro-environmental behavior at individual and collective levels. Many policymakers are fully informed about the scope and immediacy of the ecological problems; nonetheless, they do not take proportionate action. Many citizens are also aware of the urgency of the situation and the grim consequences it will bring in future but fail to change their behavior for a variety of reasons. This book aims to explicate the mechanisms for effectively communicating pro-environmental messages by investigating their content, medium, tone, language, producer, and recipient, among others.

Particular attention will be given to the reciprocally constitutive interactions between individual behavioral change and transformations in the larger context. For example, it will be conveyed that institutions like race or social constructs like class partly determine environmental behavior. This extends to the study of interactions at broader institutional levels like legislative, economic, and financial policies that enable or encumber collective environmental behavior. Our reasoning, therefore, will have strong implications for policymaking.

We believe any sustainable transformation should relate to pre-existing conditions including different forms of inequality and exclusion. This, therefore, provides an opportunity to make sure that the costs sustainable transformation incurs are not disproportionately imposed on peripheral groups and communities that already feel excluded while denying them its future benefits. On the contrary, a green transformation is an opportunity not only for a sustainable future but also for connecting people and communities through a fairer and more balanced process.

Significance and Relevance in Current Scientific Discourse

The active role of citizens and their direct involvement are essential to address climate change and other human actions that upset the delicate environmental balance. It is not possible to bring changes in citizens' and consumers'

behaviors without directly involving them, while considering their diversity and aiming for inclusiveness and justice. This is particularly significant because disadvantaged and vulnerable social groups and communities need special attention. There are many reasons for the ineluctability of such special treatments: first, vulnerable groups are usually most affected by the ecological crises; this is while they only have access to meager, if any, resources to encounter them, and their voices are muffled in major decision-making processes. In other words, the type and amount of support different communities need for an embryonic transformation to commence varies greatly. Besides, any set of realistic expectations for a transformation differs across the socio-economic spectrum of its context and should integrate the disparities in how different communities perceive the ecological crises and their priorities. In addition to acknowledging contingencies and inclusiveness, any sustainable transformation needs to make sure that its benefits are fairly distributed and that no one is left behind in enjoying them.

Furthermore, individuals should not, and indeed cannot, bear the burdens of this transformation alone. The scales and impacts of organizational, corporate, and political decisions and behaviors are vast when compared to individual actions. Organizations and corporations, for instance, frequently resort to falsification and co-opt ecological pretensions in order to expand their markets and profits. Greenwashing, for instance, is common in PR and marketing (Mahoney et al., 2013). Those that decently strive to be a part of a sustainable transition, on the contrary, encounter many challenges that jeopardize their position in increasingly competitive markets. Some of these impediments can be ameliorated by adopting more effective policies and offering well-thought-out protective measures. Thus, individuals, organizations, corporations, and policymakers should all take responsibility for transformations to a green and sustainable future. This is particularly evident in democratic societies where changes in consumer or voter behavior can lead to changes in organizational and political decisions, behaviors, and structures.

This unprecedented project aims to fill gaps in knowledge and proposes a novel alternative approach in trying to bring about sustainable transformations. Due to the diversity of stakeholders, the contingencies of their circumstances, and the varying immediacy of local ecological problems, the modes of participation and engagement differ across contexts. This book, therefore, intends to locate individual and collective behaviors in a more comprehensive picture that not only includes individual subjects but also acknowledges their being immersed in their societies. The interactions between individual psychology and social factors in determining environmental behavior take place in the larger ecosphere, of course. This project resorts to literary and cultural studies, social and environmental psychology, as well as communication studies to devise a more effective, inclusive, and fairer approach in communicating environmental messages, hence bringing about this transformation. The significance of this study lies not only in its attempt to make social and political interventions in ecological problems, but also in

the prevalence of humor. Humor can be employed for different, even contradictory purposes. One needs to think of advertising and fashion industries to see how frequently humor is manipulated in capitalist systems to promote consumerism regardless of its negative ecological impacts. However, humor does not inevitably lead to acquiescence and indifference. When employed wisely, humor and satire can also facilitate a fresh approach to dealing with ecological crises. Instead of laughing off the problem, the rhetoric of humor and satire can disparage environmentally damaging attitudes and policies, encourage a change of attitude and behavior in their audience, and promote critical ecological engagement.

In order to respond to and support EGD, SDGs, Horizon Europe call and missions, European Semester, European Climate Law, Climate Target Plan, and the European Climate Pact (for example, European Commission 2020a, 2020b, 2020c; UN, 2021), this book sets out to draw on environmental and social psychology, cultural studies, and communication science in order to develop a more comprehensive model for individual and collective behavior. To identify and integrate pertinent variables, it will take a transdisciplinary approach to persuasion and behavioral change, looking at system dynamics and integrating historical, cultural, societal, economic, and psychological perspectives. It takes into account the determinants of behavior from the perspective of social and environmental psychology (that is, enabling factors) and discusses gaps between the presence of behavioral determinants and lack of behavior (that is, inhibiting factors). The potential impacts of humor and satire will be discussed within the framework of the proposed model to analyze how they can influence the determinants of environmental behavior.

The model allows us to investigate both individual and organizational behavior and actions. It acknowledges and builds upon the reciprocally constitutive relationship of individual psychology and the external world of society and ecosphere. The model is then applied to understanding case studies and examples, and we reflect on the dynamics of cultural production and on the factors that influence the perception of ecological crises by different communities. We take it upon ourselves to meet people where they are instead of imposing prescriptive and homogenizing approaches on them. Therefore, a vast diversity of contingencies that vary by time and context will be studied to compensate for what previous models have overlooked. These include contingencies across denominations and minority communities. Insights from cultural studies foreground vulnerable and marginalized groups. Special attention will be paid to gender, sexual orientation (including lesbian, gay, bisexual, transgender, transsexual, intersex, queer, questioning, two-spirited, and ally communities), age, socioeconomic status, religion, race and ethnicity (including labor mobility as in the case of postcolonial and/or migrant workers), and nationality. The richness and intricacy of these contingencies facilitate tailoring messages and solutions to different contexts, communities, and local challenges.

Another important feature of our attempt is that besides the determinants of behavior, it will also investigate the reasons why the presence of such determinants does not necessarily lead to behavioral change. We will explore the gaps between the presence of behavioral determinants and inaction and show how humor and satire can breach and/or bridge these gaps. Exploring cognitive biases, for instance, can address dilemmas and find ways of dissonance reduction. It will also scrutinize how humor and satire can intervene in messaging in order to address trade-offs, side and rebound effects. Humor can be used, for example, in intra- and interorganizational communications to persuade and actively set or diminish perceived behavioral controls.

Besides suggesting novel ways to encourage pro-environmental behavior, facilitating more effective communication, and providing political strategies to give voice to sustainable demands, humor and satire have also community building functions that, alongside the inclusive and just engagement and participation of citizens, can be a further step toward stability and resilience. Moreover, the coping functions of humor can also be employed in fostering resilience against the already irreversible impacts of climate change in citizens.

Overview

The next chapter opens with the definitions of key terms and a succinct introduction to the major theories of humor. The traditional approaches including superiority, relief, and incongruity theories, as well as more recent theories including the reversal theory and benign violation hypothesis, will receive appropriate attention. Several evolutionary conceptualizations of humor will also be discussed as they are particularly relevant to ecological and ecospheric aspects of pro-environmental behavior. Then, we will turn to the types, styles, and functions of humor that can be employed to fine-tune environmental communication and advocacy attempts.

Having laid out essential preliminaries and fundamental concepts and theories of humor research, we will turn to models and theories of environmental and social psychology. The potential impacts of humor and satire on persuasion and environmental behaviors will be reviewed across communication, literary, and cultural studies. This will expose several inconsistencies in the findings, particularly regarding the role of humor in persuasion and the intention-action gap. The potential impacts of humor and satire on the psychological and social determinants of environmental behavior alongside their role in fostering resilience, coping, and adaptation are further investigated to contend how humorous and satiric messages can proffer effective strategies for environmental advocacy and behavioral change.

From there, we go on to propose a Modular Interdependency Model for the potential impact of humor and satire on environmental behavior (MIM). It encompasses three different but interrelated aspects of behavior, namely, its psychological, social (including cultural, political, and economic), and ecospheric dimensions. This is to ensure that pertinent sectorial, geographic, and demographic variables are taken into account so that individual citizens are

not solely held responsible for addressing ecological problems. This tripartite web of determinants further helps disperse agency through the ecosphere, acknowledging the symbiotic relationships between different species including *Homo sapiens*. One of the implications of MIM is that human beings are no longer at the center of the universe as it foregrounds their kinship and symbiotic interdependencies with other critters. The chapter concludes by discussing how humor and satire can impact behavioral determinants and what they do to breach the intention-action and attitude-behavior gaps.

Chapter 5 employs the descriptive potentials of MIM to convey how humorous and satiric works can engage the determinants of pro-environmental behavior. *The Simpsons*, a long-running comedy show, *Last Week Tonight with John Oliver*, a late-night show, and a corpus of *The New Yorker* cartoons are analyzed to show how they employ different dimensions of MIM and strive to impact behavioral determinants in order to advocate pro-environmental behavior in their audience.

Chapter 6 discusses some of the methodological and operational intricacies involved in quantitative research design for investigating the environmental impact of humor and satire. The chapter opens by highlighting the subtleties of conducting empirical research before turning to the operationalization of humor, pro-environmental attitudes and behavior, as well as several other variables explicated in the psychological module of MIM. It will further explain fundamental concepts and their implications for designing and conducting empirical studies on the effectiveness and role of humor in encouraging attitudinal and behavioral change. The concluding chapter discusses the theoretical and practical implications of MIM, explores its potential social impacts, and provides suggestions for future qualitative and quantitative research.

Note

- 1 “Multidisciplinarity draws on knowledge from different disciplines but stays within their boundaries. Interdisciplinarity analyzes, synthesizes and harmonizes links between disciplines into a coordinated and coherent whole. Transdisciplinarity integrates the natural, social and health sciences in a humanities context, and transcends their traditional boundaries” (Choi & Pak, 2006, p. 351).

References

- Abel, M. H., & Flick, J. (2012). Mediation and moderation in ratings of hostile jokes by men and women. *Humor*, 25(1), 41–58. <https://doi.org/10.1515/humor-2012-0003>
- Abrahamse, W. (2019). *Encouraging pro-environmental behavior: What works, what doesn't, and why*. Academic Press.
- Bergson, H. (1917). *Laughter: An essay on the meaning of the comic*. Macmillan.
- Boyd, B. (2004). Laughter and literature: A play theory of humor. *Philosophy and Literature*, 28(1), 1–22. <https://doi.org/10.1353/phl.2004.0002>
- Boykoff, M. (2019). *Creative (climate) communications: Productive pathways for science, policy and society*. Cambridge University Press. <https://doi.org/10.1017/9781108164047>

- Carrell, A. (2008). Historical views of humor. In V. Raskin (Ed.), *The primer of humor research* (pp. 303–332). De Gruyter Mouton. <https://doi.org/10.1515/9783110198492>
- Carroll, J. (2004). *Literary Darwinism: Evolution, human nature, and literature*. Routledge.
- Center for Research on Environmental Decisions. (2009). *The psychology of climate change communication: A guide for scientists, journalists, educators, political aides, and the interested Public*. <https://doi.org/10.7916/d8-byzb-0s23>
- Chatto, C. B., & Feldman, L. (2020). *A comedian and an activist walk into a bar: The serious role of comedy in social justice*. University of California Press.
- Chen, G.-H., & Martin, R. A. (2007). A comparison of humor styles, coping humor, and mental health between Chinese and Canadian university students. *Humor*, 20, 215–234. <https://doi.org/10.1515/HUMOR.2007.011>
- Choi, B. C., & Pak, A. W. (2006). Multidisciplinarity, interdisciplinarity and transdisciplinarity in health research, services, education and policy: 1. Definitions, objectives, and evidence of effectiveness. *Clinical and Investigative Medicine. Medecine clinique et experimentale*, 29(6), 351–364.
- European Commission. (2020a). *European climate pact*. https://ec.europa.eu/clima/policies/eu-climate-action/pact_en
- European Commission. (2020b). *A European green deal*. https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en
- European Commission. (2020c). *Horizon Europe*. https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe_en
- Glotfelty, C., & Fromm, H. (1996). *The ecocriticism reader: Landmarks in literary ecology*. The University of Georgia Press.
- Haraway, D. (2016). *Staying with the trouble: Making Kin in the Chthulucene*. Duke University Press. <https://doi.org/10.1515/9780822373780>
- Heintz, S., & Ruch, W. (2018). Can self-defeating humor make you happy? Cognitive interviews reveal the adaptive side of the self-defeating humor style. *Humor*, 31(3), 451–472. <https://doi.org/10.1515/humor-2017-0089>
- Heise, U. K. (2006). The hitchhiker's guide to ecocriticism. *PMLA*, 121(2), 503–526. <https://doi.org/10.1632/003081206X129684>
- Hoffman, A. J. (2015). *How culture shapes the climate change debate*. Stanford University Press.
- Jiang, T., Li, H., & Hou, Y. (2019). Cultural differences in humor perception, usage, and implications. *Frontiers in Psychology*, 10, 123. <https://doi.org/10.3389/fpsyg.2019.00123>
- Kazarian, S. S., & Martin, R. A. (2007). Humor styles, culture-related personality, well-being, and family adjustment among Armenians in Lebanon. *Humor*, 19, 405–423. <https://doi.org/10.1515/HUMOR.2006.020>
- Kerridge, R., & Sammells, N. (1998). *Writing the environment: Ecocriticism and literature*. Zed Books.
- Kozintsev, A. (2010). *The mirror of laughter*. Transaction Publishers.
- Lefcourt, H. M. (2001). *Humor: The psychology of living buoyantly*. Springer. <https://doi.org/10.1007/978-1-4615-4287-2>
- Mahoney, L. S., Thorne, L., Cecil, L., & LaGore, W. (2013). A research note on standalone corporate social responsibility reports: Signaling or greenwashing? *Critical Perspectives on Accounting*, 24(4–5), 350–359. <https://doi.org/10.1016/j.cpa.2012.09.008>
- Markley R. M. (2012). “How to go forward”: Catastrophe and comedy in Kim Stanley Robinson's science in the capital trilogy configurations. *Configurations*, 20(1), 7–27. <https://doi.org/10.1353/con.2012.0004>

- Martin, R., & Ford, T. (2018). *The psychology of humor: An integrative approach* (2nd ed.). Academic Press.
- McGraw, P., & Warner, J. (2014). *The humor code: A global search for what makes things funny*. Simon and Schuster.
- McGraw, A. P., & Warren, C. (2010). Benign violations: Making immoral behavior funny. *Psychological Science*, 21(8), 1141–1149. <https://doi.org/10.1177/0956797610376073>
- Meeker, J. W. (1974). *The comedy of survival: Studies in literary ecology*. Scribner.
- Morreall, J. (1983). *Taking laughter seriously*. SUNY Press.
- Morreall, J. (2008). Philosophy and religion. In V. Raskin (Ed.), *The primer of humor research* (pp. 211–242). Mouton de Gruyter.
- Morreall, J. (2009a). *Comic relief: A comprehensive philosophy of humor*. Wiley-Blackwell. <https://doi.org/10.1002/9781444307795>
- Morreall, J. (2009b). Humor as cognitive play. *Journal of Literary Theory*, 3(2), 241–260. <https://doi.org/10.1515/JLT.2009.014>
- Provine, R. R. (2000). *Laughter: A scientific investigation*. Penguin Books.
- Provine, R. R. (2012). *Curious behavior: Yawning, laughing, hiccupping and beyond*. Harvard University Press.
- Romanello, M., McGushin, A., Di Napoli, C., Drummond, P., Hughes, N., Jamart, L., Kennard, H., Lampard, P., Rodriguez, B. S., Arnell, N., Ayeb-Karlsson, S., Belesova, K., Cai, W., Campbell-Lendrum, D., Capstick, S., Chambers, J., Chu, L., Ciampi, L., Dalin, C., Dasandi, N. et al., (2021). The 2021 report of the Lancet countdown on health and climate change: Code red for a healthy future. *Lancet*, 398(10311), 1619–1662. [https://doi.org/10.1016/S0140-6736\(21\)01787-6](https://doi.org/10.1016/S0140-6736(21)01787-6)
- Scheel, T., Gerdenitsch, C., & Korunka, C. (2016). Humor at work: Validation of the short and work-related humor style questionnaire. *Humor*, 29(3), 439–465. <https://doi.org/10.1515/humor-2015-0118>
- Seymour, N. (2018). *Bad environmentalism: Irony and irreverence in the ecological age*. University of Minnesota Press.
- Sørensen, M. (2016). *Humor in political activism creative nonviolent resistance*. Palgrave Macmillan.
- Taels, J. (2011). Humor as practical wisdom. In H. Geybels & W. van Herck (Eds.), *Humor and religion: Challenges and ambiguities* (pp. 22–34). Continuum.
- Twark, J. (2007). *Humor, satire, and identity: Eastern German literature in the 1900s*. De Gruyter. <https://doi.org/10.1515/9783110958140>
- UN. (2021). *The UN sustainable development goals*. <https://sdgs.un.org/goals>
- Walker, L. (2014). Polar bears and evil scientists: Romance, comedy and climate change. *Australasian Journal of Popular Culture*, 3(3), 363–374. https://doi.org/10.1386/ajpc.3.3.363_1
- Weisfeld, G. E., Nowak, N. T., Lucas, T., Weisfeld, C. C., & Imamoglu, E. O. (2011). Do women seek humorousness in men because it signals intelligence? A cross-cultural test. *Humor*, 24, 435–462.
- Zekavat, M. (2017). *Satire, humor and construction of identities*. John Benjamins. <https://doi.org/10.1075/thr.6>
- Zekavat, M. (2022). A comparative study of pandemic humor and satire in the United States of America and Iran. *Amerikastudien/American Studies: A Quarterly*, 67(4), 521–540. <https://doi.org/10.33675/AMST/2022/4/11>

2 Theories, Types, and Functions of Humor

A Brief Overview

Definitions of Humor, Satire, and Comedy

We start by providing definitions for the key terms and concepts that recur in this volume. Coming up with definitions that meet general consensus is notoriously difficult in the field. Challenging existing definitions and proposing new ones, however, fall beyond the objectives of this book. Therefore, we resort to convenient and accessible definitions as a point of departure, while avoiding any claims about their universality or precision.

Humor, *satire*, and *comedy* have been particularly difficult to define and conceptualize. There have been many attempts to propose clear definitions for humor-related terminology, but there is hardly any consensus on the use and demarcation of the wide range of humor-related jargon in literature. This is partly because humor, satire, and comedy are deeply context-bound. They are entrenched in the culture and specific context that produce, distribute, and consume them, hence the difficulty of translating them into foreign languages. Their expiration dates could also be very short; in other words, they are prone to obfuscate new readers as the distance between the original historical moments, incidents, and figures grows in time, even within the same culture and language. This is one reason why the eighteenth-century British literature that is rife with satire usually requires heavy glossing for contemporary readers, for instance.

For the purpose of this book, we take *humor* to be

a broad, multifaceted term that represents anything that people say or do that others perceive as funny and tends to make them laugh, as well as the mental processes that go into both creating and perceiving such an amusing stimulus, and also the emotional response of mirth involved in the enjoyment of it.

(Martin & Ford, 2018, p. 16)

Laughter and smiling, meanwhile, are the reactive behaviors associated with mirth and humor (Fry & Savin, 1988). We are fully aware that associating humor with laughter and funniness is controversial but do not believe

that this is the right place to attempt yet another definition. Therefore, we stick to this widely cited definition as a matter of convenience.

This is while “Satire... much like the humor with which it has for so long been associated, is unsuitable for an essentialist definition” (Condren, 2012, p. 396). *Satire* is usually associated with “diminishing or derogating a subject by making it ridiculous and evoking toward it attitudes of amusement, contempt, scorn, or indignation” (Abrams & Harpham, 2015, p. 352; also see Test, 1991; Zekavat, 2014). It generally implies criticism and an aspiration for social reform. To quote Cuddon (1999, p. 780),

The satirist is ... a kind of self-appointed guardian of standards, ideals and truth; of moral as well as aesthetic values. He is a man (women satirists are *very* rare) who takes it upon himself to correct, censure and ridicule the follies and vices of society and thus to bring contempt and derision upon aberrations from a desirable and civilized norm. Thus satire is a kind of protest, a sublimation and refinement of anger and indignation. As Ian Jack has put it very adroitly: ‘Satire is born of the instinct to protest; it is protest become art.’

Condren et al. (2008, p. 402) provide a working definition of satire for legal purposes, namely for dealing with contentious cases under new legal exemptions to Australian copyright law. They define satire as “the critical impulse manifesting itself in some degree of denigration, almost invariably through attempted humor; the artistic results (usually humorous) of expression of such a critical impulse.”

Comedy usually denotes amusement in common application (Baldick, 2001). Northrop Frye (1973) associates comedy with the mythos of spring, fertility, and renewal. Nonetheless, comedy is not a unanimous mode and can contain reflection and revelry at varying degrees. As Parkin and Davis (2014, p. 140) note,

Any literary or artistic genre involving character portrayal may take comic shape: This includes satiric poetry, humorous short stories, comic novels, caricatures, and spoofs (whether literary, visual, or practical—in art the entire Dada movement was profoundly comic in both intent and effect), along with subliterary genres such as the stand-up routine, the tall tale, witty or obscene graffiti, joke collections, and websites; as well as in the graphic arts, the comic strip and the newspapers’ daily cartoon, and drama’s direct descendants in radio, television, film, and video.

Still, the term is frequently reserved for performative arts. Whether a dramatic genre alongside tragedy, a cinematic genre, or in the form of stand-up comedy, what tends to define comedy is its performative nature.

Although we are fully aware of terminological nuances and do not intend to reduce their subtleties in any way, most theories (for example, Semantic

Script Theory of *Humor* and General Theory of Verbal *Humor*) consciously identify themselves with humor, rather than satire or comedy, and psychology usually takes humor as its subject of study. Due to these methodological considerations and the fact that these interrelated concepts inevitably overlap, we believe that a balanced coverage of these different yet contingent and permeable concepts will enrich this book. Also, please note that we tried to avoid restricting any of these concepts to a specific genre in its traditional sense or a single medium of expression.

Classical Theories of Humor

A tripartite categorization pervades critical humor scholarship. Superiority, relief, and incongruity theories frequently resurface across many disciplines. None of these theories, however, provides a comprehensive explanation for humor.

The *superiority theory* postulates that humor is the result of feeling superior over others; in other words, it inevitably locates humor within a social structure and in a grid of intersubjective relationships (Billig, 2005; Hobbes, 1996, 1999; Martin & Ford, 2018; Morreall, 1987). Tracing it back to Plato, many believe that this is one of the oldest theories of humor. It is usually epitomized in a frequently quoted passage from *Leviathan* where Hobbes (1909, p. 45) writes,

Sudden Glory, is the passion which maketh those *Grimaces* called laughter; and is caused either by some sudden act of their own, that pleased them; or by the apprehension of some deformed thing in another, by comparison whereof they suddenly applaud themselves.

This type of humor might seem less than gracious at first sight. This is obvious in sexist or racist jokes where the butt is denigrated because of their gender identity or racial and ethnic origins. However, the superiority theory does not inevitably imply an ethically questionable attitude. If a joke disparages a corrupt politician or clergy, it might be argued that the audience is invited to laugh at the butt for “right(eous)” reasons. Charlie Chaplin’s *The Great Dictator* (1940) might be a rather obvious example (for the ethics of humor, see Lockyer & Pickering, 2005).

The release or *relief theories* of humor tend to emphasize the psychological and internal aspects of the creation and perception of humor, so the psychological dimension replaces the societal one. These theories contend that humor originates in the release of suppressed mental energies (Freud, 1964, 2010a, 2010b; Martin & Ford, 2018; Spencer, 1860, 1911). Humor, therefore, relieves tensions and causes psychological homeostasis. Sigmund Freud concludes his *Jokes and Their Relation to the Unconscious* with a remark that summarizes release theories of humor. He avers,

The pleasure in jokes has seemed to us to arise from an economy in expenditure upon inhibition, the pleasure in the comic from an economy

in expenditure upon ideation (upon cathexis) and the pleasure in humor from an economy in expenditure upon feeling.

(Freud, 1964, p. 236)

Relief theories often interpret the release of mental energies in different ways. One interpretation is that we summon mental energy for cognitive or emotional processes, but when this energy is found to be superfluous, it is released in the form of mirth. Alternatively, the release is understood as that of the mental energy that is used to suppress libidinal drives. This energy is needed for regulating individuals against taboos in the society, but it can be safely released in the case of a sexual joke, for instance, since the joke does not actually violate the sexual code but simply narrates and vents the urge through language in a safe and non-threatening manner. According to release theories, therefore, humor is capable of performing two major functions. First, it can help us cope with difficulties by releasing tension. Second, it is also a means of social regulation through managing inhibitions.

Incongruity(-resolution) theories are most prominent in contemporary scholarship. They generally contend that humor primarily arises from the recognition of an incongruity, although some trends maintain that the perception of incongruity is a necessary but not sufficient condition for humor (Koestler, 1964; Martin & Ford, 2018; McGhee, 1979; Morreall, 1983; Oring, 1992, 2016; Raskin, 1985; Ritchie, 2004; Shultz, 1974; Suls, 1972). Incongruity-resolution, appropriate incongruity, and benign violations are only some of the concepts developed to complement the notion of incongruity. Immanuel Kant famously formulated an early version of this theory in his *Critique of Judgement* where he writes,

Whatever is to arouse lively, convulsive laughter must contain something absurd (hence something that the understanding cannot like for its own sake). *Laughter is an affect that arises if a tense expectation is transformed into nothing.* This same transformation certainly does not gladden the understanding, but indirectly it still gladdens us in a very lively way for a moment. So the cause of this must consist both in the influence that the presentation has on the body and in the body's reciprocal effect on the mind—but not because the presentation is objectively an object of our gratification (for how could an expectation that turned out to be false gratify us?), but solely because it is a mere play of presentations which produces in the body an equilibrium of the vital forces.

(Kant, 1987, p. 203)

Instead of its intersubjective or affective aspects, incongruity theories foreground the cognitive procedures involved in the perception and processing of humor.

As we have seen, each of these three groups of theories emphasizes a rather different aspect of humor (sounds familiar? Well, the ancient parable of the blind men and the elephant or elephant in the dark can nicely recapitulate

the situation: “As each one feels a different part of the elephant, they experience complete disagreement when comparing their descriptions,” Scheel & Gockel, 2017, p. 9). Furthermore, existing empirical evidence for these three theories is mixed (see Scheel, 2017). All theories can partly explain humor, but none is inclusive enough to be called the general theory of humor. Besides, the traditional tripartite division of humor theories tends to downplay other important theories being devised in:

- Animal studies (for example, Panksepp & Burgdorf, 2003);
- Cultural anthropology (for example, Davies, 1996, 1998, 2011, 2017; Lindfors, 2019; Oring, 2011);
- Evolutionary biology (for example, Bressler et al., 2006; Greengross et al., 2020, 2012; Greengross & Miller, 2011; Guéguen, 2010; Hall, 2015; Miller, 2000);
- Linguistics (for example, Attardo, 1994, 2008, 2017; Attardo et al., 2002; Bouissac, 2015; Raskin, 1985, 2008; Raskin et al., 2009; Ritchie, 2004; Simpson, 2003);
- Literary and cultural studies (for example, Brock, 2009; Condren, 2012; Connery & Combe, 1995; Davis, 2014, 2016; Eagleton, 2019; Feinberg, 1967; Frye, 1973; Highet, 1960, 1962; Kernan, 1959; Knight, 2004; Kozintsev, 2010; Previt -Orton, 1968; Stott, 2005; Test, 1991; Vandaele, 2002a, 2002b, 2012);
- Philosophy (for example, Amir, 2012, 2019, 2021; Carroll, 1991, 1999, 2005, 2008, 2009, 2014, 2016; Critchley, 2002; Morreall, 1983, 1999, 2005, 2008, 2009a, 2009b, 2013; Zupan i , 2008);
- Psychology (for example, Apter, 2013; Apter & Desselles, 2012; Apter & Smith, 1977; Ferguson & Ford, 2008; Heintz & Ruch, 2019; Martin & Ford, 2018; McGraw & Warren, 2010, 2014; Ruch, 2007, 2008; Scheel & Gockel, 2017; Wyer & Collins, 1992);
- Psychology and linguistics (for example, Hempelmann & Ruch, 2005);
- Sociology (for example, Kuipers, 2015);
- Theology (for example, Layman, 1988).

Here, we will briefly introduce three more recent theories that are more pertinent to our central contention.

More Recent Theories of Humor

As a motivational theory of personality, *reversal theory* is among the more recent explanations of humor. It maps behavioral motivations into four domains each of which presents a spectrum between two metamotivational states. These eight states include mastery-sympathy, autic-alloic (that is, self-other), rebellious-conformist, and paratelic-telic (that is, playful-serious) (Apter, 2005, 2013). The theory presumes that any activity can be potentially aligned with opposite states, but some activities are more frequently aligned

with one end rather than the other. The first and most relevant domain in reversal theory for us concerns means-and-ends and is related to telic and paratelic states. In the telic state, an individual wants to achieve a goal, while she primarily seeks enjoyment in the paratelic state. Humor is associated with the playful and spontaneous paratelic state (cf. Nietzsche, 2000). In other words, for a person to experience humor, the paratelic state of the mind must be activated. Contrary to the telic state, high arousal is pleasant in the paratelic state, because it is experienced as excitement or fun. Low arousal, by contrast, is experienced as boredom. Humor, in other words, increases arousal in the paratelic state. On the contrary, arousal is experienced as anxiety in the telic state, so low arousal is perceived as relaxation, hence pleasant (see Apter, 2005; Martin & Ford, 2018).

Reversal theory is similar to incongruity theories in that it presumes humor to result from a cognitive reinterpretation of an event or stimulus. This reinterpretation involves cognitive synergy whereby two contradictory interpretations are simultaneously activated. The incongruity does not need to be resolved; rather, it is diminished. In other words, humor results when the seriousness or significance of the initial interpretation is diminished (Apter, 2013).

Another recent theory of humor shares its basic principles with incongruity theories. According to *benign violation hypothesis*, three conditions are necessary and sufficient for eliciting humor. First, the situation must be experienced as a violation; second, this violation must be appraised as benign, and finally the first two conditions must occur simultaneously. Violation is understood very broadly as anything that can threaten the way one perceives how the world ought to be. But this threat should be a benign one for humor to arise. A violation is benign if “(a) a salient norm suggests that something is wrong but another salient norm suggests that it is acceptable, (b) one is only weakly committed to the violated norm, or (c) the violation is psychologically distant” (McGraw & Warren, 2010, p. 1142). This renders humor as an adaptive response to violations. It signals that the violation is safe and “provides a healthy and socially beneficial way to react to hypothetical threats, remote concerns, minor setbacks, social faux pas, cultural misunderstandings, and other benign violations people encounter on a regular basis” (McGraw & Warren, 2010, p. 1148).

Evolutionary explanations of humor are also interesting and pertinent to environmental topics (see Blitt, 2021; Caron, 2002). Morreall (2009a, pp. 36, 39, 2009b, p. 256) believes that “laughter evolved as a play signal.” He argues that humor arises from “the playful enjoyment of a cognitive shift... expressed in laughter” (Morreall, 2009a, p. 49). The evolution of humor required the ability to play with thoughts; more specifically, Morreall believes that laughter evolved as a response to false alarms and to signal safety and its ensuing enjoyment. Detrimental concerns disturbed early communities, and humor evolved as a kind of play disengaging members from those concerns. Instead, it made it possible for them to enjoy the resulting cognitive shifts.

In other words, humor evolved to transform potentially negative emotions to positive ones. Morreall (2009a) cites the physiological response to humor as evidence for his argument. The response to the pleasurable state of humor stimulates reduced blood pressure, heart rate, and muscle tension while immune system activity is enhanced. This is contrary to the physiological response to negative emotions (Morreall, 2009a). Some of these claims require more rigorous scientific evidence, of course, as empirical findings have so far been inconclusive.

Boyd (2004) goes a step further by framing other theories of humor within an evolutionary framework. One way to understand humor is in terms of aggression or mockery when a community hoots or laughs at its common enemy. This is somewhat close to the superiority theory of humor. Another evolutionary explanation is using humor as a signal of submission and for disarming aggression. This is one of the explanations that is also offered for reflexive and Jewish humor (Ben-Amos, 1973; Davies, 1991; Zekavat, 2017, 2019a). A third explanation considers humor signaling the restoration of safety. Boyd, however, believes that the most promising evolutionary explanation is seeing humor in terms of play.

Training for the expected and training for the unexpected are two adaptive values of play. Boyd (2004, p. 9) continues to elaborate,

The mind, as evolutionary psychology has stressed, is crammed with expectations, built in first through natural selection and then added to by experience. Among those that natural selection incorporates in us, the most urgent of all is the expectation of danger, the unexpected manifestation of an expected threat. ... In play-fighting and in tickling in animals including humans, or in human peek-a-boo games, the rough form of a threat catches the attention and primes alertness, only for threat quickly to turn to opportunity.

Play and humor can be interpreted in terms of such shared expectations that stimulate risk and recovery. Play evokes risk only to replace it with the reassurance of safety. Similarly, humor involves an incongruity that is swiftly resolved. Part of the pleasure, therefore, arises from appreciating how calibrated our expectations are.

Boyd (2004, p. 16) concludes that “by signaling our pleasure in cognitive play,” laughter “invites and encourages us to prepare playful surprises for one another.” Such playful amusement serves several evolutionary and social functions that include,

Playing socially with our expectations reinforces our sense of solidarity, our recognition of the huge body of expectations we share; it trains us to cope with and even seek out the unexpected that surrounds and can extend these expectations; and yet it can offer a first more or less playful warning to those who diverge from them in ways we reject.

Although this is an evolutionary explanation of humor, one cannot miss the Kantian overtones and terminology in taking expectation as a point of departure.

The evolutionary explanations for humor, however, are not limited to philosophers and literary scholars (see also McGraw & Warner, 2014). Such explanations have served as the hypothesis of empirical research, as well. Several studies investigate the physiological responses of other mammals that resemble human laughter. “When primates are playfully fighting and chasing each other, they use the play face” to indicate the fun nature of their activity and their non-serious intentions (Martin & Ford, 2018, p. 185). Likewise, tickling elicits a 50-kHz chirp in rats that is interpreted as laughter. It seems to have social consequences similar to that of human laughter: rats prefer the company of those that tend to chirp frequently as compared to the rats that rarely chirp (Panksepp & Burgdorf, 2003; for an fMRI study of ticklish laughter, see Wattendorf et al., 2012).

Discussing the evolutionary affordance of humor in the context of mate selection, Li et al. (2009) explicate how humor can facilitate social relationships by initiating, monitoring, and maintaining them. They observe that, “through the co-evolution of laughter and language, humor initiation and appreciation may have emerged as a way for individuals to initiate and maintain different social relationships” (Li et al., 2009, p. 925). Yet, humor is ambivalent, indirect, and cognitively demanding. This begs the question why a more straightforward adaptive strategy has not been developed. Li et al. (2009) provide three answers for this mystery. First, humor can be employed to monitor and maintain a relationship at the stage when there are insufficient indications for an outright rejection or commitment. People do not commit to a relationship immediately after they meet a potential partner. Nor do they abruptly terminate their existing relationships. The ambivalent and indirect quality of humor, therefore, can indicate the general interest of individuals in initiating, maintaining, or deconstructing relationships. Second, humor dramatically reduces the costs of being rejected in initiating a relationship. As a mere indication of interest rather than a full evaluation and commitment, humor ameliorates the damage that a direct rejection might cause to reputation or one’s chances for future relationships. Finally, one can employ humor to estimate the strength of a relationship while withholding one’s true motives. For instance, one might want to assess the strength and reliability of a relationship before they confide in another person or seek their alliance in an important matter.

It is important to understand the production, processing, and reception of humor if it is to be effectively employed in communicating environmental messaging. Besides this, theories of humor have two implications for its environmental impact. First, according to relief or release theories, humor has coping affordances. People can use humor in order to cope with mental or physical hardships. Humor, therefore, can provide an invaluable coping strategy for adapting to the irreversible and irreparable impacts

of environmental crises including climate change. It can also be used to foster resilience in encountering ecological disasters (more on these in chapter 3). Second, evolutionary explanations strive to locate humor within the ecosphere and sometimes in slightly less anthropocentric frameworks. They acknowledge that humor evolved in order to help us adapt to our environment and survive and flourish in our communities. Environmentalist activists have long resorted to the survival benefits of fear to frame ecological messages but largely ignored the affordances of alternative strategies. Evolutionary theories could be a poignant reminder of the value and significance of resorting to the full repertoire of survival strategies for critical environmental advocacy.

Theories and conceptualizations of humor are extremely diverse, stretching across different eras, cultures, and disciplines. Nonetheless, *the* theory of humor does not exist: while all theories can partly explain humor, there is no theory that can convincingly explain humor in its entirety and diversity. Moreover, every theory has its drawbacks and blind spots. These, however, have not stopped scholars to taxonomize humor.

Types and Styles of Humor

The use of different types of humor yields different results, of course. Martin et al. (2003) taxonomize the individual use of humor according to two criteria: first, positive versus negative or benign versus tendentious styles; second, interpersonal versus intrapsychic styles. *Self-enhancing humor* constitutes the benign uses of humor to enhance the self, and *affiliative humor* employs the positive style to enhance intersubjective relationships. *Aggressive humor* utilizes the tendentious style to enhance the self at the expense of others, and *self-defeating humor* uses the same strategy at the expense of the self to enhance relationships (Table 2.1). Self-enhancing humor and affiliative humor, therefore, are deemed adaptive, while aggressive and self-defeating styles are seen as maladaptive.

This categorization reveals the community-building potentials of humor as one of its functions (see below and chapter 3 for more). The affiliative style is more inviting and reassuring; therefore, it can be more effective in persuading people to behave pro-environmentally. This is while the aggressive style might be more effective in staving off misguided attitudes and behaviors. In line with this, Romero and Cruthirds (2006) propose the notion of mild aggressive humor for the purpose of norm enforcement.

Table 2.1 Four humor styles according to Martin et al. (2003)

	Positive	Negative
Self	Self-enhancing humor	Self-defeating humor
Others	Affiliative humor	Aggressive humor

Building upon Schmidt-Hidding (1963), Ruch et al. (2018) propose a wider range of comic styles in a more recent study. Schmidt-Hidding uses seven factors to distinguish eight styles of humor. These factors include intention, object, attitude, behavior (for example, hostile), ideal audience, method, and linguistic peculiarities. These factors lead to two broad categories of light and dark styles. Dark styles border on ridicule, malignance, and hostility and aim to hurt others. Light styles seek to strengthen intersubjective relationships based on graciousness and positive emotions. Modifying this taxonomy, Ruch et al. (2018) propose eight comic styles that, ranging from lighter to darker styles, include fun, humor, nonsense, wit, irony, satire, sarcasm, and cynicism.

Functions of Humor

Types and functions of humor inevitably overlap. And it is very important for an environmental advocate and activist to be aware of the potential functions of humor for the purpose of optimizing the efficacy of their communication. Building upon the three major theories of humor, Meyer (2000) postulates four basic (rhetorical) functions for humor: *identification*, *clarification*, *enforcement*, and *differentiation* (Figure 2.1). The first two functions can unite communities through mutual identification and clarifications of values and positions. The latter two, by contrast, can divide through differentiating acceptable and unacceptable norms and enforcing them at the community level. Each of these functions can therefore be aligned with one or more of the three broad theories of humor. Identification maps into relief theories; clarification and differentiation align with incongruity theories; and identification, enforcement, and differentiation are associated with superiority theories (Meyer, 2000). The strength of these four functions is determined by the degree to which the audience agrees with or opposes the position endorsed by the humorous topic and by their level of familiarity with it.

This is of particular importance when humor is employed to convert people and change their behavior. It is probably not very effective to start with differentiation if humor aims to persuade people to reduce their meat consumption, for instance. Starting with identification (that is, community building) and taking the known and the familiar as a point of departure are more likely to successfully lure a larger number of people to agree with

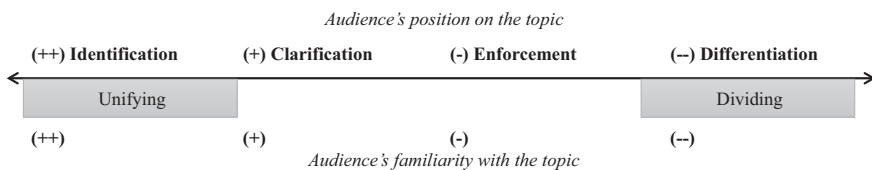


Figure 2.1 Four basic rhetorical functions of humor (Meyer, 2000).

a message that presents something different or teaches something new and encourages them to reconsider their attitudes and behaviors.

Community building is also among the functions of humor. It is a way of setting norms and expectations that eventually determine the behavior of community members (more on this in chapter 3). But since community building is partly based on distinguishing the self from the other, humor and satire are simultaneously divisive, as well. Both these functions, however, can be employed in advocating pro-environmental behavior. The affiliative and identifying qualities of humor can be employed to bring like-minded people together and create and consolidate pro-environmental identities and communities that can provide a common ground and cause, serving as a basis for socio-political action. The differentiating function can be utilized to distinguish sustainable attitudes and behaviors from environmentally destructive ones at individual and community levels. Darker and more aggressive styles can be employed to criticize and disparage unsustainable attitudes, behaviors, and norms not only at the personal level but also in the case of corporations and politicians. This is particularly effective at the societal level.

Humor, therefore, can be employed to enhance identity and to evade it; its cohesive effect can bring community members together, while it simultaneously works to exclude others (Archakis & Tsakona, 2005; Basu, 1999; Berger, 2014; Billig, 2005; Bogel, 2001; Friedman & Kuipers, 2013; Howitt & Owusu-Bempah, 2005; Klein, 2007; Martin & Ford, 2018; Martineau, 1972; Meyer, 1997, 2000; Morreall, 2005; Twark, 2007; Zekavat, 2014, 2017). Besides fostering a sense of belonging, humor is claimed to be able to perform many other, sometimes contradictory, functions. Politicians manipulate its polemical and rhetorical potentials in their campaigns to appeal to the electorate, while humor can also lead to political passivism due to evoking a sense of detachment in “laughing things off.” It is manipulated by conservatives and populists demagogues for fearmongering and appealing to the heartland, while left-wing liberals use it to criticize the status quo and push forward their progressive agendas (Bloom & Bloom, 1979; Cheauré & Nohejl, 2014; Davies, 2014; Davis, 2014, 2016, 2017; Davis & Foyle, 2017; Hart & Bos, 2008; Higgie, 2017; Holm, 2017; Kramer, 2015; Lewis et al., 2008; Lockyer & Pickering, 2005, 2008; Morreall, 2005; Rolfe, 2017; Sørensen, 2016; Takovski, 2020; Waterlow, 2015, 2018; Wedeen, 2013; Westwood & Johnson, 2013; Young, 2020).

Besides the social and political functions of humor, it is also important to consider its organizational functions for the purpose of advocating pro-environmental behavior. This is mainly because different organizations, including corporations, governmental, and non-governmental organizations, play a very significant role not only in making environmental policies and regulations but also in reducing the environmental impact of our species. First, governments are among the largest polluters and CO₂ emitters in many economies where the public sector dominates or the State is responsible for (decisions about) the production and consumption of fossil fuels.

Second, organizations and institutions exert a great deal of influence on public behavior at the same time. They can regulate people's environmental behavior not only through direct interventions such as taxing or regulating prices but also through manipulating symbolic and affective values through the entertainment industry and systems of education, among others.

The double-edged sword (Malone, 1980) of humor plays an important, though ambiguous, role in the work context as one of the main areas of individual and collective human life. Serving several intrapersonal and interpersonal purposes, it can function as a social lubricant or abrasive (Janes & Olson, 2015; Martineau, 1972). Self-enhancing humor and affiliative humor (Martin et al., 2003) account for its adaptive impacts, and self-defeating and aggressive humor can explain its maladaptive effects in work and organizational context (Mesmer-Magnus et al., 2012; Scheel et al., 2016). As an intrapersonal phenomenon, humor can help change perspectives and, subsequently, put a distance between the problem and the observer (Martin et al., 1993). This sense of detachment can lead to a more nuanced and less biased cognitive and emotional engagement with the topic. In other words, humor can instigate what Bertolt Brecht (2014) called *Verfremdungseffekt*, a sense of distancing, estrangement, or alienation effect to facilitate a detached, more objective evaluation. As a coping strategy, humor can buffer the impact of stress in the workplace (Guenter et al., 2013; Romero & Cruthirds, 2006) and even help prevent PTSD (post-traumatic stress disorder; Sliter et al., 2014; see also Gournelos & Greene, 2011). The positive emotions that humor is associated with (Martin & Ford, 2018; Plester & Inkson, 2019; Robbins & Vandree, 2009; Veatch, 1998) can explain the reason why it might be effectively employed in extreme situations and catastrophes.

On an interpersonal level, humor spurs unifying and dividing communication as discussed above (Meyer, 2000; Romero & Cruthirds, 2006). It can attract attention and create immediacy that can be used for educational and training purposes. Likewise, the emotional contagion that humor sparks can enhance positive emotions (Kong et al., 2019) and foster cohesion in teams (for example, Mesmer-Magnus et al., 2012; Romero & Cruthirds, 2006). While being employed to consolidate or contest status and power relations (Holmes & Marra, 2006), humor is also utilized for persuading and motivating staff by managers (Wood et al., 2011). The face-saving and norm-enforcing potentials of humorous messages are also used in negotiation and conflict resolution (Gockel & Vetter, 2017). In one of the first meta-analyses on positive humor at work conducted by Mesmer-Magnus et al. (2012), employees' ratings of their own "positive" humor were significantly related to better self-ratings of work results and well-being (for example, higher performance and job satisfaction, lower stress, and withdrawal from work). And employees' ratings of their leaders' "positive" humor were significantly related to better self-rated work results (for example, performance and (lower) withdrawal).

Leadership has attracted much attention in research concerning the use of humor in the context of work. In a recent meta-analysis, Kong et al. (2019)

supported the association of leader humor with a range of favorable outcomes at the level of followers which include in- and extra-role behavior, job performance, organizational citizenship behavior (OCB), job satisfaction, affective organizational commitment, and intent to stay. According to Kong et al. (2019), this is mainly achieved by means of provoking positive emotions in employees and by strengthening trust and leader-member-exchange (LMX; see also Pundt & Herrmann, 2015). Pundt and Herrmann (2015) found a detrimental effect for leaders' negative humor on the quality of the follower-supervisor relationship. Overall, humor is a powerful tool for managerial communication (Romero & Cruthirds, 2006; Wood et al., 2011) that can foster creativity, problem solving, and organizational culture (Wood et al., 2011); however, it has its potential drawbacks as in the case of gender prejudice. Recent evidence supports the risks of using humor at work for women (Evans et al., 2019). The very same humor that was judged as functional for men was deemed disruptive when employed by women, and a lower status is usually ascribed to women when they use humor.

Humor has been seen as a subversive strategy that can empower followers and at the same time as a containing strategy manipulated by leaders. On the one hand, humor is seen as being on par with oppositional resistance and intentional disobedience (Fleming & Sewell, 2002), being inherently subversive and thus inevitably challenging existing power relations and structures. On the other hand, humor is used by managers for the purpose of regulating employees and thus eventually reinforces and consolidates existing power structures (see Collinson, 2002; Loacker & Peters, 2015). In other words, instead of resisting and striving to change the system, humor helps workers cope with pressure, stress, and all they dislike about their jobs. Additionally, management may try to regulate or suppress employee humor (Collinson, 2002); nonetheless, regulating attempts sometimes backfire and create an impact contrary to the one intended by the manager. Given its ambiguous nature, some forms of (official) humor can generate stability and compliance, while other forms of workplace humor can have destabilizing, disruptive, and recalcitrant effects.

Satire

Satire is even more evasive than humor as evidenced in the wrong attribution of its etymology to *satyr* instead of *satura*. Despite many attempts to define and theorize satire over centuries, there is very little agreement even about the category to which satire belongs. Different satirists and thinkers have identified it as a genre, sub-genre, mode, discourse, or even under vague terms such as procedure (Griffin, 1994). Satire is usually associated with a critical provocation of laughter for the purpose of chastising vice and folly (Holbert, 2013). This is frequently achieved through the use of different rhetorical devices in literature. Moreover, satire usually presumes a standard moral system as a norm in comparison to which deviations and (moral) failures are detected and exposed. As a result, satire has been frequently

conceptualized at the juncture between moral philosophy and rhetoric. Nonetheless, it has never been restricted to the traditional medium of rhetoric, namely language. Not only has it resurfaced in many genres like the novel, but it has also permeated over other media including pictorial arts and motion pictures. Among other things, its use in personal attacks also shows that it has not always strictly adhered to the moral and ethical codes it aims to uphold (for more on satire, see Baumgarten & Morris, 2008; Bloom & Bloom, 1979; Condren, 2002, 2012, 2017; Condren et al., 2008; Connery & Combe, 1995; Davis, 2016, 2017; Declercq, 2018; Elliott, 1954, 1960; Feinberg, 1967; Frye, 1973; Greenberg, 2011, 2019; Griffin, 1994; Guilhamet, 1987; Highet, 1960, 1962; Hodgart, 2017; Hume, 2007; Javādī, 2005; Kernan, 1959, 1965; Knight, 2004; LaMarre et al., 2014; Marshall, 2013; McCausland et al., 2008; Meijer Drees & De Leeuw, 2015; Paulson, 1967; Phiddian, 2013, 2019; Quintero, 2007; Simpson, 2003; Sloterdijk, 2001; Sutherland, 1962; Test, 1991; Twark, 2007; Zekavat, 2014, 2017, 2019a, 2019b).

In literary and cultural studies, several critics have acknowledged the disciplinary, parrhesiastic, liberating, and revolutionary functions of satire (Bakhtin, 1984; Brock, 2018; Colebrook, 2004; Eagleton, 2019; Hoffman & Young, 2011; Holm, 2017; Hutcheon, 2005; Kozintsev, 2010; McGraw & Warren, 2014; Nikulin, 2014; Phiddian, 2017; Rolfe, 2017; Sørensen, 2016; Takovski, 2019; Waterlow, 2015, 2018; Young, 2012, 2020; Zekavat, 2017; Zupančič, 2008). Chattoo (2019, p. 512; see also Chattoo & Feldman, 2020), for instance, attributes several functions to comedy¹ in promoting social change. These functions include “attracting attention and facilitating memory; persuasion; opening a door to complex social issues; dissolving social barriers; and encouraging sharing with others.” Such complex issues and social barriers might include, but are not limited to:

- Race and ethnicity (for example, Borgella et al., 2019; Chattoo & Feldman, 2020; Donian & Holm, 2021; Gilbert & Rossing, 2013; Göktürk, 2008; Howitt & Owusu-Bempah, 2005; Kuipers, 2000, 2012; Kuipers & van der Ent, 2016; Rossing, 2016, 2019; Weaver, 2010; Zekavat, 2017);
- Gender and sexual orientation (for example, Abedinifard, 2015, 2016a, 2016b; Baines, 2014; Billig, 2001; Bing, 2004, 2007; Bing & Heller, 2003; Greengross, 2020; Heidari-Shahreza, 2019; Kairoff, 2007; Kochersberger et al., 2014; Nussbaum, 1988; Smith, 1980, 2005; Stott, 2005; Zekavat, 2017; Zekavat & Pourgiv, 2015);
- Religion (for example, Ben-Amos, 1973; Geybels & Van Herck, 2011; Gilhus, 1997, 2006, 2011; Kuipers, 2011; Layman, 1988; Morreall, 1999, 2008; Schweizer, 2019; Schweizer & Ott, 2016; Stronks, 2010; Zekavat, 2017);
- Socio-economic status (for example, Chattoo & Feldman, 2020; Kuipers, 2005; Ngai, 2017); and
- Politics (for example, Amarasingam, 2011; Basu & Zekavat, 2021; Baym & Jones, 2012, 2013; Boukes, 2018a, 2018b; Boukes & Hameleers, 2020; Branagan, 2007; Farjami, 2014, 2017; Forbes, 2010; Hill, 2013; Lee, 2014; Lee & Kwak, 2014; Miazhevich, 2015).

Many social barriers that satire addresses are also factors that partly determine our environmental behaviors. In other words, social issues are common denominators between environmental behavior and satire. This is among the reasons why we contend that humor and satire can be employed to develop an alternative effective communicative strategy for environmental messaging in order to convince citizens, corporations, and policymakers of the urgency of ecological crises and of the significance of taking immediate action in order to avoid further damage and make up for what is reparable.

Note

- 1 She uses the term comedy rather loosely. For her, comedy includes “Satirical news, scripted entertainment storytelling, marketing and advertising, and stand-up comedy” (Chattoo, 2019, p. 506). See Zekavat (2017) for a rather compendious discussion of terminology.

References

- Abedinifard, M. (2015). *Humor and gender hegemony: The panoptical role of ridicule vis-à-vis gender* [Doctoral thesis, University of Alberta]. Education and Research Archive. <https://doi.org/10.7939/R3XP6V956>
- Abedinifard, M. (2016a). Ridicule, gender hegemony, and the disciplinary function of mainstream gender humor. *Social Semiotics*, 26(3), 234–249. <https://doi.org/10.1080/10350330.2015.1134817>
- Abedinifard, M. (2016b). Structural functions of the targeted joke: Iranian modernity and the Qazvini man as predatory homosexual. *Humor*, 29(3), 337–357. <https://doi.org/10.1515/humor-2016-0008>
- Abrams, M. H., & Harpham, G. (2015). *A glossary of literary terms* (11th Ed.). Cengage Learning.
- Amarasingam, A. (Ed.). (2011). *Stewart/Colbert effect: Essays on the real impact of fake news*. McFarland & Company Inc. Publishers.
- Amir, L. (2012). Humor in philosophy: Theory and practice. *Philosophical Practice*, 7, 1015–1029.
- Amir L. (2019). *Philosophy, humor, and the human condition: Taking ridicule seriously*. Palgrave Macmillan
- Amir, L. (2021). Forget humor! Embraced ridicule as self-transcendence. *The Philosophy of Humor Yearbook*, 2(1), 283–288. <https://doi.org/10.1515/phhumyb-2021-022>
- Apter, M. J. (2005). *Personality dynamics: Key concepts in reversal theory*. Apter International.
- Apter, M. J. (2013). Developing reversal theory: Some suggestions for future research. *Journal of Motivation, Emotion, and Personality*, 1(1), 1–8. <https://doi.org/10.12689/jmep.2013.101>
- Apter, M., & Desselles, M. (2012). Disclosure humor and distortion humor: A reversal theory analysis. *Humor*, 25(4), 417–435. <https://doi.org/10.1515/humor-2012-0021>
- Apter, M., & Smith, K. (1977). Humor and the theory of psychological reversals. In A. J. Chapman & H. C. Foot (Eds.), *It's a funny thing, humor: Proceedings of the international conference on humor and laughter* (pp. 95–100). Pergamon.

- Archakis, A., & Tsakona, V. (2005). Analyzing conversational data in GTVH terms: A new approach to the issue of identity construction via humor. *Humor*, 18(1), 41–68. <https://doi.org/10.1515/humr.2005.18.1.41>
- Attardo, S. (1994). Linguistic theories of humor. *Studies in Language*, 22(1), 205–212. <https://doi.org/10.1075/sl.22.1.08kot>
- Attardo, S. (2008). Semantics and pragmatics of humor. *Language and Linguistics Compass*, 2(6), 1203–1215. <https://doi.org/10.1111/j.1749-818X.2008.00107.x>
- Attardo, S. (2017). Humor in language. In M. Aronoff (Ed.), *Oxford research encyclopedia of linguistics*. Oxford University Press. <https://doi.org/10.1093/acrefore/9780199384655.013.342>
- Attardo, S., Hempelmann, C. F., & Di Maio, S. (2002). Script oppositions and logical mechanisms: Modeling incongruities and their resolutions. *Humor*, 15(1), 3–46. <https://doi.org/10.1515/humr.2002.004>
- Baines, P. (2014). Female satirists of the eighteenth century. In R. DeMaria, Jr. H. Chang, & S. Zacher (Eds.), *A companion to British literature: Volume III: Long eighteenth-century literature 1660–1837* (pp. 95–112). Wiley Blackwell.
- Bakhtin, M. (1984). *Rabelais and his world*. Indiana University Press.
- Baldick, C. (2001). *The concise Oxford dictionary of literary terms*. Oxford University Press.
- Basu, S. (1999). Dialogic ethics and the virtue of humor. *The Journal of Political Philosophy*, 7(4), 378–403. <https://doi.org/10.1111/1467-9760.00082>
- Basu, S., & Zekavat, M. (2021). The contingent dynamics of political humor. *The European Journal of Humor Research*, 9(3), 1–8. <https://doi.org/10.7592/EJHR2021.9.3.635>
- Baumgarten, J., & Morris, J. (2008). *Laughing matters: Humor and American politics in the media age*. Routledge.
- Baym, G., & Jones, J. P. (2012). News parody in global perspective: Politics, power, and resistance. *The International Journal of Media and Culture*, 10(1–2), 2–13. <https://doi.org/10.1080/15405702.2012.638566>
- Baym, G., & Jones, J. P. (Eds.). (2013). *News parody and political satire across the globe*. Routledge.
- Ben-Amos, D. (1973). The “myth” of Jewish humor. *Western Folklore*, 32(2), 112–131. <https://doi.org/10.2307/1498323>
- Berger, P. L. (2014). *Redeeming laughter: The comic dimension of human experience* (2nd ed.). De Gruyter.
- Billig, M. (2001). Humor and hatred: The racist jokes of the Ku Klux Klan. *Discourse & Society*, 12(3), 267–289. <https://doi.org/10.1177/0957926501012003001>
- Billig, M. (2005). *Laughter and ridicule: Towards a social critique of humor*. Sage Publications Ltd. <http://dx.doi.org/10.4135/9781446211779>
- Bing, J. (2004). Is feminist humor an oxymoron? *Women and Language*, 27(1), 22–33.
- Bing, J. (2007). Liberated jokes: Sexual humor in all-female groups. *Humor*, 20(4), 337–366. <https://doi.org/10.1515/HUMOR.2007.017>
- Bing, J., & Heller, D. (2003). How many lesbians does it take to screw in a light bulb? *Humor*, 16(2), 157–182. <https://doi.org/10.1515/humr.2003.009>
- Blitt, B. (October 8, 2021). One step forward, one step back. *New Yorker*. <https://www.newyorker.com/cartoons/blitts-kvetchbook/a-new-breakthrough-in-understanding-darwins-theory>
- Bloom, E. A., & Bloom, L.D. (1979). *Satire's persuasive voice*. University Cornell Press.

- Bogel, F. V. (2001). *The difference satire makes: Rhetoric and reading from Jonson to Byron*. Cornell University Press.
- Borgella, A. M., Maddox, K. B., & Howard, S. (2019). Cracking wise to break the ice: The potential for racial humor to ease interracial anxiety. *Humor*, 33(1), 105–135. <https://doi.org/10.1515/humor-2018-0133>
- Bouissac, P. (2015). *The semiotics of clowns and clowning: Rituals of transgression and the theory of laughter*. Bloomsbury Academic.
- Boukes, M. (2018a). Agenda-setting with satire: How political satire increased TTIP's saliency on the public, media, and political agenda. *Political Communication*, 36(3), 426–451. <https://doi.org/10.1080/10584609.2018.1498816>
- Boukes, M. (2018b). The causes and consequences of affinity for political humor. In J. C. Baumgartner, J. C. & A. B. Becker (Eds.), *Political humor in a changing media landscape: A new generation of research* (pp. 207–232). Lexington.
- Boukes, M., & Hameleers, M. (2020). Shattering populists' rhetoric with satire at elections times: The effect of humorously holding populists accountable for their lack of solutions. *Journal of Communication*, 70(4), 574–597. <https://doi.org/10.1093/joc/jqaa020>
- Boyd, B. (2004). Laughter and literature: A play theory of humor. *Philosophy and Literature*, 28(1), 1–22. <https://doi.org/10.1353/phl.2004.0002>
- Branagan, M. (2007). The last laugh: Humor in community activism. *Community Development Journal*, 42(4), 470–481. <https://doi.org/10.1093/cdj/bsm037>
- Brecht, B. (2014). *Brecht on theatre*. Editors: Marc Silberman, Steve Giles, Tom Kuhn. Translator: Steve Giles. Bloomsbury Publishing.
- Bressler, E. R., Martin, R. A., & Balshine, S. (2006). Production and appreciation of humor as sexually selected traits. *Evolution and Human Behavior*, 27(2), 121–130. <https://doi.org/10.1016/j.evolhumbehav.2005.09.001>
- Brock, A. (2009). Humor as a metacommunicative process. *Journal of Literary Theory*, 3(2), 177–194. <https://doi.org/10.1515/JLT.2009.011>
- Brock, M. (2018). Political satire and its disruptive potential: Irony and cynicism in Russia and the US. *Culture, Theory and Critique*, 59(3), 281–298. <https://doi.org/10.1080/14735784.2018.1496843>
- Caron, J. E. (2002). From ethology to aesthetics: Evolution as a theoretical paradigm for research on laughter, humor, and other comic phenomena. *Humor*, 15(3), 245–281. <https://doi.org/10.1515/humr.2002.015>
- Carroll, N. (1991). On jokes. *Midwest Studies in Philosophy*, 16, 280–301. <https://doi.org/10.1111/j.1475-4975.1991.tb00244.x>
- Carroll, N. (1999). Horror and humor. *The Journal of Aesthetics and Art Criticism*, 57(2), 145–160. <https://doi.org/10.2307/432309>
- Carroll, N. (2005). Two comic plot structures. *Monist*, 88(1), 154–183. <https://doi.org/10.5840/monist20058814>
- Carroll, N. (2008). Ethnicity, race, and monstrosity: The rhetorics of horror and humor. In J. Carroll (Ed.), *Engaging the moving image* (pp. 88–107). Yale University Press. <https://doi.org/10.12987/yale/9780300091953.003.0004>
- Carroll, N. (2009). *Comedy incarnate: Buster Keaton, physical humor, and bodily coping*. Wiley-Blackwell.
- Carroll, N. (2014). *Humor: A very short introduction*. Oxford University Press.
- Carroll, N. (2016). The applied philosophy of humor. In K. Lippert-Rasmussen, K. Brownlee, D. Coady (Eds.), *A companion to applied philosophy* (pp. 527–538). John Wiley & Sons, Ltd. <https://doi.org/10.1002/9781118869109.ch37>

- Chattoo, C. B. (2019). A funny matter: Toward a framework for understanding the function of comedy in social change. *Humor*, 32(3), 499–523. <https://doi.org/10.1515/humor-2018-0004>
- Chattoo, C. B., & Feldman, L. (2020). *A comedian and an activist walk into a bar: The serious role of comedy in social justice*. University of California Press.
- Cheauré, E., & Nohejl, R. (2014). *Humor and laughter in history: Transcultural perspectives*. Transcript. <http://dx.doi.org/10.14361/transcript.9783839428580>
- Colebrook, C. (2004). *Irony*. Routledge.
- Collinson, D. L. (2002). Managing humor. *Journal of management studies*, 39(3), 269–288. <https://doi.org/10.1111/1467-6486.00292>
- Condren, C. (2002). Between social constraint and the public sphere: On misreading early-modern political satire. *Contemporary Political Theory*, 1, 79–101. <https://doi.org/10.1057/palgrave.cpt.9300016>
- Condren, C. (2012). Satire and definition. *Humor*, 25(4), 375–399. <https://doi.org/10.1515/humor-2012-0019>
- Condren, C. (2017). Yes, minister, yes, prime minister: The theoretical dimension. In: J. Milner Davis (Ed.), *Satire and politics: The interplay of heritage and practice*. Palgrave Macmillan. https://doi.org/10.1007/978-3-319-56774-7_8
- Condren, C., Milner Davis, J., McCausland, S., & Phiddian, R. (2008). Defining parody and satire: Australian copyright law and its new exception: Part 2—advancing ordinary definitions. *Media and Arts Law Review*, 13(4), pp. 401–421.
- Connery, B. A., & Combe, K. (1995). Theorizing satire: A retrospective and introduction. In B. A. Connery & K. Combe (Eds.), *Theorizing satire: Essays in literary criticism* (pp. 1–15). St. Martin's Press.
- Critchley, S. (2002). *On humor*. Routledge. <https://doi.org/10.4324/9780203870129>
- Cuddon, J. A., revised by C. E. Preston (1999). *The penguin dictionary of literary terms and literary theory*. Penguin Books.
- Davies, C. (1991). Exploring the thesis of the self-deprecating Jewish sense of humor. *Humor*, 4(2), 189–209. <https://doi.org/10.1515/humr.1991.4.2.189>
- Davies, C. (1996). *Ethnic humor around the world: A comparative analysis*. Indiana University Press.
- Davies, C. (1998). *Jokes and their relations to society*. Mouton de Gruyter.
- Davies, C. (2011). *Jokes and targets*. Indiana University Press.
- Davies, C. (2014). Political ridicule and humor under socialism. *European Journal of Humor Research*, 2(3), 1–27. <http://dx.doi.org/10.7592/EJHR2014.2.3.davies>
- Davies, C. (2017). *The mirth of nations*. Routledge.
- Davis, J. M. (2014). Traditional comic conflicts in farce and roles for women. In D. Chiaro & R. Baccolini (Eds.), *Gender and humor: Interdisciplinary and international perspectives* (pp. 30–52). Routledge.
- Davis, J. M. (2016). Satire and its constraints: Case studies from Australia, Japan, and the People's Republic of China. *Humor*, 29(2), 197–221. <https://doi.org/10.1515/humor-2015-0080>
- Davis, J. M. (Ed.). (2017). *Satire and politics: The interplay of heritage and practice*. Palgrave Macmillan. <https://doi.org/10.1007/978-3-319-56774-7>
- Davis, J. M., & Foyle, L. (2017). The satirist, the larrikin and the politician: An Australian perspective on satire and politics. In J. M. Davis (Ed.), *Satire and politics: The interplay of heritage and practice* (pp. 1–36). Palgrave Macmillan. https://doi.org/10.1007/978-3-319-56774-7_1
- Declercq, D. (2018). A definition of satire (and why a definition matters). *The Journal of Aesthetics and Art Criticism*, 76(3), 319–330. <https://doi.org/10.1111/jaac.12563>

- Donian, J. & Holm, N. (2021). Trevor Noah and the contingent politics of racial joking. The contingent dynamics of political humor. *European Journal of Humor Research*, 9(3), 30–48.
- Eagleton, T. (2019). *Humor*. Yale University Press. <https://doi.org/10.12987/9780300244786>
- Elliott, R. C. (1954). The satirist and society. *ELH*, 21(3), 237–248. <https://doi.org/10.2307/2871965>
- Elliott, R. C. (1960). *The power of satire: Magic, ritual, art*. Princeton University Press.
- Evans, J. B., Slaughter, J. E., Ellis, A. P. J., & Rivin, J. M. (2019). Gender and the evaluation of humor at work. *Journal of Applied Psychology*, 104(8), 1077–1087. <https://doi.org/10.1037/apl0000395>
- Farjami, M. (2014). Political satire as an index of press freedom: A review of political satire in the Iranian press during the 2000s. *Iranian Studies*, 47(2), 217–239. <https://doi.org/10.1080/00210862.2013.860325>
- Farjami, M. (2017). *Iranian political satirists: Experience and motivation in the contemporary era*. John Benjamins. <https://doi.org/10.1075/thr.5>
- Feinberg, L. (1967). *Introduction to satire*. Iowa State University Press.
- Ferguson, M. A., & Ford, T. E. (2008). Disparagement humor: A theoretical and empirical review of psychoanalytic, superiority, and social identity theories. *Humor*, 21(3), 283–312. <https://doi.org/10.1515/HUMOR.2008.014>
- Fleming, P., & Sewell, G. (2002). Looking for the good soldier, Švejk: Alternative modalities of resistance in the contemporary workplace. *Sociology*, 36(4), 857–873. <https://doi.org/10.1177/003803850203600404>
- Forbes, A. W. (2010). *The satiric decade: Satire and the rise of republicanism in France, 1830–1840*. Lexington Books.
- Freud, S. (1964). *Jokes and their relation to the unconscious*. Hogarth Press.
- Freud, S. (2010a). An outline of psychoanalysis. In I. Smith (Ed.), *Complete works*. (pp. 4954–5011). Epub. https://www.valas.fr/IMG/pdf/Freud_Complete_Works.pdf
- Freud, S. (2010b). Humour. In I. Smith (Ed.), *Complete works* (pp. 4539–4545). Epub. https://www.valas.fr/IMG/pdf/Freud_Complete_Works.pdf
- Friedman, S., & Kuipers, G. (2013). The divisive power of humor. Comedy taste and symbolic boundaries. *Cultural Sociology*, 7(2), 179–195. <https://doi.org/10.1177/1749975513477405>
- Fry, W. F. Jr., & Savin, W. M. (1988). Mirthful laughter and blood pressure. *Humor*, 1, 49–62. <https://doi.org/10.1515/humr.1988.1.1.49>
- Frye, N. (1973). *Anatomy of criticism: Four essays* (3rd printing). Princeton University Press.
- Geybels, H., & Van Herck, W. (Eds.). (2011). *Humor and religion: Challenges and ambiguities*. Continuum.
- Gilbert, C. J., & Rossing, J. P. (2013). Trumping tropes with joke(r)s: The daily show “plays the race card”. *Western Journal of Communication*, 77(1), 92–111. <https://doi.org/10.1080/10570314.2012.720747>
- Gilhus, I. S. (1997). *Laughing gods, weeping virgins: Laughter in the history of religion*. Routledge.
- Gilhus, I. S. (2006). *Animals, gods, and humans: Changing attitudes to animals in Greek, Roman and early Christian thought*. Routledge.
- Gilhus, I. S. (2011). Why did Jesus laugh? Laughing in biblical-demiurgical texts. In H. Geybels and W. van Herck (Eds.), *Humor and religion: Challenges and ambiguities* (pp. 123–140). Continuum.

- Gockel, C., & Vetter, L. (2017). Humor in leadership: How to lead people with humor. In T. Scheel & C. Gockel (Eds.), *Humor at work in teams, leadership negotiations, learnings, and health*. Springer. https://doi.org/10.1007/978-3-319-65691-5_4
- Göktürk, D. (2008). Jokes and butts: Can we imagine humor in a global public sphere? *PMLA*, 123(5), 1707–1711. <https://doi.org/10.1632/pmla.2008.123.5.1707>
- Gournelos, T., & Greene, V. (Eds.). (2011). *A decade of dark humour: How comedy, irony and satire shaped post 9/11 America*. University Press of Mississippi.
- Greenberg, J. D. (2011). *Modernism, satire and the novel*. Cambridge University Press.
- Greenberg, J. D. (2019). *The Cambridge introduction to satire*. Cambridge University Press.
- Greengross, G. (2020). Sex and gender differences in humor: Introduction and overview. *Humor*, 33(2), 175–178. <https://doi.org/10.1515/humor-2020-0005>
- Greengross, G., & Miller, G. (2011). Humor ability reveals intelligence, predicts mating success, and is higher in males. *Intelligence*, 39(4), 188–192. <https://doi.org/10.1016/j.intell.2011.03.006>
- Greengross, G., Martin, R. A., & Miller, G. (2012). Personality traits, intelligence, humor styles, and humor production ability of professional stand-up comedians compared to college students. *Psychology of Aesthetics, Creativity, and the Arts*, 6(1), 74–82. <https://doi.org/10.1037/a0025774>
- Greengross, G., Silvia, P. J., & Nusbaum, E. C. (2020). Sex differences in humor production ability: A meta-analysis. *Journal of Research in Personality*, 84, 103886. <https://doi.org/10.1016/j.jrp.2019.103886>
- Griffin, D. (1994). *Satire: A critical reintroduction*. University Press of Kentucky.
- Guéguen, N. (2010). Men's sense of humor and women's responses to courtship solicitations: An experimental field study. *Psychological Reports*, 107(1), 145–156. <https://doi.org/10.2466/07.17.PR0.107.4.145-156>
- Gunter, H., Schreurs, B., Van Emmerik, I. H., Gijsbers, W., & Van Iterson, A. (2013). How adaptive and maladaptive humor influence wellbeing at work: A diary study. *Humor*, 26(4), 573–594. <https://doi.org/10.1515/humor-2013-0032>
- Guilhamet, L. (1987). *Satire and the transformation of genre*. University of Pennsylvania Press. <https://doi.org/10.9783/9781512802092>
- Hall, J. A. (2015). Sexual selection and humor in courtship: A case for warmth and extroversion. *Evolutionary Psychology*, 13(3), 1–10. <https://doi.org/10.1177/1474704915598918>
- Hart, M. T., & Bos, D. (2008). Humor and social protest. *International Review of Social History Supplements*, 15(S15), 1–20. <https://doi.org/10.1017/S0020859007003094>
- Heidari-Shahreza, M. A. (2019). A sociolinguistic analysis of gender in Persian verbal humor: The case on online jokes. *Gender Issues*, 36(1), 46–66. <https://doi.org/10.1007/s12147-017-9206-9>
- Heintz, S. & Ruch, W. (2019). From four to nine styles: An update on individual differences in humor. *Personality and Individual Differences*, 141, 7–12. <https://doi.org/10.1016/j.paid.2018.12.008>
- Hempelmann, C. F., & Ruch, W. (2005). 3 WD meets GTVH: Breaking the ground for interdisciplinary humor research. *Humor*, 18(4), 353–387. <https://doi.org/10.1515/humr.2005.18.4.353>
- Higgle, R. (2017). Under the guise of humor and critique: The political co-option of popular contemporary satire. In J. Milner Davis (Ed.), *Satire and politics. Palgrave studies in comedy* (pp. 73–102). Palgrave Macmillan. https://doi.org/10.1007/978-3-319-56774-7_3

- Highet, G. (1960). *Juvenal the satirist: A study*. Clarendon Press.
- Highet, G. (1962). *The anatomy of satire*. Princeton University Press.
- Hill, M. R. (2013). Developing a normative approach to political satire: A critical perspective. *International Journal of Communication*, 7(1), 324–337. <https://ijoc.org/index.php/ijoc/article/view/1934/856>
- Hobbes, T. (1909). *Hobbes's leviathan: Reprinted from the edition of 1651*. Oxford University Press. <https://archive.org/details/hobbessleviathan00hobbuoft>
- Hobbes, T. (1996). *Leviathan*. Cambridge University Press.
- Hobbes, T. (1999). *The elements of law, natural and politic: Part I: Human nature; Part II: De Corpore Politico with three lives*. Oxford University Press.
- Hodgart, M. (2017). *Satire: Origins and principles*. Routledge. <https://doi.org/10.4324/9781315128924>
- Hoffman, L. H., & Young, D. G. (2011). Satire, punch lines, and the nightly news: Untangling media effects on political participation. *Communication Research Reports*, 28(2), 159–168. <https://doi.org/10.1080/08824096.2011.565278>
- Holbert, R. L. (2013). Developing a normative approach to political satire: An empirical perspective. *International Journal of Communication*, 7, 305–323.
- Holm, N. (2017). *Humor as politics: The political aesthetics of contemporary comedy*. Palgrave. <https://doi.org/10.1007/978-3-319-50950-1>
- Holmes, J., & Marra, M. (2006). Humor and leadership style. *Humor*, 19(2), 119–138. <https://doi.org/10.1515/HUMOR.2006.006>
- Howitt, D., & Owusu-Bempah, K. (2005). Race and ethnicity in popular humor. In S. Lockyer & M. Pickering (Eds.), *Beyond a joke* (pp. 45–62). Palgrave Macmillan. https://doi.org/10.1057/9780230236776_3
- Hume, K. (2007). Diffused satire in contemporary American fiction. *Modern Philology*, 105(2), 300–325. <https://doi.org/10.1086/588102>
- Hutcheon, L. (2005). *Irony's edge: The theory and politics of irony*. Routledge.
- Janes, L., & Olson, J. (2015). Humor as an abrasive or a lubricant in social situations: Martineau revisited. *Humor*, 28(2), 271–288. <https://doi.org/10.1515/humor-2015-0021>
- Javādī, H. (2005). *Tārīkh-i ʔanz dar adabīyyat-i Fārsī* [History of satire in Persian literature]. Kāravān.
- Kairot, C. T. (2007). Gendering satire: Behn to Burney. In R. Quintero (Ed.), *A companion to satire* (pp. 226–292). Blackwell. <https://doi.org/10.1002/9780470996959.ch16>
- Kant, I. (1987). *Critique of judgment*. Hackett Publishing.
- Kernan, A. B. (1959). A theory of satire. In A. B. Kernan (Ed.), *The cankerd muse*. Yale University Press. Reprinted in *Modern Satire* (pp. 164–179). Harcourt Brace Jovanovich, 1962.
- Kernan, A. B. (1965). *The plot of satire*. Yale University Press.
- Klein, S. (2007). *Art and laughter*. I. B. Tauris.
- Knight, C. A. (2004). *The literature of satire*. Cambridge University Press. <https://doi.org/10.1017/CBO9780511485428>
- Kochersberger, A. O., Ford, T. E., Woodzicka, J. A., Romero-Sanchez, M., & Carretero-Dios, H. (2014). The role of identification with women as a determinant of amusement with sexist humor. *Humor*, 27(3), 441–460. <https://doi.org/10.1515/humor-2014-0071>
- Koestler, A. (1964). *The act of creation*. Hutchinson.
- Kong, D. T., Cooper, C. D., & Sosik, J. J. (2019). The state of research on leader humor. *Organizational Psychology Review*, 9(1), 3–40. <https://doi.org/10.1177/2041386619846948>

- Kozintsev, A. (2010). *The mirror of laughter*. Transaction Publishers. <https://doi.org/10.4324/9781315133164>
- Kramer, C. A. (2015). *Subversive humor* [Doctoral thesis]. Marquette University.
- Kuipers, G. (2000). The difference between a Surinamese and a Turk: Ethnic jokes and the position of ethnic minorities in the Netherlands. *Humor*, 12(2), 141–175. <https://doi.org/10.1515/humr.2000.13.2.141>
- Kuipers, G. (2005). Humor styles and class cultures: Highbrow humor and lowbrow humor in the Netherlands. In T. Garfitt, E. McMorran, & J. Taylor (Eds.), *The anatomy of laughter* (pp. 58–69). Legenda.
- Kuipers, G. (2011). The politics of humor in the public sphere: Cartoons, power and modernity in the first transnational humor scandal. *European Journal of Cultural Studies*, 14(1), 63–80. <https://doi.org/10.1177/1367549410370072>
- Kuipers, G. (2012). Ethnic humor and ethnic politics in the Netherlands at the turn of the twenty-first century: The rules and attraction of clandestine humor. In M. Kessel & P. Merziger (Eds.), *The politics of humor: Laughter, inclusion and exclusion in the twentieth century* (pp. 175–201). University of Toronto Press.
- Kuipers, G. (2015). *Good humor, bad taste: A sociology of the joke*. De Gruyter. <https://doi.org/10.1515/9781501510441>
- Kuipers, G., & van der Ent, B. (2016). The seriousness of ethnic jokes: Ethnic humor and social change in the Netherlands, 1995–2012. *Humor*, 29(4), 605–633. <https://doi.org/10.1515/humor-2016-0013>
- LaMarre H. L., Landreville, K. D., Young, D., & Gilkerson, N. (2014). Humor works in funny ways: Examining satirical tone as a key determinant in political humor message processing. *Mass Communication and Society*, 17(3), 400–423. <https://doi.org/10.1080/15205436.2014.891137>
- Layman, F. D. (1988). Theology and humor. *The Asbury Seminarian*, 38(1), 3–25.
- Lee, F. L. F. (2014). The impact of online user-generated satire on young people's political attitudes: Testing the moderating role of knowledge and discussion. *Tele-matics and Informatics*, 31(3), 397–409. <https://doi.org/10.1016/j.tele.2013.08.002>
- Lee, H., & Kwak, N. (2014). The affect effect of political satire: Sarcastic humor, negative emotions, and political participation. *Mass Communication and Society*, 17(3), 307–328. <https://doi.org/10.1080/15205436.2014.891133>
- Lewis, P., Davies, C., Kuipers, G., Martin, R. A., Oring, E., & Raskin, V. (2008). The Muhammad cartoons and humor research: A collection of essays. *Humor*, 21(1), 1–46. <https://doi.org/10.1515/HUMOR.2008.001>
- Li, N. P., Griskevicius, V., Durante, K. M., Jonason, P. K., Pasisz, D. J., & Aumer, K. (2009). An evolutionary perspective on humor: Sexual selection or interest indication? *Personality and Social Psychology Bulletin*, 35(7), 923–936. <https://doi.org/10.1177/0146167209334786>
- Lindfors, A. (2019). Cultivating participation and the varieties of reflexivity in stand-up comedy. *Linguistic Anthropology*, 29(3), 276–293. <https://doi.org/10.1111/jola.12223>
- Loacker, B., & Peters, L. (2015). 'Come on, get happy!': Exploring absurdity and sites of alternate ordering in twin peaks. *Ephemera: Theory and Politics in Organization*, 15(3), 621–649.
- Lockyer, S., & Pickering, M. (2008). You must be joking: The sociological critique of humor and comic media. *Sociology Compass*, 2(3), 808–820. <https://doi.org/10.1111/j.1751-9020.2008.00108.x>
- Lockyer, S., & Pickering, M. (Eds.). (2005). *Beyond a joke: The limits of humor*. Palgrave Macmillan. <https://doi.org/10.1057/9780230236776>

- Malone, P. B., III. (1980). Humor: A double-edged tool for today's managers? *The Academy of Management Review*, 5(3), 357–360. <https://doi.org/10.5465/AMR.1980.4288842>
- Marshall, A. (2013). *A practice of satire in England 1658–1770*. John Hopkins University Press.
- Martin, R., & Ford, T. (2018). *The psychology of humor: An integrative approach* (2nd ed.). Academic Press.
- Martin, R. A., Kuiper, N. A., Olinger, L. J., & Dance, K. A. (1993). Humor, coping with stress, self-concept, and psychological well-being. *Humor*, 6(1), 89–104. <https://doi.org/10.1515/humr.1993.6.1.89>
- Martin, R. A., Puhlik-Doris, P., Larsen, G., Gray, J., & Weir, K. (2003). Individual differences in uses of humor and their relation to psychological well-being: Development of the humor styles questionnaire. *Journal of Research in Personality*, 37(1), 48–75. [https://doi.org/10.1016/S0092-6566\(02\)00534-2](https://doi.org/10.1016/S0092-6566(02)00534-2)
- Martineau, W. H. (1972). A model of the social functions of humor. In J. H. Goldstein & P. E. McGhee (Eds.), *The psychology of humor* (pp. 101–125). Academic Press.
- McCausland, S., Condren, C., & Phiddian, R. (2008). Defining parody and satire: Australian copyright law and its new exception. *Media and Arts Law Review*, 13(3), 273–293.
- McGhee, P. E. (1979). *Humor, its origin and development*. W. H. Freeman & Co. Ltd.
- McGraw, A. P., & Warren, C. (2010). Benign violations: Making immoral behavior funny. *Psychological Science*, 21(8), 1141–1149. <https://doi.org/10.1177/0956797610376073>
- McGraw, P., & Warner, J. (2014). *The humor code: A global search for what makes things funny*. Simon and Schuster.
- Meijer Drees, M., & De Leeuw, J. S. (2015). *The power of satire*. John Benjamins.
- Mesmer-Magnus, J., Glew, D. J., & Viswesvaran, C. (2012). A meta-analysis of positive humor in the workplace. *Journal of Managerial Psychology*, 27(2), 155–190. <https://doi.org/10.1108/02683941211199554>
- Meyer, J. (1997). Humor in member narratives: Uniting and dividing at work. *Western Journal of Communication*, 61(2), 188–208. <https://doi.org/10.1080/10570319709374571>
- Meyer, J. (2000). Humor as a double-edged sword: Four functions of humor in communication. *Communication Theory*, 10(3), 310–331. <https://doi.org/10.1111/j.1468-2885.2000.tb00194.x>
- Miazhevich, G. (2015). Sites of subversion: Online political satire in two post-Soviet states. *Media, Culture & Society*, 37(3), 422–439. <https://doi.org/10.1177/0163443714567015>
- Miller, G. (2002). Sexual selection for indicators of intelligence. *The nature of intelligence: Novartis Foundation Symposium 233* (pp. 260–275). Wiley. https://www.researchgate.net/profile/Geoffrey-Miller-5/publication/12056364_The_Nature_of_Intelligence_Novartis_Foundation_Symposium_233/links/5c16f7c64585157a1c7bb33/The-Nature-of-Intelligence-Novartis-Foundation-Symposium-233.pdf?_sg%5B0%5D=started_experiment_milestone&origin=journalDetail#page=269
- Morreall, J. (1983). *Taking laughter seriously*. SUNY Press.
- Morreall, J. (1987). *The philosophy of laughter and humor*. State University of New York Press.

- Morreall, J. (1999). *Comedy, tragedy, and religion*. State University of New York.
- Morreall, J. (2005). Humor and the conduct of politics. In S. Lockyer & M. Pickering (Eds.), *Beyond a joke: The limits of humor* (pp. 63–78). Palgrave Macmillan. https://doi.org/10.1057/9780230236776_4
- Morreall, J. (2008). Philosophy and religion. In V. Raskin (Ed.), *The primer of humor research* (pp. 211–242). Mouton de Gruyter.
- Morreall, J. (2009a). *Comic relief: A comprehensive philosophy of humor*. Wiley-Blackwell. <https://doi.org/10.1002/9781444307795>
- Morreall, J. (2009b). Humor as cognitive play. *Journal of Literary Theory*, 3(2), 241–260. <https://doi.org/10.1515/JLT.2009.014>
- Morreall, J. (2013). Philosophy of humor. In E. N. Zalta (Ed.), *The Stanford encyclopedia of philosophy*. The Metaphysics Research Lab. <https://plato.stanford.edu/archives/fall2020/entries/humor/>
- Ngai, S. (2017). Theory of the gimmick. *Critical Inquiry*, 43(2), 466–505. <https://doi.org/10.1086/689672>
- Nietzsche, F. (2000). *The birth of tragedy*. Translated by D. Smith. Oxford University Press.
- Nikulin, D. V. (2014). *Comedy, seriously: A philosophical study*. Palgrave Macmillan.
- Nussbaum, F. A. (1988). *The brink of all we hate: English satire on women 1660–1750*. The University Press of Kentucky.
- Oring, E. (1992). *Jokes and their relations*. University Press of Kentucky.
- Oring, E. (2011). Parsing the joke: The general theory of verbal humor and appropriate incongruity. *Humor*, 24(2), 203–222. <https://doi.org/10.1515/HUMR.2011.013>
- Oring, E. (2016). *Joking aside: The theory, analysis, and aesthetics of humor*. Utah State University Press.
- Panksepp, J., & Burgdorf, J. (2003). “Laughing” rats and the evolutionary antecedents of human joy? *Physiology & Behavior*, 79, 533–547. [https://doi.org/10.1016/S0031-9384\(03\)00159-8](https://doi.org/10.1016/S0031-9384(03)00159-8)
- Parkin, J., & Davis, J. (2014). Comedy. In S. Attardo (Ed.), *Encyclopedia of humor studies* (Vol. 1, pp. 141–144). SAGE Publications, Inc. <https://dx.doi.org/10.4135/9781483346182>
- Paulson, R. (1967). *The fictions of satire*. The John Hopkins University Press.
- Phiddian, R. (2013). Satire and the limits of literary theories. *Critical Quarterly*, 55(3), 44–58. <https://doi.org/10.1111/cრიq.12057>
- Phiddian, R. (2017). Have they no shame? Observations on the effects of satire. In J. Milner Davis (Ed.), *Satire and politics* (pp. 251–263). Palgrave. https://doi.org/10.1007/978-3-319-56774-7_9
- Phiddian, R. (2019). *Satire and the public emotions (Elements in histories of emotions and the senses)*. Cambridge University Press. <https://doi.org/10.1017/9781108869263>
- Plester, B., & Inkson, K. (2019). *Laugh out loud: A user’s guide to workplace*. Palgrave Macmillan.
- Previté-Orton, C. W. (1968). *Political satire in English poetry*. Russell & Russell.
- Pundt, A., & Herrmann, F. (2015). Affiliative and aggressive humor in leadership and their relationship to leader-member exchange. *Journal of Occupational and Organizational Psychology*, 88(1), 108–125. <https://doi.org/10.1111/joop.12081>
- Quintero, R. (Ed.). (2007). *A companion to satire*. Blackwell.
- Raskin, V. (1985). *Semantic mechanisms of humor*. D. Reidel.
- Raskin, V. (Ed.). (2008). *The primer of humor research*. Mouton de Gruyter. <https://doi.org/10.1515/9783110198492>

- Raskin, V., Hempelmann, C. F., & Taylor, J. M. (2009). How to understand and assess a theory: The evolution of the SSTH into the GTVH and now into the OSTH. *Journal of Literary Theory*, 3(2), 285–312. <https://doi.org/10.1515/JLT.2009.016>
- Ritchie, G. (2004). *The linguistic analysis of jokes*. Routledge. <https://doi.org/10.4324/9780203406953>
- Robbins, B. D., & Vandree, K. (2009). The self-regulation of humor expression: A mixed method, phenomenological investigation of suppressed laughter. *The Humanistic Psychologist*, 37(1), 49–78. <https://doi.org/10.1080/08873260802394533>
- Rolfe, M. (2017). The populist elements of Australian political satire and the debt to the Americans and the Augustans. In J. Milner Davis (Ed.), *Satire and politics. Palgrave studies in comedy* (pp. 37–71). Palgrave Macmillan. https://doi.org/10.1007/978-3-319-56774-7_2
- Romero, E. J., & Cruthirds, K. W. (2006). The use of humor in the workplace. *The Academy of Management Perspectives*, 20(2), 58–69. <https://doi.org/10.5465/AMP.2006.20591005>
- Rossing, J. P. (2016). Emancipatory racial humour as critical public pedagogy: Subverting hegemonic racism. *Communication, Culture and Critique*, 9(4), 614–632. <https://doi.org/10.1111/cccr.12126>
- Rossing, J. P. (2019). An ethics of complicit criticism for postmodern satire. *Studies in American Humor*, 5(1), 13–30. <https://doi.org/10.5325/studamerhumor.5.1.0013>
- Ruch, W. (Ed.). (2007). *The sense of humor: Explorations of a personality characteristic*. Mouton de Gruyter. <https://doi.org/10.1515/9783110804607>
- Ruch, W. (2008). Psychology of humor. In V. Raskin (Ed.), *The primer of humor research* (pp. 17–100). Mouton de Gruyter. <https://doi.org/10.1515/9783110198492.17>
- Ruch, W., Heintz, S., Platt, T., Wagner, L., & Proyer, R. T. (2018). Broadening humor: Comic styles differentially tap into temperament, character, and ability. *Frontiers in Psychology*, 9, 6. <https://doi.org/10.3389/fpsyg.2018.00006>
- Scheel, T. (2017). Definitions, theories, and measurement of humor. In T. Scheel & C. Gockel (Eds.), *Humor at work in teams, leadership negotiations, learnings, and health*. Springer. Springer. https://doi.org/10.1007/978-3-319-65691-5_2
- Scheel, T., Gerdenitsch, C., & Korunka, C. (2016). Humor at work: Validation of the short and work-related humor style questionnaire. *Humor*, 29(3), 439–465. <https://doi.org/10.1515/humor-2015-0118>
- Scheel, T., & Gockel, C. (2017). *Humor at work in teams, leadership, negotiations, learning and health*. Springer Science + Business Media. <https://doi.org/10.1007/978-3-319-65691-5>
- Schmidt-Hidding, W. (1963). *Europäische Schlüsselwörter: Humor und Witz [European Keywords: Humor and Wit]*. Huber.
- Schweizer, B. (2019). *Christianity and the triumph of humor: From Dante to David Javerbaum*. Routledge. <https://doi.org/10.4324/9780429196690>
- Schweizer, B., & Ott, K.-H. (2016). Faith and laughter: Do atheists and practicing Christians have different senses of humor? *Humor*, 29(3), 413–438. <https://doi.org/10.1515/humor-2015-0109>
- Shultz, T. R. (1974). Order of cognitive processing in humor appreciation. *Canadian Journal of Psychology/Revue canadienne de psychologie*, 28(4), 409–420. <https://doi.org/10.1037/h0082006>
- Simpson, P. (2003). *On the discourse of satire*. John Benjamins Publishing Company. <https://doi.org/10.1075/lal.2>
- Sliter, M., Kale, A., & Yuan, Z. (2014). Is humor the best medicine? The buffering effect of coping humor on traumatic stressors in firefighters. *Journal of Organizational Behavior*, 35(2), 257–272. <https://doi.org/10.1002/job.1868>

- Sloterdijk, P. (2001). *Critique of cynical reason*. (5th Ed.). Trans. Michael Eldred. University of Minnesota Press.
- Smith, W. S. (1980). Husband vs. wife in Juvenal's sixth satire. *The Classical World*, 73(6), 323–332. <https://doi.org/10.2307/4349215>
- Smith, W. S. (Ed.). (2005). *Satiric advice on women and marriage: From Plautus to Chaucer*. University of Michigan Press.
- Sørensen, M. (2016). *Humor in political activism creative nonviolent resistance*. Palgrave Macmillan.
- Spencer, H. (1860). The physiology of laughter. *Macmillan's Magazine*, 1, 395–402.
- Spencer, H. (1911). *Essays on education*. Dent.
- Stott, A. (2005). *Comedy*. Routledge. <https://doi.org/10.4324/9780203312124>
- Stronks, E. (2010). Literature and the shaping of religious identities: The case of the protestant religious emblem in the Dutch republic. *History of Religions*, 49(3), 219–253. <https://doi.org/10.1086/651990>
- Suls, J. M. (1972). A two-stage model for the appreciation of jokes and cartoons. In J. H. Goldstein, & P. E. McGhee (Eds.), *The psychology of humor: Theoretical perspectives and empirical issues*. Academic Press. <https://doi.org/10.1016/B978-0-12-288950-9.50010-9>
- Sutherland, J. (1962). *English satire*. Cambridge University Press.
- Takovski, A. (2019). Battlefield EU: Macedonian parties' representations in times of crisis. *Journal of Language and Politics*, 18(2), 184–206. <https://doi.org/10.1075/jlp.18019.tak>
- Takovski, A. (2020). Coloring social change: Humor, politics, and social movements. *Humor*, 33(4), 485–511. <https://doi.org/10.1515/humor-2019-0037>
- Test, G. A. (1991). *Satire: Spirit and art*. University Press of Florida.
- Twark, J. (2007). *Humor, satire, and identity: Eastern German literature in the 1900s*. De Gruyter. <https://doi.org/10.1515/9783110958140>
- Vandaele, J. (2002a). Humor mechanisms in film comedy: Incongruity and superiority. *Poetics Today*, 23(2), 221–249. <https://doi.org/10.1215/03335372-23-2-221>
- Vandaele, J. (2002b). Introduction: (Re-)constructing humor: Meanings and means. *Translator*, 8(2), 149–172. <https://doi.org/10.1080/13556509.2002.10799130>
- Vandaele, J. (2012). Narrative humor (II): Exit perspective. *Poetics Today*, 33(1), 59–126. <https://doi.org/10.1215/03335372-1505540>
- Veatch, T. C. (1998). A theory of humor. *Humor*, 11(2), 161–215. <https://doi.org/10.1515/humr.1998.11.2.161>
- Waterlow, J. (2015). Intimating mistrust: Popular humor in Stalin's 1930s. *Cultural and Social History*, 10(2), 211–229. <https://doi.org/10.2752/147800413X13591373275286>
- Waterlow, J. (2018). *It's only a joke, comrade!: Humor, trust and everyday life under Stalin*. CreateSpace Independent Publishing Platform.
- Wattendorf, D., Westermann, B., Fiedler, K., Kaza, E., Lotze, M., & Celio, M. R. (2012). Exploration of the neural correlates of ticklish laughter by functional magnetic resonance imaging. *Cerebral Cortex*, 23(6), 1280–1289. <https://doi.org/10.1093/cercor/bhs094>
- Weaver, S. (2010). Developing a rhetorical analysis of racist humor: Examining anti-black jokes on the internet. *Social Semiotics*, 20(5), 537–555. <https://doi.org/10.1080/10350330.2010.513188>
- Wedeer, L. (2013). Ideology and humor in dark times: Notes from Syria. *Critical Inquiry*, 39(4), 841–873. <https://doi.org/10.1086/671358>
- Westwood, R. I., & Johnston, A. (2013). Humor in organization: From function to resistance. *Humor*, 26(2), 219–247. <https://doi.org/10.1515/humor-2013-0024>

- Wood, R. E., Beckmann, N., & Rossiter, J. R. (2011). Management humor: Asset or liability? *Organizational Psychology Review*, 1(4), 316–338. <https://doi.org/10.1177/2041386611418393>
- Wyer, R. S., & Collins, J. E. (1992). A theory of humor elicitation. *Psychological Review*, 99(4), 663–688. <https://doi.org/10.1037/0033-295X.99.4.663>
- Young, D. G. (2012). A flip-flopper and a dumb guy walk into a bar: Political humor and priming in the 2004 campaign. *Humor*, 25(3), 215–231. <https://doi.org/10.1515/humor-2012-0012>
- Young, D. G. (2020). *Irony and outrage: The polarized landscape of rage, fear, and laughter in the United States*. Oxford University Press.
- Zekavat, M. (2014). A discursive model of satire. *JESELL: Jena Electronic Studies in English Language and Literature*, 1–18. http://zs.thulb.uni-jena.de/receive/jportal_jparticle_00324293
- Zekavat, M., & Pourgiv, F. (2015). Construction of gender identities via satire: The case of Juvenal. *European Journal of Humour Research*, 3(1), 1–21. <https://doi.org/10.7592/ejhr2015.3.1.zekavat>
- Zekavat, M. (2017). *Satire, humor and construction of identities*. John Benjamins. <https://doi.org/10.1075/thr.6>
- Zekavat, M. (2019a). Reflexive humor and satire: A critical review. *European Journal of Humor Research (EJHR)*, 7(4), 125–136. <http://dx.doi.org/10.7592/EJHR2019.7.4.zekavat>
- Zekavat, M. (2019b). Satire, humor and ecological thought. *Neohelicon*, 46(3), 369–386. <https://doi.org/10.1007/s11059-018-00471-0>
- Zupančič, A. (2008). *The odd one in: On comedy*. The MIT Press.

3 Determinants of Pro-Environmental Behavior

Discussing different theories of humor, we tried to show how various attempts to grasp the nature of humor have greatly diversified and enriched the field in the previous chapter. The reason behind the heterogeneity of humor studies, however, is not limited to the richness of theoretical conceptualizations. Humor and satire have been present across a great diversity of media ranging from literature to theater, painting, architecture, music, cartoons, fashion, journalism, television, cinema, and cyberspace. Given their prevalence and diverse functions, it is important to probe the implications of humor and satire for climate activism at individual and public levels.

In this chapter, we will review a wide range of scholarship to lay the ground for proposing a more comprehensive model for describing and predicting pro-environmental behavior at both psychological and social levels. This review strives to synthesize insights from environmental and social psychology, communication, literary, and cultural studies. It is not feasible to capture the spirits of these disciplines here, partly because they do not enjoy similar pedigrees. Therefore, this succinct review is only limited to the works that directly discuss the relationship between humor, satire, and ecological activism, and those that have strong implications for investigating this rapport.

Models and Theories of Pro-Environmental Behavior

Although the engagement of psychology with humor dates back to the earliest days of its conception as a discipline as in the works of Sigmund Freud (1856–1939), environmental psychology has so far ignored the potentials of humor and satire. This is while many topics voiced in humor and satire—like race, ethnicity, gender, sexual orientation, and socio-economic status—play a decisive role not only in shaping individual identities and intersubjective relationships but also in defining the rapport between different communities and their environments. Initially, it might seem that playfulness, light-heartedness, or the sense of detachment humor creates can pose an ethical

barrier to where it can be employed (Benatar, 2014; Diehl, 2013; Gantar, 2005; Lindfors, 2017; Lockyer & Pickering, 2005, 2008; Morreall, 2005, 2020; Nikulin, 2014; Percival, 2005; Zekavat, 2017); nevertheless, humor can foster resilience and make positive psychological impacts even in catastrophes and extreme situations. Victor Frankl (1984), for instance, observes how people can use humor as a coping mechanism and an effective survival strategy in the extreme situation of concentration camps. In this light, humor can be understood as a survival strategy acquired by human beings. The *Charlie Hebdo* shooting was an instance of how humor can be employed in extreme situations. The magazine responded forgivingly with humor to the massacre despite the fact that many of its journalists and cartoonists were sadly murdered (for example, Penketh, 2015).

There are two general trends in studying environmental behavior. While some approaches emphasize *rational behavior*, others underscore *affect* and *symbolic aspects*. The Theory of the Meaning of Material Possessions (Gatersleben & Steg, 2013), for instance, deems the instrumental, affective, and symbolic aspects of material products to be the determinants of environmental behavior. While the *instrumental function* of a material product signifies its practical use, its *symbolic functions* like status and gender roles might be implied in purchasing, possessing, or consuming it. The *affective aspect* is related to the feelings—like power, superiority, sensation, and arousal—that the possession and use of a product stimulates. These three aspects are interrelated and can mutually impact each other.

In a certain society, for instance, driving a sports car, shopping organic groceries, and wearing a pink outfit can signify a specific economic status or gender identity (see Steg, 2005). Likewise, sporting brand-new consumer products and fashion items (as visible indicators of socio-economic status) have different symbolic and affective values from that of a reduce-reuse-recycle lifestyle.

Another trend in environmental psychology underscores rational behavior, instead. According to the Theory of Planned Behavior (TPB; Ajzen, 1985, 1991), one's intentions determine one's behavior, and intention, in its turn, is determined by beliefs (see Figure 3.1).

TPB identifies attitude, subjective norm, and perceived behavioral control as associated with three sets of beliefs. *Attitude* refers to the perceived consequences of engaging in a behavior and follows from one's evaluation of its costs and benefits. How others expect one to behave and how far one is motivated to comply with these expectations constitute *subjective norms*. And *perceived behavioral control* signifies the possibility of doing something as affected by different factors that can hinder or facilitate that behavior.

While TPB implies that our vested interests determine our environmental behavior, Norm-Activation Model (NAM) and Value-Belief-Norm Theory (VBN) relocate the focus. NAM draws on Schwartz's value theory (Schwartz, 1992, 1994) that taxonomizes values and their motivational content. It postulates that the activation of personal norms that morally obliges

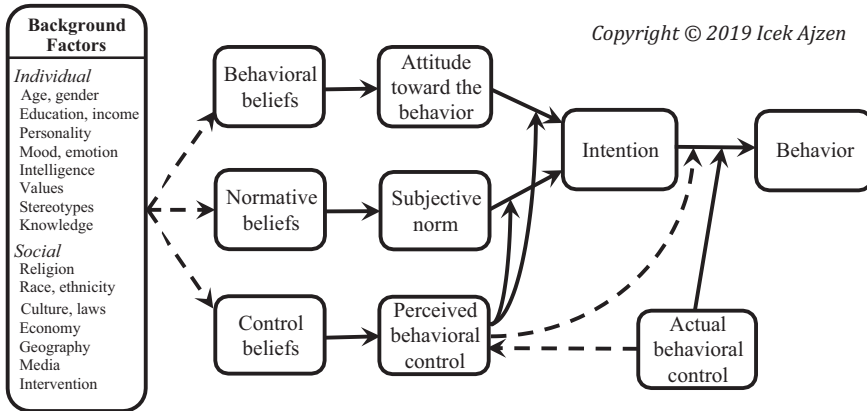


Figure 3.1 TPB with background factors (<https://people.umass.edu/ajzen/tpb.background.html>).

people to perform or refrain from engaging in certain behaviors predicts pro-environmental behavior. There are four “motivational types” according to Schwartz’s (1994) value theory: first, *power* that refers to “social status and prestige, control or dominance over people and resources” (de Groot & Thøgersen, 2013, p. 145). Examples for this motivational type include social power, wealth, and authority (de Groot & Thøgersen, 2013). Second, *universalism* is defined as “understanding, appreciation, tolerance, and protection for the welfare of all people and for nature” (de Groot & Thøgersen, 2013, p. 145). Social justice, open-mindedness, protecting the environment, and equality are examples of universalism as a value. Third, *benevolence* encompasses the “preservation and enhancement of the welfare of people with whom one is in frequent personal contact” (de Groot & Thøgersen, 2013, p. 145). Values like helpfulness, forgiveness, and honesty are instances of benevolence. Fourth, *tradition* denotes “respect, commitment, and acceptance of the customs and ideas that traditional culture or religion impose on the self” (de Groot & Thøgersen, 2013, p. 145). Traditional values include accepting one’s share in life, devoutness, and respect for customs. Universalism directly impacts pro-environmental behavior, and the other motivational values might have implications for it, as when tradition provides a religious reason or motivation for preserving nature as a manifestation of divine creation.

According to NAM, pro-environmental personal norms are activated by problem awareness (that is, being aware of the significance of pro-environmental behavior), ascription of responsibility (that is, taking responsibility for the consequences of failing to adhere to pro-environmental behavior), outcome efficacy (that is, identifying behavior that can reduce one’s negative environmental impact), and ability or self-efficacy (that is, discerning that one is able to provide relief against environmental threats). VBN is a further extension of NAM in that it assumes that values and ecological

worldviews determine pro-environmental behavior. While *altruistic* and *biospheric values* can lead to pro-environmental behavior, *egoistic values* are less likely to do so. These values lead to the formation of a new ecological (or mental) paradigm that functions as the basis of pro-environmental beliefs and personal norms. More specifically, these three values determine *beliefs* whereby an ecological worldview (a New Ecological Paradigm) is formed that heightens awareness of consequences and leads to the ascription of responsibility. This will subsequently foster *pro-environmental personal norms*—like a sense of obligation to take pro-environmental action. The resulting *behavior* is manifested in different forms, including activism, non-activist behavior in the public sphere, environmental behavior in the private sphere, and organizational behaviors (Steg & Nordlund, 2012, 2018; Stern, 2000; Stern et al., 1999).

TPB is more predictive in the case of behaviors involving larger costs, while NAM and VBN can better explain low-cost behaviors. Scholars have, therefore, tried to come up with a more comprehensive framework by integrating variables and concepts from these theories into a single model. Goal Framing Theory integrates insights from NAM in TPB, assuming that behavior is determined by both personal interests and norms (Lindenberg, 2008; Lindenberg & Steg, 2007). This theory maintains that goals determine how we perceive information and subsequently behave. Hedonic, gain, and normative goals influence behavior. While *hedonic goals* help us feel better right away, *gain goals* allow us to manage our resources, and *normative goals* make it possible for us to act appropriately. Depending on which goal is focal, which ones are in the background, and whether the background goals are compatible with the focal goal, we will process information, and subsequently behave, differently (for more on theories and models of environmental psychology, see also Abrahamse, 2019; Brick & Lewis, 2016; Corral-Verdugo et al., 2012; de Groot & Thøgersen, 2013; de Leeuw et al., 2015; Gifford & Sussman, 2012; Kals & Müller, 2012; Kormos & Gifford, 2014; Lindenberg, 2018; Lindenberg & Steg, 2007; Pfattheicher et al., 2016; Schultz & Kaiser, 2012; Schultz et al., 2016; Steg & Nordlund, 2012, 2018; Steg, Bolderdijk et al., 2014; Steg, Perlaviciute et al., 2014; Swim et al., 2012).

Enhancing TPB by integrating goals and motivations, the Theory of Reasoned Goal Pursuit (TRGP; Ajzen & Kruglanski, 2019) adds two types of goals as determinants of behavioral and normative beliefs. *Active procurement goals* inform behavioral beliefs that determine attitude toward behavior and subsequently motivation. *Active approval goals* impact motivation through determining normative beliefs and subjective norms. Both types of goals can also directly moderate the relation of behavioral attitudes and subjective norms with motivation. In other words, attitudes toward the behavior can impact motivation, depending on active procurement goals. Likewise, subjective norms impact motivation depending on active approval goals. According to the TRGP, motivation may lead to intention, which may ultimately lead to behavior.

To recapitulate, the core components for explaining pro-environmental behavior are goals, values, beliefs, norms, attitudes, and (perceived) behavioral control according to environmental psychology. All these determinants are defined on a subjective level. Their combinations may form an intention, which can facilitate or inhibit behavior. The gap that might exist between an attitude or intention and the desired behavior will be discussed later in this chapter.

The Focus Theory of Normative Conduct (Stok & de Ridder, 2019) has also strong implications for behavioral change and can explicate how humor and satire can impact the determinants of (pro-environmental) behavior. According to this theory, norms influence human behavior. When there are several norms present, behavior is dictated by the focal norm that is salient. There are two types of norms: *descriptive norms* refer to social norms that describe the usual thing to do, while *injunctive norms* describe what ought to be done. In other words, injunctive norms tell us what others expect us to do, and these norms tend to determine our behavior because human beings are motivated to affiliate with others. Descriptive norms provide adaptive patterns as shortcuts to decision-making; in other words, instead of investing a lot of resources in order to discover the best adaptive way on our own, we simply observe the behavior of other people to find optimal solutions. Injunctive norms, by contrast, do not primarily provide best solutions for behavioral decisions. Instead, their objective is to lead us toward gaining social approval (Stok & de Ridder, 2019). Humor and satire can impact injunctive norms not only because they exhibit strong affiliative social functions, but also because ridicule and shaming are among the strategies that help set and communicate expectations and rules of group belonging and membership. They might also be used to determine normative focus, according to which

any given social norm will only influence behavior when it is activated at the moment of the behavioral decision, that is, when that specific norm is made salient or when an individual's attention is focused on that specific norm while choosing their path of action.

(Stok & de Ridder, 2019, p. 98)

Humor and satire can also help change behavior by manipulating self-regulatory resources. *Self-regulatory resources* refer to “the capacity that people have to exert effortful control over their inner states and external behavior” (Stok & de Ridder, 2019, p. 100). People do not always have sufficient self-regulatory resources in which case their decision-making tends to be more automatic rather than deliberative; in other words, they tend to follow descriptive norms. On the contrary, when people have sufficient self-regulatory capacity, they might consider their own values and goals, among other factors. The safe distance that humor and satire create from their object can provide an opportunity for deliberation and slow thinking

and rule out the impact of those descriptive norms (like greed in collecting more resources; see the next chapter) that are not sustainable. Humorous and satiric interventions on self-regulation and injunctive norms can make a real difference, because injunctive norms are most useful for advocating behavioral change (Stok & de Ridder, 2019). The reason is that they “can be put to use in any given situation, because the socially driven motivations that underlie injunctive norm effects play a role regardless of what others are actually doing” (Stok & de Ridder, 2019, pp. 102–103).

The Environmental Impact of Humor and Satire: Communication Studies

Besides scientific investigation, any attempt that hopes to make meaningful ecological interventions must effectively communicate the findings to the public and policymakers, which inevitably encompasses imagination, as well as cultural, aesthetic, visceral, experiential, and emotional dimensions. The field of communication studies features research on the role of humor and satire in bringing about attitude and behavior change, but just a few of these studies focus on advocating critical environmentalism.

Boykoff (2019) enumerates several goals for environmental communication including educational improvement, advocacy efforts, awareness raising, and promotion of behavioral and cultural change. Calling for “both arts and the science together,” he underscores the role of narrative, alongside the scientific discourse, in environmental communication (Boykoff, 2019, p. 14; see also Boykoff & Osnes, 2018). Boykoff is fully aware of the subtleties and contingencies involved in addressing ecological crises, which arise from the paradoxes that these crises involve: they have their largest impact on people who are endowed with the least power to address them and whose voices are usually stifled in decision-making processes. Moreover, the measures and mechanisms devised to address these crises are frequently insufficient and inefficient. Policymakers feigning ignorance and shunning responsibility do little to improve the situation.

Environmental communication cannot successfully achieve its objectives merely by resorting to scientific facts. Boykoff cites Duncombe (2007, p. 20; see also Corner & Clarke, 2017) who insists,

The truth does not reveal itself by virtue of being the truth: it must be told, and we need to learn how to tell the truth more effectively. It must have stories woven around it, works of art made about it; it must be communicated in new ways and marketed so that it sells.

It is naïve to believe that facts speak for themselves or that they are enough to motivate people to take action. This is even more pronounced when we consider the nature of science as an enterprise that is inevitably filtered through political, cultural, social, and ideological lenses and that of the

climate as “a social-ecological-atmospheric construct” (Clifford & Travis, 2018, p. 8; see also Hoffman, 2015; Jasanoff, 1996; O’Connor, 1999; Walsh, 2015; Zaval, 2016). This fact links climate science and environmental activism to other socio-political issues, which require a narrative thread to become prominent in public debates. As Edward Said (1984, p. 34), a critical figure in postcolonial thought, also remarks, “Facts do not at all speak for themselves, but require a socially acceptable narrative to absorb, sustain and circulate them. Such a narrative has to have a beginning and end....”

Boykoff (2019) insists that information-deficient models are insufficient and can lead to attributing ignorance, public and political disengagement, and inaction to deficiencies in information and knowledge (see also Seymour, 2018). It is, therefore, very important to aim for experiential, affective, visceral, tangible, emotional, aesthetic, and imaginative appeals in environmental communication not only because people’s cognitive capabilities are limited, but also because citizens tend to engage in motivated reasoning when they encounter controversial issues, such as climate science. Creative comedic communications have proven to be effective in addressing sensitive issues as they can challenge and draw attention to the points that people might overlook, while exposing hypocrisy. Motivated reasoning is less likely to coincide with humorous content, because it tends to engage the audience with the narrative and thereby demotivates them to counterargue the message (Boukes et al., 2015; Nabi et al., 2007). Likewise, satire can effectively challenge existing perceptions and dispositions, and persuade people. Boukes and Hameleers (2020), for example, show how satire can convince the supporters of a populist party to vote for alternative politicians. This further demonstrates the potentials of satire to persuade people who might initially oppose pro-environmental behavior, since climate-skeptics are particularly attracted to populist politics (Huber, 2020; Lockwood, 2018; Vihma et al., 2021). The same story is, at least partly, true regarding other forms and modes with “family resemblances” to satire and humor (for example, Anderson & Becker, 2018).

Research has conveyed that satiric shows about global warming affirm the reality of the ecological issue and criticize actors associated with climate skepticism (Feldman, 2013a). Feldman et al. (2011) maintain that satiric news shows increase the level of public attention to global warming, especially among people with lower levels of formal education who might lack resources and motivation to follow scientific developments. Feldman (2013b) conveys that audiences who watch satiric news shows as both news and entertainment (that is, infotainment) obtain more political knowledge from watching the show, while those who watch them only for entertainment tend to learn less. Providing the latter with information-processing goals can incite larger mental effort and maximize the educative impact (see also LaMarre et al., 2014; Young, 2008). Elsewhere, Feldman (2017, p. 323) argues that satiric news “may help foster public attention to, active engagement with, and understanding of science”; nonetheless, it also has

limitations including “the challenge of conveying the seriousness of certain science issues while using humor, the potential for audience misreading of satiric intention, the inherent divisiveness of satire, and the tension between communication goals and the authenticity of satiric performance.” Chattoo and Feldman (2020) enumerate four benefits for streamlining climate communication through comedy. First, it can foment public interest and attract attention to climate change as a topic that does not regularly engage many people. Second, comedy offers an alternative to debate climate issues as a topic that is depressing and disengaging through fostering hope and a sense of agency. Third, raising the topic in a non-threatening manner, comedy can help overcome the polarized and polarizing political discourse around climate change. Fourth, “comedy can say what other media can’t or won’t” (p. 91, also see pp. 64–65, 195–198) which is on a par with the parrhesiastic function of humor and satire as discussed below. Comedy, therefore, can foreground climate change in public debates, and consequently engage citizens and put pressure on policymakers to adopt more aggressive measures.

Bore and Reid (2014) build their argument on the premise that satire can be an effective communicative strategy to make science accessible to public audiences. Satire is particularly suitable for this purpose because instead of inducing fear in its audience—that can lead to disengagement through overwhelming them—it resorts to comical and inviting elements. Therefore, serious proposals should be supplemented with light-hearted communicative approaches in order to spur environmental action. Still, there are two risks in using satire to communicate ecological information: first, humorous distance can be discouraging. Second, environmental humor might be funny only for those who are already aware of ecological hazards; therefore, it might fail to reach out to skeptics and deniers. The rhetorical function and persuasive powers of satire, however, cannot be ignored. They can be employed to convert people through several means including laughter, shock, or the *unheimlich* or the uncanny. Rhetorical studies have focused on the persuasive functions of satire and humor. Lynch (2002), for instance, reviews several such studies to show how satirists’ intentions and audiences’ reception might determine the persuasiveness of the rhetoric of satire.

The Environmental Impact of Humor and Satire: Literary and Cultural Studies

A relatively small portion of literature, created in its traditional form, medium, and genres, engages with humorous and satiric treatments of ecological crises. One might think of Margaret Atwood, Ian McEwan, Kurt Vonnegut, Don DeLillo, Philip K. Dick, Oliver Jeffers’ *The Fate of Fausto*, and some occasional pieces as in Aoise Stratford’s *Turtle Beach* and Italo Calvino’s “Theodora” in his *Invisible Cities*. While climate fiction is replete with dystopias, motion pictures, cyberspace, and images lead the way in employing humor and satire for environmental messaging. The situation is not

much better when it comes to critical writing. Despite the strong possible ramifications of their alliance, both critical humor studies and environmental humanities have almost totally ignored each other. As Greg Garrard (2014, p. 18; see also Panda, 2020) has observed, “There is no shortage of popular environmental comedy, but almost no recognition of it in academic circles.” There are occasional unsubstantiated claims like “Humorous political stunts can also bring attention to issues that are neglected or a company profiting from environmental exploitation or human suffering” (Sørensen, 2016, p. 9; see also p. 23), but sustained scholarly engagements are indeed rare.

Underlying “the potential environmental efficacy of satire” (p. 387), Branch (2014, p. 380) has called for “environmental writers, scholars, and activists... [to] enter the New Age by joyfully embracing the nurturing, healing power of humor.” At the same time, he has some reservations about the sobriety of critical humor studies that, despite the hilarious nature of its subject of study, kills joy due to overt pedantry. The moral, ethical, and political ambivalence of satire is yet another reason that might repel environmentalists. This downside also concerns Grimbeek (2017) who, in her study of *MaddAddam* trilogy, argues that Margaret Atwood effectively uses satire to offer an alternative to apocalyptic approaches. However, satire complicates Atwood’s attempts by adding a flair for ambiguity and irreverence to her work. This uncertainty about authorial intentions gives way to skepticism if her environmental project should be taken seriously at all.

DiCaglio (2015) contends that irony can be employed to overcome the resistances that ecology encounters and to revise the relationship of its audience to ecosystems. He suggests that irony can liberate us from the binary opposition of anthropocentrism versus ecocentrism (or biocentrism) and lead to anti-centrism, “a decentering of the idea of a center itself” (p. 459). For him, irony is “an overturning of principles, a reversal of the established law” that through reiterating the accepted and prevalent, while introducing a small change, reveals the flaws of the principle and thus subverts it (p. 459). DiCaglio is adopting poststructuralist tenets, including its conceptualization of irony, to disperse the human over the ecosystem. This destabilizes the binary of anthropocentrism versus ecocentrism and removes human beings from the privileged position of mastery they have secured for themselves mostly by means of culture. Although irony can dissolve the privileged position of human beings in their relationships with the ecosphere, its destabilization of identity and agency can diminish the possibility of reform and change.

Bevis (2013, p. 13) underlines the relationship between comedy and nature. He insists that “the idea that comedy should begin by conceiving and searching out the green place has been an enduring one, even when it has proved difficult to get out of the city.” But he does not elaborate on the ecological implications of comedy. Back in 1972, however, Meeker argued that comedy celebrates the possibility of survival and biological renewal, but this survival is not exclusive to a single species at the cost of all others;

rather, comedy is cosmopolitan like a climax ecosystem where the rights of all species for survival are equally acknowledged. As comedy reflects upon how human beings can modify themselves and their attitudes, instead of their environments, in order to survive, it seeks to restore the disruption of the ecological balance. Meeker proposes that an alliance between aesthetic speculations and nature can effectively change the long-running history of destruction as it will teach human beings to learn more about the world rather than dreaming to change it. As the examples he discusses show, Meeker uses the word comedy rather loosely. Actually, it seems that for him comedy is an umbrella term as he traces it in works as diverse as Dante's *Divine Comedy*, Joseph Heller's *Catch-22*, pastoral poetry, and picaresque fiction (Meeker, 1974).

In her study of American nature writing, Peiffer (2000) seeks the reason behind the exclusion of humor from the genre in its moral dimension. More specifically, she argues that moral commitment to nature necessitated seriousness, which, in its turn, was conceived to contradict humor. Another reason might be the anthropocentric conceptualization of humor in the past. Still, she insists that putting humor out of the equation can do irreparable harm as it can perform several constructive functions for nature writing.

Many scholars in communication studies agree on identification, clarification, differentiation, and enforcement as four functions of humor (Meyer, 2000, 2021) that explain its potential impact. Employing Meyer's four functions of humor and insights from invitational rhetoric for the purpose of showing how humorous literature is aligned with environmentalism, Chandler (2014, p. 343) concludes that "the playfulness of human imagination and the foolishness of human behavior is central to the humor found in environmental literature." Traub (2018) looks into satire and humor as alternatives to represent and ethically engage ecological crises. After briefly discussing their predecessors including Stanley Kubrick's 1964 movie, *Dr. Strangelove Or: How I Learned to Stop Worrying and Love the Bomb*, Traub explores Atwood's MaddAddam trilogy (2003–2013) and McEwan's *Solar* (2010) to show how humor can serve cli-fi. Likewise, Walker (2014, p. 363) "argues that popular culture such as genre fiction can be an important communicative device in responding to climate change." Zekavat (2019) contends that satire and critical humor studies can be invaluable assets in dealing with and interpreting environmental creative and critical works. This is mainly because satire can function as a strategy to bring about ethical and political change in various realms including ecological issues and their pertinent, contingent determinants including race, ethnicity, class, gender, and sexuality.

As this succinct review shows, scholarly engagements with the potential environmental impacts of humor and satire have been occasional and their findings rather inconsistent. Systematic studies of how these affordances can be employed to optimize environmental communication and how the negative impacts of humor and satire can be mitigated are very limited, if existing at all.

Inconsistencies in Research Findings about the Environmental Impact of Humor

Communication Studies: Persuasion

Empirical findings about the effectiveness of humor and satire in environmental advocacy have so far been inconclusive (see also Kaltenbacher & Drews, 2020). Holbert et al. (2003, p. 177) argue that “television news and nature documentary use are predicted by environmental concern and contribute to pro-environmental behaviors”; nonetheless, they conclude that treating environmental issues in prime-time entertainment programs invokes either neutral or apathetic stances in the audience. Brewer and McKnight (2015) show that exposure to satirical news can change the perception of climate change. Elsewhere, they conclude that watching a segment of *Last Week Tonight with John Oliver* “increased viewers’ own belief in global warming, as well as viewers’ perceptions that most scientists believe in global warming” (Brewer & McKnight, 2017, p. 166). Skurka et al. (2019) argue that using satire, featuring indignation, can ameliorate the negative effects of using humor in persuading the audience about the impending dangers of climate change and altering their behavior. Featuring both mirthfulness and abrasiveness, satire simultaneously evokes positive and negative emotions, and negative emotions such as fear and anger are positively associated with environmental outcomes (see also Skurka et al., 2018). However, Skurka et al. (2022) fail to replicate the results of their 2018 study. “Unlike the original study (Skurka et al., 2018), neither a threat appeal nor a humor appeal promoted young adults’ intentions to engage in climate activism, nor did the threat appeal enhance climate risk perception” (p. 153). Nonetheless, they show that young adults are among the age groups most impacted by the persuasive power of humor.

Young (2008, 2020) proposes two explanations for the persuasive potentials of humor. First, processing humor is cognitively demanding; as a result, less resources will be allocated to the scrutiny of the argument when humor is involved (Young, 2008). Second, anticipation of positive affect on the part of the recipient negatively influences their scrutiny of the argument (Young, 2008, 2020; also Martin & Ford, 2018). The recipient of humor expects positive affect, and this further encourages persuasion through reducing the recipient’s motivation for argument scrutiny. This is mainly because the recipient desires to maintain the positive affect created by humor, while scrutinizing the argument erodes it; as a result, the recipient loses her motivation for counterargumentation and is more likely to be influenced by a humorous message than by neutral or journalistically composed messages (see also Nabi et al., 2007). Therefore, Martin and Ford (2018) conclude, when the message contains a strong argument, the use of humor decreases the number of pro-arguments that the recipient comes up with and reduces persuasion as a result. By contrast, when the argument is not particularly

strong, humor can decrease critical counterarguments and consequently increase persuasion.

Hameiri (2021) and Boukes et al. (2015) explain inconsistencies in the impact of satire on attitude change differently. Satire triggers two opposing processes: on the one hand, it boosts focus and reduces counterarguments, which enhance attitude change. Being funny, on the other hand, causes message discounting, positive attitudes toward the target, and relieved tension, and therefore decreases attitude change. We argue that ignoring the intention-action gap, mediating factors, and the incremental and gradual impacts of humorous and satiric communication can also explain the inconsistencies in research findings.

According to the Referent Informational Influence Model (for example, Turner, 1982, 1985; Turner et al., 1987, 1989), group expectations determine individual behavior as long as the individual identifies with the group. This opens up a new outlook that has been largely ignored in previous studies regarding the environmental impact of humor and satire. None of these studies has tried to tailor humor and satire for their target group; they have simply created or chosen ready-made materials with “general” appeal and studied their impact on a general (randomly selected and allocated) audience. Subsequently, they either attribute a positive or persuasive impact to humor and satire or deny it. However, the impact of any message, including satiric or humorous ones, depends on its creator, medium, distribution, recipient, and context. The impact of a satiric environmental message articulated by a white, middle-aged, upper-middle-class man on television varies greatly on audiences from different demographics. To effectively reach out to certain audience groups, one might need to change the humorist persona and/or the medium (Cameron et al., 2021), and modify the message. The same story is true with political persuasion. If a conservative old politician mocks green policies, his message is likely to resonate with a conservative base. The same base is less likely to take the word of a progressive woman of color who uses humor to advocate environmental policies. Therefore, it is not safe to ignore the plethora of factors that impact environmental messaging and attribute the success or failure of a message to the absence or presence of humor (see Kaltenbacher & Drews, 2020). Another crucial factor that most studies have tended to ignore is that the impact of (humorous and satiric) environmental messages is incremental and gradual, rather than immediate and definitive. We will further discuss this in the next chapter. More detailed discussions on the viability of these explanations for inconsistencies in research findings follow in subsequent sections and in the next chapter.

Psychology: The Intention-Action Gap

The presence of one or a set of behavioral determinants does not necessarily lead to action. Many environmental messages and campaigns aim to provide their audience with information, for instance. Information provision,

however, does not guarantee behavioral change. Most people who smoke or do not take exercises are fully aware of the hazards of smoking or the necessity of physical activity, but this does not necessarily spur them to quit smoking or take regular exercise. Information(al social influence), therefore, is not sufficient to bring about behavioral change. In many cases, one or even more than one of the behavioral determinants are present; nonetheless, pro-environmental behavior does not materialize (for example, Barr, 2006; Blake, 1999; Hameiri, 2021; Lamb et al., 2020; Rausch & Kopplin, 2021; Vermeir & Verbeke, 2006). Pro-environmental interventions, therefore, are limited as they might fall short of changing behavior or even lead to counterproductive results (see Abrahamse, 2019). One reason is that the audience is not exclusively exposed to (satiric and humorous) pro-environmental messages. The episteme, to borrow Michel Foucault's concept, features many competing discourses; therefore, public attitudes and behaviors are shaped by an extremely complex and multifaceted set of determinants. These determinants do not necessarily reinforce each other toward a cumulative effect; in fact, they frequently contradict or even cancel out each other.

Psychological insights can also shed light on the reason why only awareness of the problem does not suffice to induce pro-environmental behavioral change. The influence of inadequate direct determinants of behavior can partly explain this. An individual might have pro-environmental intentions arising from her attitudes and be exposed to pro-environmental norms at the same time, but inadequate (perceived) behavioral controls or habits might directly determine her behavior and divert her from pro-environmental behavior (see Triandis, 1977). For instance, an individual might know that driving a car or flying has a great carbon footprint. Her personal attitude tells her to avoid these activities, and people around her (the company where she works and her family) also expect her to reduce her environmental impact. But if public transport is not available or she has to travel to a place that is not accessible by train, then she cannot adhere to pro-environmental behavior despite her attitudes and intentions. In other words, even if an effective message can persuade people, it does not necessarily translate into pro-environmental behavior. That is why the holistic model we develop in chapter 4 lays greater emphasis on the social, economic, political, and cultural aspects of behavior and implies strategies not only to change the behavior of citizens but also to reach out to corporations, organizations, decision-makers, and politicians whose decisions might facilitate or hinder pro-environmental behavior.

While perceived or actual behavioral control might hinder pro-environmental behavior despite an otherwise adequate mental set, our mental set can be impacted by various biases in the first place. Cognitive biases influence human judgment and decision-making (Tversky & Kahneman, 1974; Wilke & Mata, 2012). *Cognitive dissonance* (Festinger, 1962) describes a common phenomenon of creating psychological consistency between two (or more) contradicting pieces of information, ideas, or other incompatibilities.

Accepting the scientific validity of climate crisis and traveling by airplane at the same time are cognitively incompatible. In an effort to reduce cognitive dissonance, a person might actively seek information demonstrating that CO₂ emissions or pollution caused by airplanes is not the most pertinent environmental problem, so they change their attitude toward flying rather than altering their behavior. Cognitive dissonance underlines how our cognitions are biased in favor of our choices and preferred courses of action. Likewise, *affirmative thoughts* (Hepper et al., 2010; Miller & Ross, 1975) may justify our self-serving behaviors and failure to act pro-environmentally. For instance, a person may downplay the impact of her personal behavior as non-consequential to the environment and try to comfort herself by thinking that her acts of abstention would not improve the situation anyways. In a similar self-serving vein, the *better-than-average effect* is a bias that leads people to overestimate their own pro-environmental behaviors (Bergquist, 2020). Participants of experimental studies report acting more pro-environmentally as compared to others (both abstract others like other Americans and concrete others like their friends). This is, however, an improbable estimation for statistical reasons (Bergquist, 2020).

Confirmation bias describes the way one seeks or interprets evidence that confirms their expectations, existing beliefs, or generated hypotheses (Nickerson, 1998). Believers and skeptics of climate change are sometimes tempted to cite short-term hot or cold swings as evidence for confirming their beliefs. The Republican Senator James Inhofe threw an actual snowball in the Senate Chamber to refute climate change as “the greatest hoax ever perpetrated on the American people” (Janik, 2015). Additionally, our *memory* is prone to cognitive biases, which may determine behavior (Schacter, 1999). Our memories are subject to *forgetting*, *distortions*, and *persistence*. Forgetting includes *transience*, that is, a decrease in the accessibility of information over time; *absent-mindedness*, that is, inattention or the narrow processing of information; and *blocking*, which refers to the (temporary) inaccessibility of information stored in the memory. Memory distortions comprise *misattribution* of ideas or recollections to a wrong source, *suggestibility* by way of integrating inaccuracies obtained from external sources (for example, comments during recall attempts), or *bias*, which “involves retrospective distortions and unconscious influences that are related to current knowledge and beliefs” (Schacter, 1999, p. 183) and interfere with the recollection of previous experiences (Schacter & Slotnik, 2004). Finally, *persistence* describes the intrusive recollection of information or events we wish to, but cannot, forget. That is, insufficient memory might fail to inform pro-environmental behavior due to the unavailability or distortion of information. Closely related to absent-mindedness, the *attentional bias* (Azriel & Bar-Haim, 2020) also hinders an “objective” processing of information; that is, we tend to select information that confirms our beliefs and norms.

Another explanation for the gap between attitudes and behavior is the *delay of gratification* (Mischel & Ebbesen, 1970) according to which the

more immediate the gratification ensuing a behavior, the more irresistible the behavior. This is while pro-environmental behavior is rarely rewarding in itself; rather, it usually connotes abstinence (see Seymour, 2018), which seems to be in stark contrast to psychological egoism (cf. Hobbes, 1994) and contradict our latent or manifest consumer attitudes. In our increasingly individualistic times, one's personal gain is more immediate and tangible as compared to a more distant and abstract plan for saving the planet in the future. Thus, even when one develops a new intention for pro-environmental behavior, many motives compete against it, and numerous conditions, for instance, social bias and resistance to change, determine whether this new intention is actually realized in behavior.

Moreover, situational and social features also influence pro-environmental behavior. When self-regulation is low, people tend to rely on automatic decision-making (Gigerenzer & Gaissmaier, 2011).

In response to uncertain and risky situations, humans have a tendency to focus and simplify their decision making. Individuals responding to a threat are likely to rely on one action, even when it provides only incremental protection or risk reduction and may not be the most effective option. People often take no further action, presumably because the first one succeeded in reducing their feeling of worry or vulnerability. This phenomenon is called the *single action bias*.

(Shome & Marx, 2009, p. 21; see p. 23 on how to counteract the single action bias)

Instead of deciding on the basis of their personal values or goals, people resort to descriptive social norms that provide decisional shortcuts in urgent situations. While still regularly traveling by airplane, one may decide to turn vegan to purportedly offset their carbon emissions, for instance. These social norms may be salient due to one's group identity (Tajfel, 1974; Tajfel & Turner, 2004); thus, when one identifies as a member of a specific social group, the perceived norms of that group will influence their behavior. As one usually belongs to more than one group at a time, the norms of different groups may even interfere with each other. For instance, flying for business trips is inevitable for a top manager or a CEO responsible for securing corporate interests. If the same person also engages in volunteer service in an environmental NGO, then she might prefer to take the train. In other words, situational and social factors might be the final determinant of behavior in this case.

Diffusion (or attribution) of responsibility is yet another possible reason that can deter the translation of the determinants of behavior into actual behavior (for a discussion of the diffusion of responsibility in the context of ecological behaviors see Borden, 1984; Frantz & Mayer, 2009). When people witness the environmentally destructive behaviors of others, they might falsely conclude that those behaviors are sanctioned or that the threat cannot be really serious when others persist in their exploitative behaviors.

In this case, an individual might conclude that when others do not take responsibility for ecological crises, why should they bother after all.

Most models and theories in environmental psychology do not explicitly integrate an explanation for the intention-action gap (cf. Blake, 1999). Our more comprehensive model for behavior can explain the absence of pro-environmental behavior despite the fact that some of its determinants as identified in environmental psychology are present. We will also show there are other factors that might work to inhibit pro-environmental behavior besides the gaps between attitude or intention and behavior in chapter 4. The taskforce of the APA also acknowledges some of these factors (APA, 2009, p. 81). It insists that researchers should “be cognizant that psychological phenomena are context dependent” (APA, 2009, p. 83) and that they should “be mindful of social disparities and ethical and justice issues that interface with climate change” (APA, 2009, p. 84). Besides psychological determinants like attitude-behavior gap, this guideline also draws attention to institutional and structural barriers. These might include regulatory restrictions and split incentives where “one actor pays the costs of action while another gets the benefits (energy efficiency retrofits in rental housing is a classic example)” (APA, 2009, p. 64).

APA (2009) identifies thirteen reasons or “psychological barriers” to explain why people do not behave pro-environmentally (APA, 2009, p. 65ff; see also Marshall, 2014). *First, ignorance*: some people do not know about climate change or what they can do about it. Behavioral change might be facilitated by providing information in this case. *Second, uncertainty*: some interpret any signs of perceived or real uncertainty about climate change as a sufficient reason for inaction, postponing action, or acting in self-interest. Confirmation bias (Nickerson, 1998) or affirmative thoughts (Miller & Ross, 1975) might explain the mechanisms behind the impact of uncertainty. *Third, mistrust and reactance* are other reasons behind environmental inaction. If people fear that others could unfairly manipulate their environmental attempts for personal gain or doubt the effectiveness and value of change, they might refrain from participating. The latter two psychological barriers can easily lead to *denial* as the *fourth* reason. *Fifth, judgmental discounting* refers to underestimating risks that are temporarily or spatially distant. Thus, when people witness the severity and consequences of ecological crises in a distant land, they are less motivated to act locally. This barrier has similarities with the delay of gratification (for example, Mischel & Ebbesen, 1970) that can make the greater accomplishment of saving the planet in the future less appealing than smaller but immediate gains. *Sixth, place attachment* suggests that people care for places they feel attached to, implying that historically mobile people might care less for their current environment. This resonates with our attempt to locate behavior in the ecosphere and integrate different communities including refugees and asylum seekers in our model.

Seven, habit or behavioral momentum suggests that causing permanent change in habitual behaviors is either very difficult or extremely slow.

Changing habits usually needs greater effort, and the intention-action gap seems to be particularly wide in case of routine behaviors. *Eight*, due to *perceived behavioral control*, some people think that they have little control over outcomes, so they do not act. This is one of the core variables of environmental behavior models (for example, TPB). *Nine*, *perceived risks for behavioral change* may be (1) functional (that is, the viability of adaptation), (2) physical (that is, danger), (3) financial (that is, benefits outweighing costs), (4) social (that is, potential damage to one's ego or reputation), (5) psychological (that is, being teased or criticized), or (6) time-related (that is, time is wasted if the environmental attempt falls flat). *Ten*, *tokenism* means people would take low-cost environmental actions with little effect in terms of mitigation rather than high-cost actions. Tokenism is akin to single-action bias. *Rebound effect* explains why people erase gains after a meaningful environmental act, for example, by driving more often after they buy a more fuel-efficient vehicle. *Eleven*, *social comparison, norms, conformity, and perceived equity* comprise subjective, descriptive, and peer norms (see NAM). *Twelve*, *conflicting goals and aspirations* where, for example, the economic goals that require the use of coal or fossil fuels outweigh the environmental goals that demand the substitution of renewable energy. *Thirteen*, *belief in solutions outside of human control* might also hinder some people from taking climate action. They might believe that religious or otherwise higher forces will take care of what needs to be done.

Some of these reasons, like *ignorance* about climate change, do not explain the presence of behavioral determinants and the absence of behavior. Nevertheless, this list is rather comprehensive and includes psychological explanations for attitude/intention-action gaps.

Laying the Theoretical Grounds for Integrating Humor and Satire in a Comprehensive Model for Pro-Environmental Behavior

The literature review has already conveyed that the potential environmental impacts of humor and satire are not fully and conclusively researched. Existing research hardly goes beyond case studies to theorize, create a larger picture, and measure the impacts of interventions. Nor were we able to find any work that investigates the conditions under which humor and satire can be employed to advocate critical environmentalism, how they can be effectively utilized to achieve this goal, and what contingent contextual subtleties might determine their potential impact. Here, we provide a more nuanced theoretical discussion that paves the way for proposing a more comprehensive model for pro-environmental behavior in the next chapter. A geographic, demographic, and sectorial modular model is a breakthrough as it challenges assumptions, pushes boundaries, revolutionizes our understanding of the impact of satire and humor, and suggests novel ways to address ecological crises as looming global challenges. A more comprehensive outlook

will shed light on (popular) culture and how we can reduce its negative ecological impact and instead employ it to exert a positive influence. This will offer a novel creative solution to tackle ecological crises.

Our primary contention is that humor and satire can advocate pro-environmental behavior in two ways: (a) through influencing the determinants of behavior, and (b) through bridging the gap between the presence of behavioral determinants and lack of action (quasi intention-action or attitude-behavior gaps). We will explore theoretical grounds to show how humor and satire can enhance or deter persuasion and behavioral change at psychological and social levels. Then, we will explore how humor and satire can breach or bridge the gap between the presence of behavioral determinants and lack of action (see chapter 4).

Potential Impacts of Humor and Satire on the Psychological Determinants of Environmental Behavior

Many studies have conveyed that humor is associated with *positive emotions* (Martin & Ford, 2018; Plester & Inkson, 2019; Robbins & Vandree, 2009; Veatch, 1998). This might be effective in promoting critical environmentalism through facilitating the communication of ecological messages to public audiences. Environmental campaigns have usually relied on somber contentions and dark tones that induce fear and depict a hopeless, apocalyptic situation, but these are not sufficient to galvanize citizens (Holmes & Hall, 2019; Knowlton, 2017; Lyytimäki, 2021). Humor and satire, in contrast, can provide effective alternatives to eco-anxiety, eco-despair, and fear-inducing messages because they can communicate scientific findings in a way that begets genuine engagement and commitment to change due to their experiential, affective, visceral, emotional, tangible, and aesthetic appeal. “Humor and comedy,” Boykoff (2019, pp. 198–199) observes,

then have the potential to generate emotion and, in turn, leverage power to enable movement between ‘authorized’ and revealed alternatives. Thus, their expressions cultivate fertile locations for subversion, resistance and liberation as they open up additional dimensions of understanding of the world.

(see also Boykoff & Osnes, 2018)

Being entrenched in the social matrix—which includes cultural, political, and economic dimensions—humor and satire have strong implications for regulating behavior through *influencing symbolic and affective motives*. They can foreground symbolic values in order to comment on and scrutinize the material culture, and subsequently uphold or undermine the symbolic values we ascribe to certain choices. Abstaining from (excessive) meat consumption, for instance, bears a symbolic significance that leads to the formation of one from among the variety of vegetarian identities. This

range of identities is defined as opposed to carnism, and might as well be associated with other traits, like liberalism and care. By picking up on this opposition, satire and humor can both symbolically glorify some habits while chastising others. As a result, they can foster and reinforce a sense of affiliation and build a community. The animated comedy show *South Park* resorts to the symbolic aspect of owning and driving hybrid cars in “Smug Alert!” (Season 10, Episode 2) to comment on a form of affiliation based on pro-environmental behavior and simultaneously warn against the dangers of green complacency (see Zekavat, 2019).

Satire and humor can also help *regulate affect* in order to advocate pro-environmental behavior. Mirth is considered to be the reward of the cognitive processing of (the incongruity of) humor, but the affective aspect of humor is not merely limited to mirth. Disparaging humor and satire are also associated with *ridicule* and *shame*. Alongside guilt, fear and shame are two affects that regulate social behaviors (see Dodds, 1997); therefore, ridicule and fear of being laughed at can potentially regulate environmental behavior. As Martin and Ford (2018, pp. 261–262) observe,

Through ridicule, members of a group can communicate implicit expectations and rules about acceptable behavior and intimidate group members into conforming to those rules. Ridicule thus functions as a means of establishing or maintaining control over others through embarrassment or humiliation.... laughter (ridicule) in intragroup settings functions to ‘humiliate, and consequently to correct’ those who violate the rules of the group by behaving in some deviant manner....

Shame and ridicule can promote pro-environmental behavior at individual and collective levels. They can disparage unsustainable behaviors at the individual level and condemn policymakers and corporations that refuse to acknowledge the urgency of the ecological crises and take effective and timely measures to address them. The resulting negative emotions might have a stronger and more lasting impact on behavioral change (more on this in the next chapter). A Tweet we received in response to a course assignment effectively employed shaming in a good-natured and gentle manner to disparage unsustainable travel habits: “What if penguins don’t fly just because they want to protect the environment?”

Of course, apocalyptic and somber environmental messages have also relied on fear and guilt. There are two major differences between humorous and satiric shame and ridicule, and gloomy fear and guilt. First, a constant diet of guilt and fear is depressing, to say the least. If their impacts threaten to disturb our mental balance too deeply and for too long, our defense mechanisms will naturally prioritize individual mental homeostasis over environmental concerns. It is only natural, therefore, to expect fear- and guilt-inducing environmental concerns to be psychologically repressed in order to secure personal psychological homeostasis. Second, apocalyptic

environmental messages often tend to hold the individual responsible; therefore, the sense of fear and guilt they incite are usually personal. I feel guilty because animals have to suffer and lay their lives in order to provide meat for me. I fear for my life in the case of an environmental catastrophe. In satiric and humorous ridicule and shaming, by contrast, the intersubjective and social aspects of affect are emphasized. As evident in the quotation from Martin and Ford (2018), they often imply a sense of belonging and conformity to communal norms to secure social acceptance. This can lessen disproportionate pressure on the individual and at the same time foreground social responsibility and the significance of collective action.

Humor and satire can challenge our beliefs, attitudes, and perceptions of behavioral controls; they can also create social pressure to instigate pro-environmental behavior. We have already cited many studies that investigate how humor and satire can challenge and even change our attitudes regarding socio-political issues including gender, race, ethnicity, and sexual orientation. They tend to magnify and defamiliarize our prejudices and detach us from our long-held but unfounded biases through their distancing effect in order to encourage us to reconsider them. In Trevor Spaulding's (2014) cartoon *Leftover Guilt*, a woman who is stooping to reach out to the deep recesses of her large French door refrigerator says to another woman standing behind her, "I freeze my leftovers until I feel less guilty about throwing them away." This sheds light on an attitude that tries to justify food waste by appealing to its long storing time instead of genuinely addressing food waste through tempering consumption. The cartoon does not stop at merely exposing the way individuals use fallacious reasoning to come to terms with their own conscience and goes on to criticize the hypocritical sense of self-righteousness to justify their actions.

Satire and humor can also push to *modify perceived behavioral controls*. They can challenge our perceived ability to change behavior within the context of perceived barriers. This can expose misperceptions and lead to amending them as they might hinder us from adopting pro-environmental behaviors. Humor and satire, for instance, can target the misconception that cutting down on red meat consumption will inevitably affect one's health in a negative way.

Humor and satire can also *(re)direct subjective norms* toward endorsing pro-environmental behaviors. "Subjective norms refer to the perceived social pressure to engage in a specific behavior" (Abrahamse, 2019, p. 12), and disparaging humor and satire are especially effective in building up such social pressure. Just imagine how dining with a group of vegan friends might influence your decision on what to order so that you will stay immune to their (acerbic) humor. This quality can be particularly pertinent in the context of socializing children. Humor can be wisely employed in children's and young adult literature and systems of education to set pro-environmental expectations for children and motivate them to adhere to

such behaviors in the process of their socialization. Psychological research supports this assumption that a

potential social function of laughter is to motivate others to behave in particular ways.... laughter can be a method of positively reinforcing others for desirable behavior ('laughing with'), as well as a potent form of punishment directed at undesirable behaviors ('laughing at').

(Martin & Ford, 2018, p. 8; see also Carroll-Monteil, 2022)

Behavioral change interventions can be structural or informational. *Structural interventions* aim to change the context in which people make decisions for their behaviors. Taxation and subsidies, for instance, can regulate the expenses that a behavior incurs and consequently exert a considerable impact on the climate. People are more likely to reconsider and change their car use when combustion engines, roads, or parking spaces are made more expensive. *Informational approaches*, on the contrary, hope to change the determinants of behavior by providing information and feedback (Abrahamse, 2019). The assumption is that when people learn about the environmental consequences of their behaviors, they will adopt more environmentally friendly lifestyles. Satire and humor can be instrumental in modifying structural, cognitive, and technological fixes. In targeting policies and policymakers, they can push for change in structural fixes including pricing, taxation, subsidies, and other governmental policies. By targeting corporations and consumers, satire can call for change in technological fixes like production, marketing, and consumption of efficient and environmentally friendly products. But their greatest impact is probably in cognitive fixes where they can provide information about pro-environmental choices and behaviors.

Likewise, satire and humor have strong implications for *(re)defining norms and values*. They frequently target vices and deviations from norms. This is particularly true for satire that frequently relies on the disparity between how things are and how they ought to be. It often presupposes an ideal set of norms and values, but when the satirist witnesses how people ignore and deviate from them, she sets out to criticize these digressions in hopes of morally rectifying the society. Satire has also been successful in challenging motivations, most obviously power. While universalism and benevolence are more likely to lead us toward pro-environmental behavior, power and tradition usually discourage such behavior (see above). Many scholars and satirists consider satire to possess parrhesiastic potentials (see below); in other words, it can stand up to and challenge power. Furthermore, satire and comedy have a long history of exposing the follies of social structures and degrading traditional hierarchies (think of comedy of manners, for instance). They can expose the frailties of tradition and call for transformation.

The potentials of humor for intervening in values and motivations are evident in the curious similarities between the concepts and terms used to taxonomize humor styles (Martin et al., 2003; see also chapter 2) and motivational types of values (Bilsky & Schwartz, 1994; see also above). Though developed independently, they partly base their classifications on the relationship between what centers around the individual personality and what exists beyond it. Self-enhancing humor arises from and can reinforce *self-enhancement* (for example, achievement, power) as a motivational value. In contrast, the styles of humor that enhance relationships with others (for example, affiliative) reverberate with *self-transcendence* as a motivational type (for example, universalism, benevolence). The taxonomy for the styles of humor, however, stops short of locating these relationships in the larger ecosystem.

Satire and humor have also the capacity to activate personal norms in VBN. Research has already conveyed that satire and humor can be employed to provide information (see Boukes, 2019; Boykoff, 2019; Chattoo & Feldman, 2020; Friedman & Friedman, 2020; Martin & Ford, 2018; Young, 2016). Accordingly, they can raise problem awareness and come up with suggestions for outcome efficacy. Due to their critical edge, they are also effective in the ascription of responsibility. This can be even more effective as they do not just blame and shame, but rather reprimand the audience in good nature, which will create an aura of safety and a good mood. This is especially important because people are more likely to endorse their environmental responsibility when confronted in a cheerful and non-threatening manner. The cheerful optimism of satire and humor can further enhance a sense of ability or self-efficacy.

The *Goal Framing Theory* integrates insights from other theories in the tripartite frame it proposes (see above). Hedonic goals overlap with affect, gain goals resonate with TPB, and normative goals are focal in NAM and VBN. Therefore, our discussions on the implications of humor and satire for advocating pro-environmental behavior are also valid in the framework of this theory. In other words, humor and satire can be employed to reshape hedonic goals through affective (and symbolic) aspects; gain goals, through attitude, subjective norms, and (perceived) behavioral control; and normative goals, through revisiting values, challenging motivations, envisioning a new environmental paradigm, and activating personal norms.

Previous studies have also recognized the potentials of humor and satire for changing attitudes, belief, and behaviors (Chattoo & Feldman, 2020; Krefting, 2014). Chattoo and Feldman (2020, p. 5) insist that comedy can contribute to social change on several grounds including “building public awareness, shaping individual attitudes and behaviors, shifting social norms and practices, encouraging public engagement, setting a media agenda, and influencing policy.” They also observe that “humor can bypass usual frames of societal acceptance, creating a temporary state in which dominant norms or power dynamics can be reexamined” (Chattoo & Feldman, 2020, p. 27).

Moreover, they acknowledge the crucial impact of humor, satire, and comedy on the public sphere, rather than the individual, which can provide invaluable resources for collective action.

Locating behavior in environmental psychology, thus, conveys how humor and satire can be employed to promote pro-environmental behavior. As shown in this section, they show strong promises within the framework of all major theories of environmental psychology. Another implication of this discussion is that (informational) environmental campaigns must diversify and consider different values in order to be able to appeal to a wider range of audiences in the public sphere. Some trends should foreground egoistic values to appeal to people with low environmental values, while others can draft people with higher altruistic and biosphere values. In other words, there is no single way (like depicting apocalyptic premonitions of imminent doom as has been dominant so far) to advance environmental campaigns. This reductive approach, which is not sensitive to the wide diversity of audiences and stakeholders, only risks losing their attention and repelling them toward despair, eco-anxiety, indifference, and inaction (more on this in the next chapter).

Potential Impacts of Humor and Satire on the Social Determinants of Environmental Behavior

Although some of the determinants of behavior, like symbolic value or norms, function at the societal level, environmental psychology primarily focuses on individual behavior. Drawing on insights from communication, literary, and cultural studies, we undertake to provide a more comprehensive picture by locating the individual within the matrix of society, culture, politics, economy, and ecosphere in order to explore how humor and satire can advocate pro-environmental behavior in the larger context and at both individual and collective levels. In this section, we will discuss our reasons why humor and satire can be employed for environmental advocacy at the social level.

Building Communities

Humor and satire can build communities and foster a sense of belonging and solidarity. To the extent that humor is a viable community-building strategy, it facilitates sharing social norms, community engagement, and collective action for the purpose of social change including environmental activism. Research in community psychology has underscored the role of a sense of belonging to a community—as understood to refer to both territorial and relational affiliations—in galvanizing engagement and participation among citizens with the aim of improving community well-being and social change (see McMillan & Chavis, 1986; Sarason, 1974). Chavis and Wandersman (1990) posit that a sense of community can act as a catalyst for participation

and community development. Empirical research has confirmed that a sense of community is associated with a variety of community engagement behaviors including volunteering, demonstrations, petitions, and boycotting. Sense of community is enhanced when members share significant experiences together, develop a sense of emotional connection, assume their needs can be satisfied by community membership, and feel they matter to other members of the community (McMillan & Chavis, 1986). Accordingly, “People who feel an affiliation with a group are thus more likely to cooperate in environmental decisions” (Shome & Marx, 2009, p. 31). Humor and satire can have a strong potential in strengthening social cohesion and helping individuals develop a sense of community and belonging. They may provide practical strategies to foment activism and mobilize joint actions among community members in support of environmental causes and climate change (see Chattoo & Feldman, 2020; Climate Outreach, 2022; Li et al., 2009; Seymour, 2018; Shome & Marx, 2009).

Parrhesia

Several critics have noticed the parrhesiastic potentials of satire and humor. Though originally a figure of speech, parrhesia is usually understood as frank speech or scandalously telling the truth to power. Although there are reservations about freedom of speech, which was sometimes extended to freedom of action as in the case of Plato, in the history of the use of the term, the struggles of political power and the power of truth have clear ramifications for reformatory attempts (Foucault, 2001, 2011). Rossing (2013) argues that humor can offer new perspectives on reality, alert us about injustice, advocate dialogue and action, create a sense of community, and humanize contenders in a struggle. After enumerating many writers and artists who have employed humor and satire to further the cause of social justice, Rossing declares that “style and politics interweave” (p. 60). As people continue to struggle for justice, they continue to look for discursive practices that lend themselves to an activist political style. His main contention is that, “humor figures as a necessary, if not sufficient, element of an activist style of advocacy. Said differently, activism necessarily takes place with a comic sensibility” (p. 60). He offers several reasons for his claim that include the cohesive function of humor for communities, its power in fostering hope as required for activism that aims to change the world for the better, its inclination to criticize, and the fact that “humor imbues activism with a creative spirit necessary to awaken new perspectives on reality and to challenge the status quo” (p. 60). There are, of course, some drawbacks to using political humor for social change: the limitations of polysemy, corroboration rather than refutation of biases and political ideologies, naturalization of social difference, and the reliance of humor on background cultural knowledge (p. 61; also see Martins, 2019; Stott, 2005). On successfully navigating these subtleties, the power of rhetoric and parrhesia in humor and satire

can be employed for political activism not only in promoting environmental policies and behaviors but also in drawing attention to other adjacent issues, including class, race, ethnicity, and gender, that are inevitably linked to ecological crises (see also Shome & Marx, 2009).

Framing and Priming

Chattoo and Feldman (2020) contend that *framing* climate change discussions through comedy can foster hope and motivate individual and collective action. Framing is defined as “setting of an issue within an appropriate context to achieve a desired interpretation or perspective” (Shome & Marx, 2009, p. 11). Through reframing the terms of debate, comedy can resist oppression as a practice of empowerment (Chattoo & Feldman, 2020). Furthermore, humor and satire can frame ecological topics in a way that brings them home to their audience. This is particularly important because

By framing climate change as a local issue, communicators not only increase their audience’s sense of connection to and understanding of climate change, but also promote the development of local and regional solutions that could transfer well to the national and global arenas and, further, inspire future action everywhere.

(Shome & Marx, 2009, p. 10)

Reviewing the uses of humor in environmental communication, Lyytimäki (2021, p. 470) observes that humorous framing has been employed by social protest movements in order to enhance their visibility where “Lists of polluters have been used to ridicule by naming and shaming, caricatures of opponents are commonly raised up in demonstrations, and communication campaigns often employ comic stereotypes as tools of critique.” He cites the Fossil of the Day award as a successful example. The Climate Action Network presents the award to the country that has done the most to obstruct negotiations during the United Nations Framework Convention on Climate Change. An ironic twist is used to frame the award, shaming diplomats for their failures, rather than lauding them for their achievements (see also Panda, 2020).

Chattoo and Feldman (2020) also contend that comedy can attract attention and motivate people to seek further information about complex topics from other (serious) sources due to its *priming* function. Exposure to one stimulus impacts our response to another stimulus through priming. If appearing on a distorted list of grocery items, so*p is more likely to be completed as soap, but if you change the context to a restaurant menu, then the word is more likely to be read as soup. Corporations use priming to create associations in the minds of consumers in order to make them more receptive of the products they market. This is why they consistently stick to certain sound effects, theme songs, colors, or shapes in their advertisements

as their association with the product will be automatically triggered when a similar mental image emerges in a different context. Chattoo and Feldman (2020, p. 43) argue that the priming effect of comedy is particularly strong “among those who are less knowledgeable about public affairs. Among those who are already civically engaged, comedy may help signal that a particular issue warrants their time and effort.” Priming is a nudging technique that might be used to redirect the target’s attention and foster pro-environmental behavior (for example, Byerly et al., 2018; Wee et al., 2021). It can help make pro-environmental attitudes more salient (Bimonte et al., 2020).

Agenda Setting and Intermediality

Chattoo and Feldman (2020) identify intermedia agenda setting as one of the ways through which comedy can exert societal influence. Agenda setting occurs when the agenda of one outlet or medium influences the agenda of another, for example, when a story that has first appeared in a newspaper also receives coverage on television. Entertainment media can be potentially influential, especially in the digital climate, as they can reach a large audience. If a topic that is not salient in mainstream media goes viral because of its humorous treatment, it might subsequently be taken up by serious or mainstream media. Chattoo and Feldman (2020, p. 53) further note that mediated comedy’s “agenda-setting effects not only shape *what* topics get covered in the news but also *how* these topics are covered, thereby helping to shift the dominant framing of social issues, as ‘journalists take interpretive cues from comedians’.” In this way, comedy and humor can make certain social issues salient, shape public debates, and influence policymakers. Humor is particularly potent because it can work across different media and in textual, pictorial, auditory, and cinematic forms, to name only a few, and complementing discursive materials with visual aids is one of the principles of effective communication of and public engagement with climate change (Corner et al., 2018; see also Hee et al., 2022). Boukes (2019, p. 430) also agrees that,

perceived importance, interpersonal talk, and participation intentions, altogether, thus indicate how salient a topic is on the (individual-level) public agenda. As a certain level of understanding is required before citizens can evaluate a topic’s importance and act accordingly..., the expectation is that satire indirectly sets the public agenda via an increased understanding of the issue at hand.

Narrative Appeal

Environmental activists are repeatedly asked to tell human stories, rather than listing scientific data, as an effective way to reach out to and connect with their audiences (see Climate Outreach, 2022; Corner et al., 2015, 2018; Holmes & Hall, 2019). Narrative can make environmentalism, as a demanding and

complex scientific topic, more relatable (Seymour, 2018). Due to their narrative nature, humor and satire are capable of telling a human story. They engage the imagination and can make abstract ideas concrete and tangible for their audience. As opposed to impersonal and objective facts and figures, humor and satire can make it possible for activists and scientists to meet their audiences where they are by relating narratives about local interests.

Narratives can also transport their audience into the imagined world of the story and facilitate “attitude change consistent with the narrative’s premises or conclusions” (Chattoo & Feldman, 2020, p. 66). Transportation happens when audiences are so immersed in the narrative that “they lose touch with their immediate surroundings and are changed as a result” (pp. 120–121). Since this experience is pleasurable, “it is likely to reduce cognitive resistance to persuasive messages embedded within the narrative, and accordingly has been linked to changes in audiences’ knowledge, attitudes, and behavior” around social issues (pp. 120–121). As compared to didactic narratives, entertaining stories can therefore be more effective in bringing about change (see Seymour, 2018).

Censure and Ridicule

The shaming power of satire can be used to instigate and/or disparage attitudes, decisions, and behaviors among both policymakers and citizens. The shaming power of laughter has been acknowledged at least since the time of Plato (Billig, 2001, 2005; Morreall, 1987). It was so strong that some legal systems had vehement injunctions against satire, which occasionally even drove the satirized to commit suicide (Elliott, 1954, 1960; Greenberg, 2019; Quintero, 2007). This function is particularly pertinent in shame cultures where public opinion is of primary concern for citizens (see Dodds, 1997 for two types of cultures). Shame still seems to be an influential societal factor as it continues to raise serious concerns over mental health as in the case of social media use among teenagers, body image, and the like. Its positive impact can be wisely harnessed in the era of flight shame and feeling of guilt over red meat or exotic food consumption to advocate environmentalism (see also Ruch & Heintz, 2016; Seymour, 2018; Sundén & Paasonen, 2020). Shame and ridicule can also be employed to confront authorities. Hannah Arendt (1970, p. 45) avers that “the greatest enemy of authority ... is contempt, and the surest way to undermine it is laughter.” Shame is closely connected to social norms and may thus be an important determinant of behavior in the framework of TPB.

Destabilizing, Reformative, and Subversive Potentials of Humor and Satire

There are several ways through which humor and satire can challenge and transform conventional attitudes, beliefs, and values. The destabilizing and

subverting nature of humor and satire can be employed to undermine culture/nature, human/nature, and other pertinent binaries, giving way to ecological consciousness, promoting more environmentally friendly attitudes in their audience, encouraging behavioral change, and advocating (multispecies) environmental justice. Boykoff (2019) notices that humor can link ideas and information in unconventional ways, leading to new conceptualizations and behaviors, because it defies the bona fide use of language and logic and thrives on ambiguity and double entendre. At the same time, humor can connect people—potentially, even those at opposite sides of the political spectrum (Paletz, 1990)—an inevitable precondition for collective action. Boykoff (2019) further observes that “Comedy can then exploit cracks in arguments, wiggle in, poke, prod, and make nuisance to draw attention to that which is incongruous, hypocritical, false, or pretentious” (p. 187). He maintains that multiscale comedic approaches at micro, meso, and macro levels

help to explore how agency, social structure, culture, institutions, inequality, power, and spatial dimensions of these issues shape how we address present-day climate change.... In so doing, power saturates social, political, economic, and institutional conditions that shape these relations and interactions.

(p. 222)

In other words, resorting to humor can facilitate what has been largely missing from environmental attempts. Not only does it acknowledge that genuine and effective solutions to ecological crises are feasible only when adopting a comprehensive and holistic outlook, but it also makes such a perspective possible. Friedman and Friedman (2020) agree that humor can promote social justice through pushing people out of their comfort zones and modifying their attitudes, beliefs, and perceptions.

Rossing (2016) has also noticed that humor can be destabilizing to the rigid worldview we have already endorsed and replace contingency in its stead. He maintains that “Humor renders untenable a fixed understanding of truth and a concrete view of common sense thereby enabling us to break allegiance to rigid views of reality” (p. 14). In a bold claim, Carroll (2014, n.p.) also asserts that, “the primary function of humor is to disrupt the heuristics we deploy in everyday life.” Elsewhere, he writes, “the function of comic amusement is to apprise us of the many ways that normal thinking and reasoning procedures can derail” (n.p.). In other words, humor serves to make us aware of the knowledge and reasoning we have subconsciously endorsed and exposes not only the flaws of this seemingly infallible system but also reveals its grip on our myriad ways of thinking, decision-making, and behavior. It rewards this detection of our flawed thinking with mirth and amusement. As the result, this procedure does not stop with one individual: we delight in recounting these flaws to others, hence spreading information. As we learn how far we are subject to the frailties of human thinking, humor can provide an occasion

for modesty and reconsideration of unfounded superiorities. Its destabilizing power, therefore, inevitably has reformatory implications and calls for alternatives to our prejudices. This can offer an opportunity to embrace alternative posthumanist orders based on ecocentrism and biocentrism (see also Bevis, 2013; Chattoo & Feldman, 2020; Klein, 2007; Plester & Inkson, 2019; Sørensen, 2016; Stott, 2005; Waterlow, 2014, 2015).

Humor and satire can also destabilize long-held and cherished but destructive attitudes and practices through facilitating more nuanced and contingent interpretations of truth. Boykoff (2019) asserts the power of comedy in facilitating alternative perspectives, resistance, and subversion in addressing ecological issues. He declares that “the power of comedy as a vehicle for social, political, economic and cultural change was revealed” (p. 215). One reason behind the liberating potentials of humor is its potential to destabilize and modify power-knowledge. Statements and discourses are geared toward validating and authorizing certain forms of knowledge while discrediting others within an episteme, and humor can reveal the fissures of this regime and subtly modify/subvert it.

In contrast to brash imposition of law or mandate, comedy and humor—and by extension, laughter—have the power to reconstitute subtle power-knowledge regimes that permeate and create what becomes ‘permissible’ and ‘normal’ as well as ‘desired’ in everyday discourses, practices, and institutional processes.

(Boykoff, 2019, p. 187)

Similarly, Rossing (2016) contends that humor plays with knowledge constructions and invites audiences to reflect on their actions and the regime of truth. When people become aware of the process through which knowledge is produced as well as its contingencies, they can find ways to revise and recreate it. Humor, in other words, foregrounds the possibility of multiple realities and the contingency of knowledge (see also Rossing, 2013). Therefore, it features ways of thinking and behaving that are required for participation in civic life including the ability to discern reality as a process of becoming—rather than being—and as a result of the complex workings of a rich multiplicity of factors including discursive construction. Having the capacity to make people aware of their responsibility for initiating reform and reconstructions, humor offers a flexible and playful perspective that encourages alternative constructions. Thus, Rossing concludes humor is essential for relinquishing prejudices and correcting errors (see also Chattoo & Feldman, 2020; Davis et al., 2016; Gloor, 2021; Marra, 2016; Nikulin, 2014; Sloterdijk, 2001).

Adaptation, Coping, and Resilience

Besides their impacts on the psychological and social determinants of environmental behavior, humor and satire are also capable of fostering resilience,

coping, and adaptation. Some ecological crises are already beyond salvage. Scientists have shown that part of the damage caused by human intervention in the ecosphere is irreparable and irreversible. A very simple example would be the species that have already gone extinct. Confronting ecological crises and climate change, therefore, requires behavioral change and a green transformation to halt further damage as much as fostering resilience to encounter the realities of the degraded new world. Many studies have discussed the adaptive functions of laughter, humor, and satire (Boyd, 2004; Declercq, 2021; Hall, 2021; Kozintsev, 2010; Lynch, 2002; Martin & Ford, 2018; Meyer, 2000; Panda, 2020; Seymour, 2018; Zekavat, 2017, 2022). They afford adaptive values at the psychological level, that is coping, and at the socio-political level.

Coping is defined as,

an effort by the individual to adapt to threatening or difficult situations called stressors.... Basically the stress response is an adaptive response aimed at the survival of the individual, which is especially useful when quick action as a response to possibly life-threatening or injuring stressors is required.

(Doosje, 2014, p. 179)

Accordingly, humorous coping can be described as “the active use of humorous behaviors or thoughts to adapt to stressors in order to avoid or reduce the unpleasant states or emotions accompanying them” (Doosje, 2014, p. 179). Problem-focused coping, which encompasses actions in order to diminish a problem, has to be differentiated from emotion-focused coping (for example, Carver & Scheier, 1998; Lazarus & Folkman, 1984). The latter describes attempts to deal with the negative emotions a stressor might induce. Finding a solution to the problem is of course far better than offsetting its negative emotional response; however, some problems like death, extreme weather, drought, and famine do not have ready solutions. In these cases, emotion-focused coping could be a useful alternative.

Besides psychological coping, humor also affords socio-political adaptation. As a means of information provision (Boukes, 2019; Cook, et al., 2022), humor can help us make informed decisions and take wise actions. Moreover, while reflecting on corruption, satire also helps people adapt to those aspects of the world they cannot change for the better at certain historical moments (Declercq, 2021; Zekavat, 2022). Humor may also, “conceal malice or allow the expression of aggression without the consequences possible from direct confrontation” (Meyer, 2000, p. 317).

Humor and Satire as Strategies for Environmental Advocacy

Humor, comedy, and satire, therefore, can instigate behavioral change and advocate critical environmentalism not only at the level of individual psychology but also at intersubjective, social, and political levels within

different cultures and communities inhabiting the ecosphere. Instead of arbitrarily delimiting pro-environmental behavior to the psychology of individuals, therefore, we strive to locate individual and collective behaviors in the intersection of human psyche and larger social and ecospheric contexts for the purpose of realizing behavioral change through humorous and satiric interventions.

Individual action is significant and can make a difference when adopted by many, but blaming individuals for the ecological crises breeds eco-anxiety (see Hickman et al., 2021) at best and immobilization or even antipathy at worse. Asking individuals to drastically rethink and change their lifestyles—which is of course necessary—might lead to indifference when they recognize dissonance. You make sacrifices and make life more difficult for yourself and your loved ones to slow down climate change, for instance, but you witness others do not even slightly try. This might lead one to conclude that since my individual sacrifices do not make a difference, and as no one else really cares, why should I bother after all? Besides, the footprints of large corporations and wealthy people are not remotely comparable to that of individual citizens. It does not make much sense to target individuals to ride bicycles to work, when billionaires tour the space or the war machine depletes resources on an enormous scale.

Therefore, any model to address ecological crises is doomed to failure if it only focuses on individual behavioral change and technological fixes. A genuine solution and sustainable transformation must consider the myriad, contingent factors causing ecological crises, that in their turn vary from region to region and impact different sectors in different ways. It must acknowledge the asymmetrical impacts of ecological crises on different communities and entail tailored solutions, aiming for equality, inclusion, justice, reckonings, and reparations. A holistic model that locates environmental behavior in the psyche, society, and ecosphere is a step in this direction.

We will expand on this in our model as presented in the next chapter by arguing that for an environmental message to be optimally effective, many factors should be taken into consideration, and the message should focus on regional ecological problems, should be tailored to a specific audience, be delivered by the right person, and be distributed via appropriate outlets and media. An identical message cannot address the use of plastic among refugees in Europe and send an effective reduce-reuse message to middle-class European consumers who aspire to live a life of fashion. It is not easy to reach out to younger generations via radio and to senior citizens via TikTok. Even if persuaded and amused by its aesthetics, an environmental message encouraging people to support organic farming or renewable energy (which usually tend to be more expensive) might not succeed in changing the behavior of people who have a more limited access to financial resources. Ethnic and racial residents of areas negatively impacted by industrial farming or mining industries need less persuasion to change the situation than the white male executives who are profiting from environmental degradation. Considering the passage of time adds another dimension to these intricacies. The

immediate impact of a single humorous message or satiric sketch (which is usually investigated in previous research) could be very different from the gradual and incremental impact of a series of exposures to satiric messages over a longer period of time. The first message might fail to conduce a change, while continuous exposure could lead to changing voting behavior, for instance, in the long run. The model we propose strives to encompass more pertinent variables than previous models. Mitigating measures are also discussed in the next chapter.

We believe that satire and humor can be effective (communicative) strategies in implementing such a holistic model. This is because, as Boykoff (2019, pp. 193–194; see also Boykoff & Osnes, 2018) also acknowledges, humor can:

- Increase salience of climate change issues (exposing audiences to new insights);
- Offer new routes to “knowing” about climate change (through experience/emotion);
- Help increase accessibility of a complex, often-distant, long-term set of issues;
- Engage new audiences;
- Increase retention of climate change information through effective storytelling;
- Provide relief amid anxiety-producing evidence of causes and consequences of climate change; and
- Bridge difficult topics, overcoming polarized discussions through often entertaining/non-threatening ways.

Likewise, Hodson and Prusaczyk (2021, p. 184) conclude, “we see great potential for using humor to combat prejudice” after arguing at length to show that “cavalier humor beliefs play an important role in affording humor-based ridicule and marginalization the social cover deemed necessary in contemporary society” (p. 182). They continue to give several examples where humor and satire were successfully used to trigger political change (see also Chattoo & Feldman, 2020).

We believe that a balance between theory and praxis across science, humanities, and culture can open up new vistas for addressing ecological crises at individual and public levels. Therefore, we propose a modular model for pro-environmental behavior at the intersections of interdisciplinary dialogues and integrate humor and satire into it. This will eventually enable us to measure the environmental impacts of humorous and satiric interventions. This model insists that alongside individual and psychological determinants, the impact of social and ecospheric factors cannot be ignored in environmental behavior. Individuals are not exclusively exposed to pro-environmental messages but are rather subject to myriad competing discourses. Behavior, therefore, is shaped by an incredibly complex and multifaceted set of determinants that may incrementally reinforce, contradict, neutralize, or cancel

each other in their negotiations. So even if an environmental message effectively targets psychological determinants of behavior but fails to consider social and ecospheric variables, it is less viable as a solution. You cannot have the same level of expectations from the affluent who have been capitalizing on inexpensive sources of energy, middle-class mainstream consumers, and disenfranchised racial, ethnic, or sexual minorities who have long suffered from the negative impacts of ecological crises in their communities or who do not have the resources required for taking consequential environmental action. Environmental refugees are paying the price of the actions of others, and they have very little to begin with, so encouraging them to minimize their consumption for the purpose of reducing their carbon footprint might not make much sense. In other words, for a message to spur pro-environmental behavioral change, it must be tailored to its context and audience.

References

- Abrahamse, W. (2019). *Encouraging pro-environmental behavior: What works, what doesn't, and why*. Academic Press.
- Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & L. Beckmann (Eds.), *Action control: From cognition to behavior* (pp. 11–39). Springer. https://doi.org/10.1007/978-3-642-69746-3_2
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Ajzen, I., & Kruglanski, A. W. (2019). Reasoned action in the service of goal pursuit. *Psychological Review*, 126(5), 774–786. <https://doi.org/10.1037/rev0000155>
- Anderson, A. A., & Becker, A. B. (2018). Not just funny after all: Sarcasm as a catalyst for public engagement with climate change. *Science Communication*, 40(4), 524–540. <https://doi.org/10.1177/1075547018786560>
- APA (2009). *Psychology & global climate change: Addressing a multifaceted phenomenon and set of challenges*. Last retrieved April 1st, 2022. <https://www.apa.org/science/about/publications/climate-change>
- Arendt, H. (1970). *On violence*. Houghton Mifflin Harcourt.
- Azriel, O., & Bar-Haim, Y. (2020). Attention bias. In J. S. Abramowitz & S. M. Blakey (Eds.), *Clinical handbook of fear and anxiety: Maintenance processes and treatment mechanisms* (pp. 203–218). American Psychological Association. <https://doi.org/10.1037/0000150-012>
- Barr, S. (2006). Environmental action in the home: Investigating the ‘value-action’ gap. *Geography*, 91(1), 43–54. <https://doi.org/10.1080/00167487.2006.12094149>
- Benatar, D. (2014). Taking humor (ethics) seriously, but not too seriously. *Journal of Practical Ethics*, 2(1), 24–43. <https://ssrn.com/abstract=2464556>
- Bergquist, M. (2020). Most people think they are more pro-environmental than others: A demonstration of the better-than-average effect in perceived pro-environmental behavioral engagement. *Basic and Applied Social Psychology*, 42(1), 50–61. <https://doi.org/10.1080/01973533.2019.1689364>
- Bevis, M. (2013). *Comedy: A very short introduction*. Oxford University Press.
- Billig, M. (2001). Humor and hatred: The racist jokes of the Ku Klux Klan. *Discourse & Society*, 12(3), 267–289. <https://doi.org/10.1177/0957926501012003001>

- Billig, M. (2005). *Laughter and ridicule: Towards a social critique of humor*. Sage Publications Ltd. <http://dx.doi.org/10.4135/9781446211779>
- Bilsky, W., & Schwartz, S. H. (1994). Values and personality. *European Journal of Personality*, 8(3), 163–181. <https://doi.org/10.1002/per.2410080303>
- Bimonte, S., Bosco, L., Stabile, A. (2020). Nudging pro-environmental behavior: Evidence from a web experiment on priming and WTP. *Journal of Environmental Planning and Management*, 63, 651–668. <https://doi.org/10.1080/09640568.2019.1603364>
- Blake, J. (1999). Overcoming the ‘value-action gap’ in environmental policy: Tensions between national policy and local experience. *Local Environment*, 4(3), 257–278. <https://doi.org/10.1080/13549839908725599>
- Borden, R. J. (1984). Psychology and ecology: Beliefs in technology and the diffusion of ecological responsibility. *The Journal of Environmental Education*, 16(2), 14–19. <https://doi.org/10.1080/00958964.1985.10801948>
- Bore, I.-L., & Reid, G. (2014). Laughing in the face of climate change? Satire as a device for engaging audiences in public debate. *Science Communication*, 36(4), 454–478. <https://doi.org/10.1177/1075547014534076>
- Boukes, M. (2019). Infotainment. In T. P. Vos, F. Hanusch, D. Dimitrakopoulou, M. Geertsema-Sligh & A. Sehl (Eds.), *The international encyclopedia of journalism studies* (pp. 1–9). Wiley. <https://doi.org/10.1002/9781118841570.iejs0132>
- Boukes, M., & Hameleers, M. (2020). Shattering populists’ rhetoric with satire at elections times: The effect of humorously holding populists accountable for their lack of solutions. *Journal of Communication*, 70(4), 574–597. <https://doi.org/10.1093/joc/jqaa020>
- Boukes, M., Boomgaarden, H. G., Moorman, M., & De Vreese, C. H. (2015). At odds: Laughing and thinking? The appreciation, processing, and persuasiveness of political satire. *Journal of Communication*, 65(5), 721–744. <https://doi.org/10.1111/JCOM.12173>
- Boyd, B. (2004). Laughter and literature: A play theory of humor. *Philosophy and Literature*, 28(1), 1–22. <https://doi.org/10.1353/phl.2004.0002>
- Boykoff, M. (2019). *Creative (climate) communications: Productive pathways for science, policy and society*. Cambridge University Press. <https://doi.org/10.1017/9781108164047>
- Boykoff, M., & Osnes, B. (2018). A Laughing matter? Confronting climate change with humor. *Political Geography*, 68, 154–163. <https://doi.org/10.1016/j.polgeo.2018.09.006>
- Branch, M. P. (2014). Are you serious? A modest proposal for environmental humor. In G. Garrard (Ed.), *The Oxford handbook of ecocriticism* (pp. 378–391). Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780199742929.013.021>
- Brewer, P. R., & McKnight, J. (2015). Climate as comedy: The effects of satirical television news on climate change perceptions. *Science Communication*, 37(5), 635–657. <https://doi.org/10.1177/1075547015597911>
- Brewer, P. R., & McKnight, J. (2017). “A statistically representative climate change debate”: Satirical television news, scientific consensus, and public perceptions of global warming. *Atlantic Journal of Communication*, 25(3), 166–180. <https://doi.org/10.1080/15456870.2017.1324453>
- Brick, C., & Lewis, G. L. (2016). Unearthing the “green” personality: Core traits predict environmentally friendly behavior. *Environment and Behavior*, 48(5), 635–658. <https://doi.org/10.1177/1075547016514554695>

- Byerly, H., Balmford, A., Ferraro, P., Wagner, C. H., Palchak, E., Polasky, S., Ricketts, T. H., Schwartz, A. J., & Fisher, B. (2018). Nudging pro-environmental behavior: Evidence and opportunities. *Frontiers in Ecology and the Environment*, 63(4), 651–668. <https://doi.org/10.1080/09640568.2019.1603364>
- Cameron, L., Rocque, R., Penner, K., & Mauro, I. (2021). Evidence-based communication on climate change and health: Testing videos, text, and maps on climate change and Lyme disease in Manitoba, Canada. *PLOS ONE*, 16(6), e0252952. <https://doi.org/10.1371/journal.pone.0252952>
- Carroll, N. (2014). *Humor: A very short introduction*. Oxford University Press. <https://doi.org/10.1093/actrade/9780199552221.001.0001>
- Carroll-Monteil, E. (2022). Is climate change a laughing matter? *Environmental Education Research*. <https://doi.org/10.1080/13504622.2022.2113764>
- Carver, C. S., & Scheier, M. F. (1998). *On the self-regulation of behavior*. Cambridge University Press. <https://doi.org/10.1017/CBO9781139174794>
- Chandler, K. R. (2014). Poisonwood persuasion: Rhetorical roles of humor in environmental literature. *Interdisciplinary Literary Studies*, 16(2), 326–347. <https://muse.jhu.edu/article/554074>
- Chattoo, C. B., & Feldman, L. (2020). *A comedian and an activist walk into a bar: The serious role of comedy in social justice*. University of California Press.
- Chavis, D. M., & Wandersman, A. (1990). Sense of community in the urban environment: A catalyst for participation and community development. *American Journal of Community Psychology*, 18(1), 55–81. <https://doi.org/10.1007/BF00922689>
- Clifford, K. R., & Travis, W. R. (2018). Knowing climate as a social-ecological-atmospheric construct. *Global Environmental Change*, 49, 1–9. <https://doi.org/10.1016/j.gloenvcha.2017.12.007>
- Climate Outreach. (2022). *Manage the psychological risk of climate change*. Last retrieved on April 8th, 2022, <https://climateoutreach.org/download/6744/>
- Cook, J., Ecker, U. K. H., Trecek-King, M., Schade, G., Jeffers-Tracy, K., Fessmann, J., Kim, S. C., Kinkead, D., Orr, M., Vraga, E., Roberts, K., & McDowell, J. (2022). The cranky uncle game—Combining humor and gamification to build student resilience against climate misinformation. *Environmental Education Research*. <https://doi.org/10.1080/13504622.2022.2085671>
- Corner, A., & Clarke, J. (2017). *Talking climate: From research to practice in public engagement*. Palgrave Macmillan.
- Corner, A., Lewandowsky, S., Phillips, M., & Roberts, O. (2015). *The uncertainty handbook*. Climate Outreach.
- Corner, A., Shaw, C., & Clarke, J. (2018). *Principles for effective communication and public engagement on climate change: A handbook for IPCC authors*. Climate Outreach.
- Corral-Verdugo, V., Frias-Armenta, M., Tapia-Fonllem, C. O., & Fraijo-Sing, B. S. (2012). Protecting natural resources: Psychological and contextual determinants of freshwater conservation. In S. D. Clayton (Ed.), *The Oxford handbook of environmental and conservation psychology* (pp. 581–597). Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780199733026.013.0030>
- Davis, C. B., Glantz, M., & Novak, D. R. (2016). “You can’t run your SUV on cute. Let’s go!”: Internet memes as delegitimizing discourse. *Environmental Communication*, 10(1), 62–83. <https://doi.org/10.1080/17524032.2014.991411>
- De Groot, J. I. M., & Thøgersen, J. (2013). Values and pro-environmental behavior. In L. Steg, A. E. van den Berg, & J. I. de Groot (Eds.), *Environmental psychology: An introduction* (pp. 141–152). BPS Blackwell.

- De Leeuw, A., Valois, P., Ajzen, I., & Schmidt, P. (2015). Using the theory of planned behavior to identify key beliefs underlying pro-environmental behavior in high-school students: Implications for educational interventions. *Journal of Environmental Psychology*, 42, 128–138. <https://doi.org/10.1016/j.jenvp.2015.03.005>
- Declercq, D. (2021). *Satire, comedy and mental health: Coping with the limits of critique*. Emerald Publishing.
- DiCaglio, J. (2015). Ironie ecology. *Interdisciplinary Studies in Literature and Environment*, 22(3), 447–465. <https://doi.org/10.1093/isle/isu106>
- Diehl, N. (2013). Satire, analogy, and moral philosophy. *The Journal of Aesthetics and Art Criticism*, 71(4), 311–321. <https://doi.org/10.1111/jaac.12030>
- Dodds, E. R. (1997). *The Greeks and the irrational*. University of California Press.
- Doosje, S. (2014). Coping mechanism. In S. Attardo (Ed.), *Encyclopedia of humor studies* (pp. 179–180). Sage. <http://dx.doi.org/10.4135/9781483346175>
- Duncombe, S. (2007). *Dream: Re-imagining progressive politics in an age of fantasy*. The New Press.
- Elliott, R. C. (1954). The satirist and society. *ELH*, 21(3), 237–248. <https://doi.org/10.2307/2871965>
- Elliott, R. C. (1960). *The power of satire: Magic, ritual, art*. Princeton University Press.
- Feldman, L. (2013a). Cloudy with a chance of heat balls: The portrayal of global warming on *The Daily Show* and *The Colbert Report*. *International Journal of Communication*, 7(1), 430–451. <https://ijoc.org/index.php/ijoc/article/view/1940/861>
- Feldman, L. (2013b). Learning about politics from *The Daily Show*: The role of viewer orientation and processing motivations. *Mass Communication and Society*, 16(4), 586–607. <https://doi.org/10.1080/15205436.2012.735742>
- Feldman, L. (2017). Assumptions about science in satirical news and late-night comedy. In K. H. Jamieson, D. Kahan, & D. A. Scheufele (Eds.), *The Oxford handbook of the science of science communication* (pp. 321–332). Oxford University Press. <http://doi.org/10.1093/oxfordhb/9780190497620.013.35>
- Feldman, L., Leiserowitz, A., & Maibach, E. (2011). The science of satire: *The Daily Show* and *The Colbert Report* as sources of public attention to science and the environment. In A. Amarasingam (Ed.), *The Stewart/Colbert effect: Essays on the real impacts of fake news* (pp. 25–46). McFarland.
- Festinger, L. (1962). Cognitive dissonance. *Scientific American*, 207(4), 93–106. <https://doi.org/10.1038/scientificamerican1062-93>
- Foucault, M. (2001). *Fearless speech*. Edited by Pearson, J. Semiotext(e).
- Foucault, M. (2011). *The courage of the truth: The government of self and others II), Lectures at the Collège de France 1983–1984*. Edited by Frédéric Gros. English Series Editor: Arnold I. Davidson. Translated by Graham Burchell. Palgrave Macmillan.
- Frankl, V. E. (1984). *Man's search for meaning: An introduction to logotherapy* (3rd ed.). Simon & Schuster.
- Frantz, C. M., & Mayer, F. S. (2009). The emergency of climate change: Why are we failing to take actions? *Analyses of Social Issues and Public Policy*, 9(1), 205–222. <https://doi.org/10.1111/j.1530-2415.2009.01180.x>
- Friedman, H. H., & Friedman, L. W. (2020). The pen is mightier than the sword: Humor as a social justice tool. *Review of Contemporary Philosophy*, 19, 26–42. <https://doi.org/10.22381/RCP1920202>
- Gantar, J. (2005). *Pleasure of fools: Essays in the ethics of laughter*. McGill-Queen's University Press.

- Garrard, G. (2014). *The Oxford handbook of ecocriticism*. Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780199742929.001.0001>
- Gatersleben, B., & Steg, L. (2013). Affective and symbolic aspects of environmental behavior. In L. Steg, A. E. van den Berg, & J. I. de Groot (Eds.), *Environmental psychology: An introduction* (pp. 165–174). BPS Blackwell.
- Gifford, R., & Sussman, R. (2012). Environmental attitudes. In S. D. Clayton (Ed.), *The Oxford handbook of environmental and conservation psychology*. Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780199733026.013.0004>
- Gigerenzer, G., & Gaissmaier, W. (2011). Heuristic decision making. *Annual Review of Psychology*, 62, 451–482. <https://doi.org/10.1146/annurev-psych-120709-145346>
- Gloor, J. L. P. (2021). Cheap talk? Follower sarcasm reduces leader overpay by increasing accountability. *Journal of Experimental Social Psychology*, 96, 104166. <https://doi.org/10.1016/j.jesp.2021.104166>
- Greenberg, E. (2019). Humor as a threat-coding mechanism. *The European Journal of Humour Research*, 8(1), 14–28. <http://dx.doi.org/10.7592/EJHR2020.8.1.greenberg>
- Grimbeek, M. (2017). *Margaret Atwood's environmentalism: Apocalypse and satire in the MaddAddam trilogy* [Doctoral thesis, Karlstad University]. Karlstad University Studies.
- Hall, J. (2021). Humor and long-term romantic relationships. In M. Strick & T. E. Ford (Eds.), *The social psychology of humor* (pp. 74–91). Routledge.
- Hameiri, B. (2021). Paradoxical thinking as a paradigm of attitude change. In M. Strick & T. E. Ford (Eds.), *The social psychology of humor* (pp. 39–54). Routledge.
- Hee, M., Jürgens, A.-S., Fiadotava, A., Judd, K., & Feldman, H. R. (2022). Communicating urgency through humor: School strike 4 climate protest placards. *Journal of Science Communication*, 21(5). <https://doi.org/10.22323/2.21050202>
- Hepper, E. G., Gramzow, R. H., & Sedikides, C. (2010). Individual differences in self-enhancement and self-protection strategies: An integrative analysis. *Journal of Personality*, 78(2), 781–814. <https://doi.org/10.1111/j.1467-6494.2010.00633.x>
- Hickman, C., Marks, E., Pihkala, P., Clayton, S., Lewandowski, R. E., Mayall, E. E., Wray, B., Mellor, C., & van Susteren, L. (2021). Climate anxiety in children and young people and their beliefs about government responses to climate change: A global survey. *Lancet Planet Health*, 5(12), e863–873. [https://doi.org/10.1016/S2542-5196\(21\)00278-3](https://doi.org/10.1016/S2542-5196(21)00278-3)
- Hobbes, T. (1994). *The elements of law, natural and politic: Part I, Human nature, part II, De corpore politico; with Three lives*. Oxford University Press.
- Hodson, G., & Prusaczyk, E. (2021). Cavalier humor beliefs. In M. Strick & T. E. Ford (Eds.), *The social psychology of humor* (pp. 170–188). Routledge.
- Hoffman, A. J. (2015). *How culture shapes the climate change debate*. Stanford University Press.
- Holbert, R., Kwak, N., & Shah, D. V. (2003). Environmental concern, patterns of television viewing, and pro-environmental behaviors: Integrating models of media consumption and effects. *Journal of Broadcasting & Electronic Media*, 47(2), 177–196. https://doi.org/10.1207/s15506878jobem4702_2
- Holmes, D. & Hall, S. (2019). *A literature review of best practice communication of climate science and impacts: Guide for Policy Makers*. Monash Climate Change Communication Research Hub, Melbourne.
- Huber, R. A. (2020). The role of populist attitudes in explaining climate change skepticism and support for environmental protection. *Environmental Politics*, 29(6), 959–982. <https://doi.org/10.1080/09644016.2019.1708186>

- Janik, R. (2015). Senator throws snowball on senate floor to disprove climate change. *Time*. <https://time.com/3724969/james-inhofe-snowball-senate/>
- Jasanoff, S. (1996). Beyond epistemology: Relativism and engagement in the politics of science. *Social Studies of Science*, 26(2), 393–418. <https://doi.org/10.1177%2F030631296026002008>
- Kals, E., & Müller, M. M. (2012). Emotions and environment. In S. D. Clayton (Ed.), *The Oxford handbook of environmental and conservation psychology* (pp. 128–147). Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780199733026.013.0008>
- Kaltenbacher, M., & Drews, S. (2020). An inconvenient joke? A review of humor in climate change communication. *Environmental Communication*, 14(6), 717–729. <https://doi.org/10.1080/17524032.2020.1756888>
- Klein, S. (2007). *Art and laughter*. I. B. Tauris
- Knowlton N. (2017). Doom and gloom won't save the world. *Nature*, 541, 271. <https://doi.org/10.1038/544271a>
- Kormos, C., & Gifford, R. (2014). The validity of self-report measures of proenvironmental behaviour: A meta-analytic review. *Journal of Environmental Psychology*, 40, 359–371. <https://doi.org/10.1016/j.jenvp.2014.09.003>
- Kozintsev, A. (2010). *The mirror of laughter*. Transaction Publishers.
- Krefting, R. (2014). *All joking aside: American humor and its discontents*. Johns Hopkins University Press.
- LaMarre H. L., Landreville, K. D., Young, D., & Gilkerson, N. (2014). Humor works in funny ways: Examining satirical tone as a key determinant in political humor message processing. *Mass Communication and Society*, 17(3), 400–423. <https://doi.org/10.1080/15205436.2014.891137>
- Lamb, W. F., Mattioli, G., Levi, S., Roberts, J. T., Capstick, S., Creutzig, F., Minx, J. C., Müller-Hansen, F., Culhane, T., & Steinberger, J. K. (2020). Discourses of climate delay. *Global Sustainability*, 3, e17, 1–5. <https://doi.org/10.1017/sus.2020.13>
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer Publishing Company.
- Li, N. P., Griskevicius, V., Durante, K. M., Jonason, P. K., Pasisz, D. J., & Aumer, K. (2009). An evolutionary perspective on humor: Sexual selection or interest indication? *Personality and Social Psychology Bulletin*, 35(7), 923–936. <https://doi.org/10.1177/0146167209334786>
- Lindenberg, S. (2008). Social rationality, semi-modularity and goal-framing: What is it all about? *Analyse & Kritik*, 30, 669–687. <https://doi.org/10.1515/auk-2008-0217>
- Lindenberg, S. (2018). How cues in the environment affect normative behavior. In L. Steg & J. de Groot (Eds.), *Environmental psychology: An introduction* (2nd ed., pp. 144–153). John Wiley & Sons Ltd. <https://doi.org/10.1002/9781119241072.ch15>
- Lindenberg, S., & Steg, L. (2007). Normative, gain and hedonic goal frames guiding environmental behavior. *Journal of Social Issues*, 63(1), 117–137. <https://doi.org/10.1111/j.1540-4560.2007.00499.x>
- Lindfors, A. (2017). Performance of moral accountability and the ethics of satire in stand-up comedy. *Ethnologia Europaea*, 2(47), 5–21. <https://doi.org/10.16995/ee.1141>
- Lockwood, M. (2018). Right-wing populism and the climate change agenda: Exploring the linkages. *Environmental Politics*, 27(4), 712–732. <https://doi.org/10.1080/09644016.2018.1458411>
- Lockyer, S., & Pickering, M. (2008). You must be joking: The sociological critique of humour and comic media. *Sociology Compass*, 2(3), 808–820. <https://doi.org/10.1111/j.1751-9020.2008.00108.x>

- Lockyer, S., & Pickering, M. (Eds.). (2005). *Beyond a joke: The limits of humor*. Palgrave Macmillan. <https://doi.org/10.1057/9780230236776>
- Lynch, O. H. (2002). Humorous communication: Finding a place for humor in communication research. *Communication Theory*, 12(4), 423–445. <https://doi.org/10.1111/j.1468-2885.2002.tb00277.x>
- Lyytimäki, J. (2021). Ecological crisis as a laughing matter: Uses of humor in environmental communication. In B. Takahashi, J. Metag, J. Thaker, & S. E. Comfort, (Eds.), *The handbook of international trends in environmental communication* (pp. 464–478). Routledge. <https://doi.org/10.4324/9780367275204-35>
- Marra, J. (2016). The phenomenological function of humor. *Idealistic Studies*, 46(2), 135–161. <https://doi.org/10.5840/idealisticstudies2017112262>
- Marshall, M. (2014). *Don't even think about it: Why our brains are wired to ignore climate change*. Bloomsbury.
- Martin, R. A., Puhlik-Doris, P., Larsen, G., Gray, J., & Weir, K. (2003). Individual differences in uses of humor and their relation to psychological well-being: Development of the Humor Styles Questionnaire. *Journal of Research in Personality*, 37(1), 48–75. [https://doi.org/10.1016/S0092-6566\(02\)00534-2](https://doi.org/10.1016/S0092-6566(02)00534-2)
- Martin, R., & Ford, T. (2018). *The psychology of humor: An integrative approach* (2nd ed.). Academic Press.
- Martins, C. P. (2019). *Comedy for dinner and other dishes*. IEF.
- McMillan, D. W., & Chavis, D. M. (1986). Sense of community: A definition and theory. *Journal of Community Psychology*, 14(1), 6–23. [https://doi.org/10.1002/1520-6629\(198601\)14:1<6::AID-JCOP2290140103>3.0.CO;2-I](https://doi.org/10.1002/1520-6629(198601)14:1<6::AID-JCOP2290140103>3.0.CO;2-I)
- Meeker, J. W. (1974). *The comedy of survival: Studies in literary ecology*. Scribner.
- Meyer, J. (2000). Humor as a double-edged sword: Four functions of humor in communication. *Communication Theory*, 10(3), 310–331. <https://doi.org/10.1111/j.1468-2885.2000.tb00194.x>
- Meyer, J. (2021). Uniting and dividing in personal interactions: Four key functions of humor in communication. In M. Strick & T. E. Ford (Eds.), *The social psychology of humor* (pp. 57–73). Routledge.
- Miller, D. T., & Ross, M. (1975). Self-serving biases in the attribution of causality: Fact or fiction? *Psychological Bulletin*, 82(2), 213–225. <https://doi.org/10.1037/h0076486>
- Mischel, W., & Ebbesen, E. B. (1970). Attention in delay of gratification. *Journal of Personality and Social Psychology*, 16(2), 329–337. <https://doi.org/10.1037/h0029815>
- Morreall, J. (1987). *The philosophy of laughter and humor*. State University of New York Press.
- Morreall, J. (2005). Humor and the conduct of politics. In S. Lockyer & M. Pickering (Eds.), *Beyond a joke: The limits of humor* (pp. 63–78). Palgrave Macmillan. https://doi.org/10.1057/9780230236776_4
- Morreall, J. (2020). The good, the bad, and the funny: An ethics of humor. *The Southern Journal of Philosophy*, 58(4), 632–647. <https://doi.org/10.1111/sjp.12390>
- Nabi, R. L., Moyer-Gusé, E., & Byrne, S. (2007). All joking aside: A serious investigation into the persuasive effect of funny social issue messages. *Communication Monographs*, 74(1), 29–54. <https://doi.org/10.1080/03637750701196896>
- Nickerson, R. S. (1998). Confirmation bias: A ubiquitous phenomenon in many guises. *Review of General Psychology*, 2(2), 175–220. <https://doi.org/10.1037/1089-2680.2.2.175>
- Nikulin, D. V. (2014). *Comedy, seriously: A philosophical study*. Palgrave Macmillan.

- O'Connor, M. (1999). Dialogue and debate in a post-normal practice of science: A reflexion. *Futures*, 31(7) 671–687. [https://doi.org/10.1016/S0016-3287\(99\)00026-9](https://doi.org/10.1016/S0016-3287(99)00026-9)
- Paletz D. L. (1990). Political humor and authority: From support to subversion. *International Political Science Review*, 11(4), 483–493. <https://doi.org/10.1177/019251219001100406>
- Panda, P. (2020). Indigenous humor in Thomas King's *The Back of the Turtle*: An ecocritical perspective. *Studies in American Humor*, 6(2), 323–340. <https://doi.org/10.5325/studamerhumor.6.2.0323>
- Peiffer, K. S. (2000). *Coyote at large: Humor in American nature writing*. The University of Utah Press.
- Penketh, A. (2015, January 14th). Charlie Hebdo 'All is Forgiven' edition reviewed: 'typically cheeky- but poignant'. *The Guardian*. <https://www.theguardian.com/media/2015/jan/14/charlie-hebdo-post-attacks-edition-reviewed>
- Percival, P. (2005). Comic normativity and the ethics of humor. *The Monist*, 88(1), 93–120. <https://doi.org/10.5840/monist20058815>
- Pfattheicher, S., Sassenrath, C., & Schindler, S. (2016). Feelings for the suffering of others and the environment: Compassion fosters proenvironmental tendencies. *Environment and Behaviour*, 48(7), 929–945. <https://doi.org/10.1177/0013916515574549>
- Plester, B., & Inkson, K. (2019). *Laugh out loud: A user's guide to workplace*. Palgrave Macmillan.
- Quintero, R. (Ed.). (2007). *A companion to satire*. Blackwell.
- Rausch, T. M., & Kopplin, C. S. (2021). Bridge the gap: Consumers' purchase intention and behavior regarding sustainable clothing. *Journal of Cleaner Production*, 278, 123882. <https://doi.org/10.1016/j.jclepro.2020.123882>
- Robbins, B. D., & Vandree, K. (2009). The self-regulation of humor expression: A mixed method, phenomenological investigation of suppressed laughter. *The Humanistic Psychologist*, 37(1), 49–78. <https://doi.org/10.1080/08873260802394533>
- Rossing, J. P. (2013). Dick Gregory and activist style: Identifying attributes of humor necessary for activist advocacy. *Argumentation and Advocacy*, 50(2), 59–71. <https://doi.org/10.1080/00028533.2013.11821810>
- Rossing, J. P. (2016). A sense of humor for civic life: Toward a strong defense of humor. *Studies in American humor*, 4(1), 1–21. <https://doi.org/10.5325/studamerhumor.2.1.0001>
- Ruch, W., & Heintz, S. (2016). The virtue gap in humor: Exploring benevolent and corrective humor. *Translational Issues in Psychological Science*, 2(1), 35–45. <https://doi.org/10.1037/tps0000063>
- Said, E. (1984). Permission to narrate. *Journal of Palestine Studies*, 13(3), 27–48. <https://doi.org/10.2307/2536688>
- Sarason, S. B. (1974). *The psychological sense of community: Prospects for a community psychology*. Jossey-Bass.
- Schacter, D. L. (1999). The seven sins of memory: Insights from psychology and cognitive neuroscience. *American Psychologist*, 54(3), 182–203. <https://doi.org/10.1037/0003-066X.54.3.182>
- Schacter, D., & Slotnik, S. D. (2004). The cognitive neuroscience of memory distortion. *Neuron*, 44, 149–160. <https://doi.org/10.1016/j.neuron.2004.08.017>
- Schultz, P. W., & Kaiser, F. G. (2012). Promoting pro-environmental behavior. In S. D. Clayton (Ed.), *Oxford library of psychology. The Oxford handbook of environmental and conservation psychology* (pp. 556–580). Oxford University Press.

- Schultz, P. W., Messina, A., Tronu, G., Limas, E. F., Gupta, R., & Estrada, M. (2016). Personalized normative feedback and the moderating role of personal norms: A field experiment to reduce residential water consumption. *Environment and Behavior*, 48(5), 686–710. <https://doi.org/10.1177/0013916514553835>
- Schwartz, S. H. (1992). Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. In M. Zanna (Ed.), *Advances in experimental social psychology* (25th ed., pp. 1–65). Academic Press. [https://doi.org/10.1016/S0065-2601\(08\)60281-6](https://doi.org/10.1016/S0065-2601(08)60281-6)
- Schwartz, S. H. (1994). Are there universal aspects in the structure and contents of human values? *Journal of Social Issues*, 50(4), 19–45. <https://doi.org/10.1111/j.1540-4560.1994.tb01196.x>
- Seymour, N. (2018). *Bad environmentalism: Irony and irreverence in the ecological age*. University of Minnesota Press.
- Shome, D., & Marx, S. (2009). *The psychology of climate change communication: A guide for scientists, journalists, educators, political aides, and the interested public*. Center for Research on Environmental Decisions, Columbia University.
- Skurka, C., Niederdeppe, J., & Nabi, R. (2019). Kimmel in climate: Disentangling the emotional ingredients of satirical monologue. *Science Communication*, 41(4), 394–421. <https://doi.org/10.1177/1075547019853837>
- Skurka, C., Niederdeppe, J., Romero-Canyas, R., & Acup, D. (2018). Pathways of influence in emotional appeals: Benefits and tradeoffs of using fear or humor to promote climate change-related intentions and risk perceptions. *Journal of Communication*, 68(1), 169–193. <https://doi.org/10.1093/joc/jqx008>
- Skurka, C., Romero-Canyas, R., Joo, H. H., Acup, D., & Niederdeppe, J. (2022). Emotional appeals, climate change, and young adults: A direct replication of Skurka et al. (2018). *Human Communication Research*, 48(1), 147–156. <https://doi.org/10.1093/hcr/hqab013>
- Sloterdijk, P. (2001). *Critique of cynical reason*. University of Minnesota Press.
- Sørensen, M. (2016). *Humor in political activism creative nonviolent resistance*. Palgrave Macmillan.
- Spaulding, T. (2014, January 14th). *Leftover guilt*. CONDÉ NAST STORE. <https://condenaststore.com/featured/leftover-guilt-trevor-spaulding.html>
- Steg, L. (2005). Car use: Lust and must. Instrumental, symbolic and affective motives for car use. *Transportation Research Part A: Policy and Practice*, 39(2–3), 147–162. <https://doi.org/10.1016/j.tra.2004.07.001>
- Steg, L., & Nordlund, A. (2012). Models to explain environmental behavior. In L. Steg, A. E. van den Berg, & J. I. M. de Groot (Eds.), *Environmental psychology: An introduction* (pp. 185–195). BPS Blackwell.
- Steg, L., & Nordlund, A. (2018). Theories to explain environmental behavior. In L. Steg, & J. de Groot (Eds.), *Environmental psychology: An introduction* (2nd ed., pp. 217–227). Wiley. <https://doi.org/10.1002/9781119241072.ch22>
- Steg, L., Bolderdijk, J. W., Keizer, K., & Perlaviciute, G. (2014). An integrated framework for encouraging pro-environmental behavior: The role of values, situational factors and goals. *Journal of Environmental Psychology*, 38, 104–115. <https://doi.org/10.1016/j.jenvp.2014.01.002>
- Steg, L., Perlaviciute, G., van der Werff, E., & Lurvink, J. (2014). The significance of hedonic values for environmentally relevant attitudes, preferences, and actions. *Environment and Behavior*, 46(2), 163–192. <https://doi.org/10.1177/0013916512454730>

- Stern, P. C. (2000). New environmental theories: Towards a coherent theory of environmentally significant behavior. *Journal of Social Issues*, 56(3), 407–424. <https://doi.org/10.1111/0022-4537.00175>
- Stern, P. C., Dietz, T., Abel, T., Guagnano, G. A., & Kalof, L. (1999). Value-belief-norm theory of support for social movements: The case of environmentalism. *Human Ecology Review*, 6(2), 81–97.
- Stok, M., & Ridder, D. (2019). The focus theory of normative conduct. In K. Sassenberg, & M. Vliek (Eds.), *Social Psychology in Action* (pp. 95–110). Springer. https://doi.org/10.1007/978-3-030-13788-5_7
- Stott, A. (2005). *Comedy*. Routledge.
- Sundén, J., & Paasonen, S. (2020). *Who's laughing now?: Feminist tactics in social media*. MIT Press.
- Swim, J. K., Markowitz, E. M., & Bloodhart, B. (2012). Psychology and climate change: Beliefs, impacts, and human contributions. In S. D. Clayton (Ed.), *The Oxford handbook of environmental and conservation psychology*. Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780199733026.013.0033>
- Tajfel, H. (1974). Social identity and intergroup behavior. *Social Science Information*, 13(2), 65–93. <https://doi.org/10.1177/053901847401300204>
- Tajfel, H., & Turner, J. C. (2004). The social identity theory of intergroup behavior. In J. T. Jost & J. Sidanius (Eds.), *Political psychology* (pp. 276–293). Psychology Press. <https://doi.org/10.4324/9780203505984-16>
- Traub, C. (2018). From the grotesque to nuclear-age precedents: The modes and meanings of cli-fi humor. *Studies in the Novel*, 50(1), 86–107. <https://doi.org/10.1353/sdn.2018.0005>
- Triandis, H. C. (1977). *Interpersonal behavior*. Brooks/Cole Publishing Company.
- Turner, J. C. (1982). Toward a cognitive redefinition of the social group. In H. Tajfel (Ed.), *Social identity and intergroup relations* (pp. 15–40). Cambridge University Press.
- Turner, J. C. (1985). Social categorization and the self-concept: A social cognitive theory of group behavior. In E. J. Lawler (Ed.), *Advances in Group Processes* (pp. 77–122). JAI Press.
- Turner, J. C., Hogg, M. A., Oakes, P. J., Reicher, S. D., & Wetherell, M. S. (1987). *Rediscovering the social group: A self-categorization theory*. Blackwell
- Turner, J. C., Wetherell, M. S., & Hogg, M. A. (1989). Referent informational influence and group polarization. *British Journal of Social Psychology*, 28(2), 135–147. <https://doi.org/10.1111/j.2044-8309.1989.tb00855.x>
- Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science*, 185(4157), 1124–1131. <https://doi.org/10.1126/science.185.4157.1124>
- Veatch, T. C. (1998). A theory of humor. *Humor*, 11(2), 161–215. <https://doi.org/10.1515/humr.1998.11.2.161>
- Vermeir, I., Verbeke, W. (2006). Sustainable Food Consumption: Exploring the Consumer “Attitude – Behavioral Intention” Gap. *Journal of Agricultural Environmental Ethics*, 19, 169–194. <https://doi.org/10.1007/s10806-005-5485-3>
- Vihma, A., Reischl, G., & Nonbo Andersen, A. (2021). A climate backlash: Comparing populist parties’ climate policies in Denmark, Finland, and Sweden. *The Journal of Environment & Development*, 30(3), 219–239. <https://doi.org/10.1177/10704965211027748>
- Walker, L. (2014). Polar bears and evil scientists: Romance, comedy and climate change. *Australasian Journal of Popular Culture*, 3(3), 363–374. https://doi.org/10.1386/ajpc.3.3.363_1

- Walsh, L. (2015). The visual rhetoric of climate change. *Wiley Interdisciplinary Reviews: Climate Change*, 6(4), 361–368. <https://doi.org/10.1002/wcc.342>
- Waterlow, J. (2014). More than resistance: Political humor under Stalin in the 1930s. In E. Cheauré & R. Nohejl (Eds.), *Humor and laughter in history. Transcultural perspectives* (pp. 103–108). Transcript. <https://doi.org/10.14361/transcript.9783839428580.103>
- Waterlow, J. (2015). Intimating mistrust: Popular humor in Stalin’s 1930s. *Cultural and Social History*, 10(2), 211–229. <https://doi.org/10.2752/147800413X13591373275286>
- Wee, S.-C., Choong, W.-W., & Low, S.-T. (2021). Can “nudging” play a role to promote pro-environmental behavior? *Environmental Challenges*, 5, 100364. <https://doi.org/10.1016/j.envc.2021.100364>
- Wilke, A., & Mata, R. (2012). Cognitive bias. In V. S. Ramachandran (Ed.), *Encyclopedia of human behavior* (pp. 531–535). Academic Press.
- Young, D. G. (2008). The privileged role of the late-night joke: Exploring humor’s role in disrupting argument scrutiny. *Media Psychology*, 11(1), 119–142. <https://doi.org/10.1080/15213260701837073>
- Young, D. G. (2020). *Irony and outrage: The polarized landscape of rage, fear, and laughter in the United States*. Oxford University Press. <https://doi.org/10.1093/poq/nfaa020>
- Young, J. R. (2016, December 7). A comedian and an academic walk into a podcast. *Chronicle of higher education*. www.chronicle.com/article/A-Comedianan-Academic/237715
- Zaval, L. (2016). Culture and climate action. *Nature Climate Change*, 6(12), 1061–1062. <https://doi.org/10.1038/nclimate3164>
- Zekavat, M. (2017). *Satire, humor and the construction of identities*. John Benjamins.
- Zekavat, M. (2019). Satire, humor and ecological thought. *Neohelicon*, 46(3), 369–386. <https://doi.org/10.1007/s11059-018-00471-0>
- Zekavat, M. (2022). A comparative study of pandemic humor and satire in the United States of America and Iran. *Amerikastudien/American Studies: A Quarterly*, 67(4), 521–540. <https://doi.org/10.33675/AMST/2022/4/11>

4 A Modular Interdependency Model for the Potential Impact of Humor and Satire on Environmental Behavior

Toward a More Comprehensive Model for Environmental Behavior

Scholars agree that the (environmental) impacts of humor vary depending on its content and context (see Lyytimäki, 2022, for a review). Discussing environmental humor, Lyytimäki (2022, p. 469) avers,

On an individual level, a person's sense of humor, past experiences, knowledge level, attitudes, values, and current mood can influence whether a joke is considered hilarious or ignored as bad humor. On the level of institutions, jokes criticizing an environmental polluter may spark a process of inspired change toward sustainability or it can strengthen the resistance and create hard-to-break lock-ins.

A more comprehensive model for environmental behavior should, therefore, strive to encompass a larger number of pertinent variables at individual and collective levels. This is particularly significant because some environmental problems like climate change tend to be intersectional, complicated, confusing, and overwhelming (see Latour, 2015). At the same time, these topics are often highly politicized, hence polarizing. Besides, there is always a degree of scientific uncertainty that can be manipulated to undermine the overwhelming scientific consensus.

From a psychological point of view, human behavior is primarily determined by motivation at the individual level. Motivation, in turn, is determined by need, cognition, or certain processes including expectancy, goal-setting, and reinforcement (for example, Alderfer, 1969; Maslow, 1943; McClelland & Burnham, 1976). Individual disposition, however, is deeply enmeshed in extraneous determinants as the material conditions of existence shape it in the first place. To use Pierre Bourdieu's terminology (Bourdieu, 1989; Grenfell, 2014; Schirato & Roberts, 2020), practice is the result of complex interactions between internal and external dualisms in habitus, (economic, cultural, social, and symbolic) capital, and the field. At the collective level, biological and (bio)social factors, cultural tendencies,

situational factors, and the physical environment are among the determinants of behavior (Gastil, 1961). Existing models, therefore, tend to reduce the wide range of the potential determinants of (values, beliefs, goals, and) behavior. Synthesizing the insights of psychology, cultural studies, and communication science can partly fill this gap and pave the way for a more comprehensive understanding of environmental behavior.

The Basics: Hereditary and Environmental Factors

Our point of departure for developing a complex model is the basic evolutionary insight that both hereditary and environmental factors determine human characteristics (for example, Bouchard & McGue, 2003). These two types of factors, however, are inseparably intermingled. This could have two implications: first, as the characteristics of human beings are inevitably determined by their environment in its broadest sense, human behavior cannot be fully detached from environmental determinants. Second, the environment exerts both direct and indirect influences on human creations. Directly, it provides human beings with the resources they need for production, both material and non-material, like sublimity or inspiration in Romantic arts. Indirectly, it determines their personality traits, including their creative competence, so even seemingly artificial creations are eventually enmeshed in the environment. For the impact of the natural world on culture, one can consider how different culinary cultures and dress codes, for example, have evolved across different climates or think how geographic origins alongside socio-political conditions might have shaped languages, which in their turn shaped thought (Boroditsky, 2011; Gasperoni, 1996; Lacan, 2006; Levinson, 1996; Patriarca & Heinsalu, 2009).

Overall Frame: The Ecosphere and Its Dimensions

The ecosphere, critical zone to be more specific, has made it possible for diverse sentient critters to evolve and inhabit the planet. Some of these critters have created their own artifacts. *Homo sapiens* are among the species that have evolved in the habitable ecosphere and created their artifacts. During this process, cultures, economies, political systems, and societies have taken different forms depending on the environment in which they were developed and on the people that helped shape them. In other words, both individuals and societies with their economic, cultural, and political components (akin to Bourdieu's "field of power") are located within the ecosphere, and the constructive relationships between them are reciprocal (Figure 4.1; compare actor-network theory, Jóhannesson & Bærenholdt, 2009; Latour, 2005). While generations of human beings gradually and incrementally shape the society, social variables are said to shape and regulate the ways they think, behave, and live.

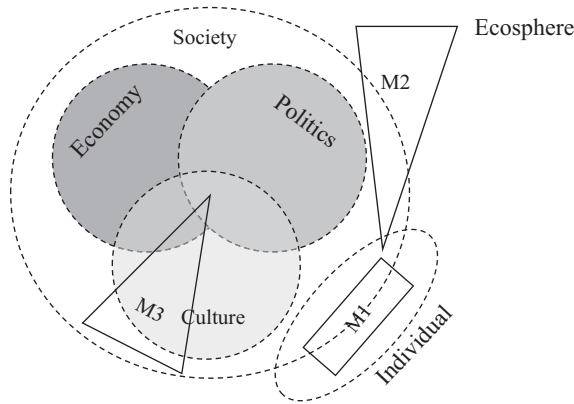


Figure 4.1 Frame model, its dimensions, and the three modules: individuals are located within the ecosphere and the society with its cultural, political, and economic components. Societies also feature regulatory mechanisms like shame, guilt, and fear cultures; juridical and punitive systems; and ideological and repressive state apparatuses (Althusser, 1970). The sub-models are based on different interstices within the overall framing model; that is, module M1 is the sub-model describing psychological mechanisms, M2 encompasses the ecosphere and biological determinants, and social components constitute M3.

Before explicating different dimensions of each of these spheres in modular sub-models, two points should be emphasized. First, the schema is in no way symmetrical or proportionate. In other words, the impacts of the ecosphere, social or external determinants, and individual or internal determinants are not equal, consistent, or always comparable. A smaller area in the figure does not inevitably translate into a smaller impact. The impact of a behavioral determinant at the psychological level or cultural level might surpass the impact of the much larger ecosphere. People who consume exotic or tropical fruits in better-off European markets are probably less influenced in their dietary decisions and habits by their regional ecosphere as compared to economic, cultural, or symbolic factors. In the same way, environmental policies can regulate human behavior in societies and subsequently impact the ecosphere. Governmental policies on logging, hunting, or fossil fuel production and consumption can modify the ecosphere, for instance. Second, the boundaries between the individual, society, economy, politics, culture (and language), and ecosphere are very permeable.

Most, if not all, determinants of behavior as already recognized by other theories and models (see chapter 3) can be located in this broad model. Values, norms, perceived behavioral control, symbolic motives, and informational social influence border on the social domain (that is, economy, culture, and politics). Affective motives, attitudes, intention, goals, and self-regulatory resources mostly function at the individual level. Instrumental motives can be understood within the framework of economy, and behavioral controls are partly regulated by economic and political factors.

We do not intend to challenge or modify the determinants that are already identified in other theories and models, and that we have simply integrated in this more holistic one. What the Modular Interdependency Model (MIM) intends to do is to provide a larger picture about the intersectionality and interdependencies of different determinants of behavior. We should also clarify what we mean by culture. Pierre Bourdieu's conceptualization of cultural field is particularly relevant here. According to Webb et al. (2002, pp. 43–44),

Cultural field can be defined as a series of institutions, rules, rituals, conventions, categories, designations, appointments, and titles which constitute an objective hierarchy, and which produce and authorize certain discourses, and activities. But it is also constituted by, or out of, the conflict which is involved when groups or individuals attempt to determine what constitutes capital within the field, and how that capital is to be distributed.

With its tripartite footing in the ecosphere, society, and mind, this general frame potentially yields many modular sub-models. Here, we will introduce three examples. Sub-model I integrates and goes beyond the insights already offered by (environmental) psychologists and thus prominently implies individual dimensions, while acknowledging that they are located within the society. Sub-model II displays the relevance of the critical zone and biological determinants, which closely bind the individual to the ecosphere. Sub-model III moves toward sketching the social determinants of pro-environmental behavior.

In this way, the model will provide a more comprehensive picture of the determinants of environmental behavior and acknowledges the complexities of their mutual influences to facilitate a better appreciation of their dynamics. The psychological sub-model integrates the Theory of Planned Behavior (TPB), Norm-Activation Model (NAM), Value-Belief-Norm Theory (VBN), and Goal Framing Theory (GFT). These are mostly relevant when the focus is on the individual mind. The society in which individuals interact, though, is inherently a contested sphere where social subjects negotiate and interact their identities as impacted by a plethora of diverse factors. As a result, individuals (and their intersubjective relationships) are subject to myriads of external forces that can impact their environmental behavior. At the same time, these external and social factors often imbricate into environmental issues.

Besides the reasons that psychology provides to justify and bridge the gap between the determinants of behavior and its realization, therefore, there is a range of other reasons that psychology has ignored. An incomplete list¹ of some mediators, variables, and dissonances that psychology has largely ignored might include:

- Gender roles, sexual orientation, and family status;
- Ethnicity and race;

- Socio-economic status, class, income, the economic system, and indentured servitude;
- Nationality, place of origin, postcoloniality, geopolitical demarcations and attachments (place, space, geography), the political system, relation to globalization, diaspora and transnation, (im)migration, alien or asylum seeker status, and refugee backgrounds;
- Age, body and corporeality, ability, and cyborg;
- Belief, faith, and religion;
- Language, education, knowledge, culture and subculture, laws and legislation, dominant judicial (alongside other shame, guilt, and fear) systems, lifestyle, intellectual and educational affiliations, political persuasion, customs and traditions, codes of behavior and etiquette, dress code, aesthetics and arts, cuisine, architecture, time and cultural memory, media, digital/cyberspace, leisure (sports, music genres, movies, dance, etc.), fashion and style, stereotypes, minority, majority, and mainstream; and
- Personality (for example, conscientiousness), mood (for example, through affecting the depth and elaboration of processing), emotion (for example, envy), and intelligence (for example, knowledge).

Acknowledging that environmental behavior is determined by ecospheric, social, and individual factors implies that attempts to advocate behavioral change are less likely to succeed if they do not consider and respond to these factors. Social subjects are mired in a complex matrix of nodes and interrelationships that inevitably impact and moderate their (environmental) behavior. For an environmental message to be effective, it needs to consider not only individual and psychological but also societal and ecospheric variants. A general message that is not tailored to a specific audience and does not strive to meet them where they are cannot be optimally effective (see also Climate Outreach, 2015; Shome & Marx, 2009). This is not to mention the myriad forms and intensities of ecological problems in different regions of the world. But even ecological problems and common goals that go beyond most borders—say carbon emissions and attempts to reduce them—do not have the same impact on different communities nor are they perceived identically by everyone across the spectrum of these variables. The impacts of climate change vary on wealthy and less-than-privileged nations and across lowlands and the torrid zone. Even communities in one nation or region are not symmetrically impacted: women, children, minorities, and the differently abled are among more vulnerable communities, to name just a few. Likewise, the message that can inform highly educated people and persuade them into adopting pro-environmental behavior differs from the one targeted at those who benefit from a different type or level of education. It takes very different approaches to persuade a republican or a democrat in the US of the reality and urgency of climate change. For environmental communication to be successful, therefore, it needs to consider sectoral

(education, youth organizations, corporations, businesses, NGOs, etc.), geographic (urban, rural, global south, farmers, etc.), and demographic (age, gender, socio-economic status, etc.) variables (Holmes & Hall, 2019). Several of these factors closely resemble those mentioned in the list above.

A modular model, thus, can lay out a more comprehensive picture and better explain the intricacies of environmental behavior. The sub-models make it possible to create bespoke environmental messages targeting a particular audience which can subsequently improve the impact of environmental communication. A modular model also facilitates research design and measuring the impact of humor and satire in environmental advocacy. Pertinent individual modules can be singled out for the purpose of designing tailored messages or delimiting an academic study. In what follows, we elaborate on three examples but do not attempt to extract all potential sub-models.

Sub-Model I: Psychological Mechanisms

Sub-module I integrates insights from environmental psychology, namely, the Theory of Planned Behavior (TPB), Norm-Activation Model (NAM), Value-Belief-Norm Theory (VBN), and Goal Framing Theory (GFT). Additionally, the Focus Theory of Normative Conduct (FTNC; see Bore & Reid, 2014) adds a socio-psychological dimension, and the Theory of the Meaning of Material Possessions (TMMP) represents a motivational approach.²

This sub-model accounts for affective and motivational aspects of behavior, as well as norms and values that inform goals. The impact of social determination is more readily evident in the case of beliefs and norms, whereas personality might better explain affect and motivational types that could activate norms.

Figure 4.2 is a simplification of the psychological mechanisms involved in environmental behavior. VBN puts individually and socially constructed values as the first step in shaping behavior. These values may be biospheric, altruistic, or egoistic and are closely related to Schwartz's (1994) motivational types of basic human values. VBN, NAM, and TPB see the link between beliefs and norms as the central mechanism for enhancing pro-environmental behavior. We should add that we are aware that several models have also integrated habits as a predictor of environmental behavior (see Dahlstrand & Biel, 1997; Feola & Binder, 2010; Gagnon et al., 2010; Klöckner, 2013; Lülfs & Hahn, 2013, 2014; Moody & Siponen, 2013). Yet, we believe it is more accurate to exclude habit from a model that discusses the determinants of behavior since habits are actually forms of behavior. In other words, pro- or contra-environmental habits can be made salient by manipulating the determinants of behavior.

While beliefs may encompass an ecological world view, which translates into awareness of consequences and subsequently ascription of responsibility accordingly to VBN and NAM, TPB differentiates behavioral, normative, and control beliefs. From among the variety of beliefs, the belief in personal

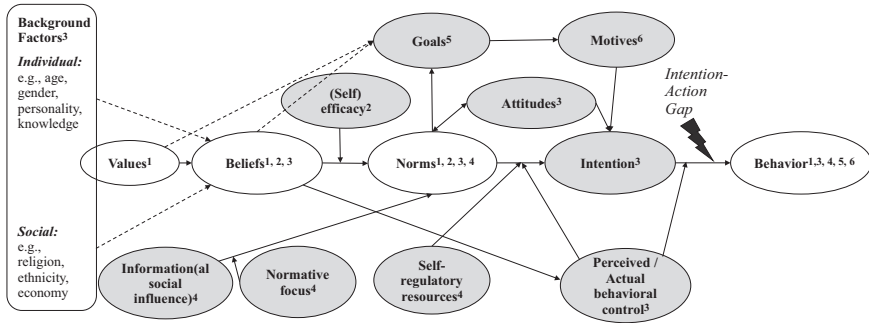


Figure 4.2 Simplified model for pro-environmental behavior: ¹VBN (Value-Belief-Norm Theory), ²NAM (Norm-Activation Model), ³TPB (Theory of Planned Behavior), ⁴FTNC (Focus Theory of Normative Conduct), ⁵GFT (Goal Framing Theory), and ⁶TMMP (Theory of the Meaning of Material Possessions).

responsibility and normative beliefs affect subjective norms (TPB). If one believes in being personally responsible for climate change and also thinks that others expect them to take action in order to combat climate change, one perceives an obligation for pro-environmental action (VBN). Interestingly, behavioral beliefs directly relate to attitudes toward behavior (TPB). If a person analyzes the costs and benefits of using public transport and concludes that the benefits, including the money they can save, outweigh the costs, including the longer time they spend on commutation, they may develop a positive attitude toward public transport. Given that the actual behavioral control is consistent, that is, public transport is available, they may thus behave pro-environmentally without relying on subjective pro-environmental norms. A similar case can be made for control beliefs and their impact on perceived behavioral control (TPB); that is, believing in hindering or facilitating factors informs the perception of the possibility of performing an action. For instance, a person who uses a wheelchair would perceive low possibility of using public transport in the case of inaccessibility, as when the elevator is frequently defective, even if the subway station is very close. For other people, on the contrary, the perceived behavioral control will be higher if the subway station is within reach and provides convenient daytime service. Again, control beliefs, like behavioral beliefs, suggest pathways for pro-environmental behavior even in cases in which personal norms are not particularly pro-environmental. This proffers an important opportunity by removing norms from their central position in this sub-model. That is, these alternative routes for fostering pro-environmental behavior provide invaluable options in cases where norms should not or cannot be influenced.

That being said, norms are shaped not only by beliefs, but also by information or informational social influence. Behavioral decisions are also

influenced by normative focus (FTNC). Since descriptive and injunctive norms tend to regulate social behavior, social norms are particularly prone to these influences. One might decide to go vegan when perceiving that their colleagues do (that is, a descriptive norm), and/or when feeling that their significant others expect them to do so (that is, an injunctive norm). Again, a person does not primarily have to believe in climate change and does not have to cherish explicit norms for pro-environmental behavior in order to behave pro-environmentally due to the impact of social influences. Moreover, the influence of self-efficacy on the way beliefs can inform norms, and the impact of self-regulation on the realization of norms into intentions and behavior must also be considered. NAM proposes that self-efficacy determines the extent to which beliefs translate into norms. A person with lower self-efficacy is less likely to develop their general beliefs (that is, climate change is anthropogenic) into personal norms and, thus, less likely to perceive an individual obligation to behave accordingly (for example, consume less meat). And self-regulatory resources exert a direct influence on the extent to which norms determine behavior in that one's capacities determine the extent to which the expectations of others (that is, informational social influence, normative focus) might shape their behavior.

As the next step in the process that might eventually lead to pro-environmental behavior, (subjective) norms can both directly and indirectly inform intentions for specific behaviors. TPB proposes a direct relationship; that is to say, a subjective norm for pro-environmental behavior may relate to the intention to behave accordingly. Based on GFT, TMMP, and TPB, we propose two more indirect ways for the relation between norm and intention. First, norms inform a variety of personal goals (GFT), and these goals determine specific motives (TMMP). While normative goals might be most relevant for symbolic motives, hedonic goals align to affective motives, and gain goals to instrumental motives. Motives, in their turn, influence the intention to behave in a certain way. In other words, a subjective norm for pro-environmental behavior in livestock farming (norm) may foster the normative goal to act accordingly and reduce factory farming (goal), which leads to a symbolic motive like adopting a vegan identity and associated values like caring for animal welfare (motive). This process might culminate in an intention to reduce or abstain from meat consumption (intention). As a side note, goals are also relevant to information processing; that is, they direct our attention to goal-relevant information and therefore influence the evaluation of information (GFT). This implies that pertinent pro-environmental goals should be made salient in order to attract attention to information and to positively evaluate them. Moreover, goals that are not particularly pro-environmental might also interfere with information acknowledgment and/or evaluation. Second, norms may relate to intention via attitudes (TPB). (Of course, attitudes may also shape norms; in fact, several relationships proposed in our model might be bidirectional.) A personal pro-environmental norm may lead to positive attitudes toward

environmentally friendly people, events, behaviors, and the like. A more positive attitude toward a candidate of a “green” party, Fridays for Future demonstrations, or a vegan diet may lead to an intention to vote for the party, join the demonstration, or reduce meat consumption.

Behavioral control is a very important component of the model (TPB). On the one hand, it seems to be among the factors that directly target the intention-action gap. On the other, it is among the few explanations for behavior bypassing norms; that is, despite the existence of pro-environmental norms, an intention to behave pro-environmentally might not be formed when the perception of behavioral control is low. Both the perception of behavioral control and actual behavioral controls moderate the intention-action gap, thus functioning as inhibiting or facilitating factors for pro-environmental behavior. Perceived behavioral control is different from actual behavioral control in that it is influenced by both control beliefs and actual behavioral control. Meanwhile, actual behavioral control has both a direct and an indirect impact on the intention-action gap. Also, perceived behavioral control can impact the way (subjective) norms may translate into intentions (TPB); for example, low perceived behavioral control can prevent the norms to lead to behavior. Although behavioral controls offer promising potentials for explaining the intention-action gap, they hardly provide a mechanism that can bridge this gap and ultimately realize behavioral change (Figure 4.2). Since this is quite a complex phenomenon, its detailed discussion is postponed to a separate section below.

The dynamics of these relationships determine environmental behavior at the psychological level. While VBN distinguishes three types of pro-environmental behavior in public, private, and organizational spheres, other theories and models do not categorize pro-environmental behavior. Moreover, there are a few relationships that are not explicitly indicated in Figure 4.2. In one version of the theory, TPB also accommodates examples of individual (for example, knowledge) and social factors (for example, religion). However, it relegates them to the background, while putting the individual in the center, hence anthropocentrism. While TPB deems individual and social background factors as precursors of individual beliefs and effectively places them outside the model and well beyond the direct and indirect determinants of environmental behavior, we propose that these “background” factors can directly influence behavior. For example, being in a melancholic mood might prevent active pro-environmental behavior despite perceived behavioral control and intention. Unwillingness to go an extra mile to get to a curbside recycling center due to lethargy is one example. By contrast, a picture depicting dehydrated children in a drought-stricken region might evoke spontaneous donations to pertinent charitable causes despite a lack of intention for pro-environmental behavior in the first place. Likewise, an intention to vote for a pro-environmental party might not translate into behavior when a person is too young for voting or if they belong to a disenfranchised community. Cartesian thought puts the ego at the center and grants it full autonomy; nonetheless, people sometimes do things contrary to their beliefs. This is while many intentions do get a chance to be realized

in action. Religion, for instance, can determine belief, intention, and subsequently behavior. However, it can also be employed to establish a theocracy that manipulates faith as an institution to coerce people to behave in certain ways. As a blunt example, consider women's behavior under Taliban: how they behave does not necessarily reflect their values, beliefs, or intentions. As another example, women cannot ride their bicycles in Iran even if they believe in green transportation and intend to do so: it is legally forbidden. Nor are we compelled by our beliefs or intentions in performing gender roles (on the notion of performativity, see Butler, 2002, 2004). We usually conform to gender roles due to factors that are external to our egos. And it is hardly their intentions or beliefs that motivate people who are struggling under indentured labor to drudge. The direct impact of physiological and social factors (that is, cultural, political, economic) goes on and on (see below). And this is not to mention sub- and unconscious behaviors that fall beyond our intentions or motivations, for example, some habits.

Sub-Model II: The Ecosphere and Biological Determinants

Besides psychology, individuals have two more dimensions to their existence: social and biological. This calls for another module that consolidates the role of the ecosphere in environmental behavior. Survival, procreation, as well as basic biological needs like food and shelter bind all species including *Homo sapiens* to each other and to the ecosphere. One example for the impact of ecosphere on the societal and individual environmental behavior is evident in culinary cultures. Due to its harsh climate, there is hardly any vegetation growing in the north pole. This means there is no source of vitamins for its inhabitants. People have therefore developed a solution: parts of sacrificed animals are eaten raw. Raw consumption preserves vitamins that are destroyed in the process of cooking. In other words, the features of this habitat have led to a different culinary culture.

Broadly speaking, there are three biological determinants for human behavior: "1) self-preservation; 2) the reason for self-preservation, [namely] reproduction; and 3) a method to enhance self-preservation and reproduction, [namely] greed" (Taflinger, 1996, n.p.). Members must live long enough to pass genes to their offspring for a species to survive. As a result, we seek elements—like food, water, oxygen, shelter, rest—that secure our survival and avoid those that threaten it—like predators and starvation. Survival is possible either through genetic mutations and evolution or through strategy that does not necessarily require genetic modification and might simply constitute learned behaviors. In any case, survival invariably depends on where it happens, that is, niche. A niche is,

a position within an environment that calls for certain attributes to exploit that environment. An environment can contain any of a variety of elements: amount of water, from ocean to desert; type of land, from marsh mud to solid rock; amount of vegetation, from none (the Arctic

and Antarctic) to abundant (rainforests). It can also contain animal life, from the tiniest insects to blue whales and everything in between. It is the combination and degree of each of these elements that create niches. (Taflinger, 1996, n.p.)

In other words, the ecosphere is diverse, and this diversity partly determines our behavior.

The strategies that aim to secure survival and reproduction are relatively more complex in the case of human beings. They usually go beyond the basics, so shelter and safety have different meanings for human beings as compared to other animals. Such complexity necessitates connections between unrelated people, and economy was developed to regulate these complex connections that usually function based on the distribution of resources (Taflinger, 1996; see also Robson, 2001). To enhance self-preservation and production, human beings strive to compile resources they need to survive. The more resources I gather, the higher my chances of survival and reproduction. This leads to greed, that is, “one organism getting a larger piece of the pie, more of the necessary resources, than other organisms” (Taflinger, 1996, n.p.).

Sub-model II (Figure 4.3) enhances our appreciation of environmental behavior in several ways. First, it underlies that survival, hence reproduction, of humanity is inevitably linked to other species. Human beings cannot survive alone as a species because of their symbiotic interdependencies and interrelationships with other species (see also Haraway, 2016). This is a simple and rather obvious fact that many ignore. The politicians who engineered and have been promoting the European Green Deal (European Commissions, 2019a, 2019b) have repeatedly said that the urgency of the climate crisis is about humanity. We should change our behavior, if we want to survive; the planet will endure anyways. This is not entirely accurate. We know that human interventions have upset the delicate biological balance that has led, among many things, to the extinction of many species and biodiversity loss. Instead of reductive and inaccurate depictions, therefore,

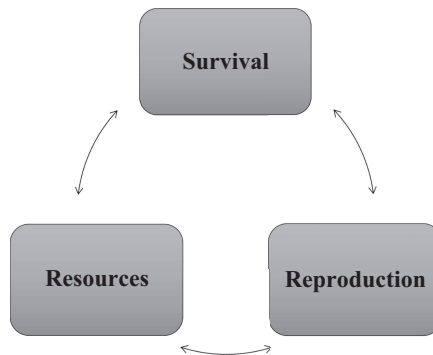


Figure 4.3 Sub-model II: the economy of survival.

holistic approaches to communicating scientific facts can underscore the symbiotic interdependencies of all species in the critical zone. We should acknowledge that we are not the center of the world; anthropocentrism actually wreaked the havoc that has pushed the planet to the brink of disaster.

Besides acknowledging our kinship with other species, this module also links the ecosphere to society. It emphasizes that economy was developed partly based on a biological principle where resources are accumulated for the purpose of securing the survival of the species (compare actor-network theory; Jóhannesson & Bærenholdt, 2009). Rapacious consumption of resources, which inevitably causes depletion, eventually defeats the purpose in that it jeopardizes survival. This module also suggests an explanation for the depletion of resources: the asymmetrical relationship between *Homo sapiens* and other species makes it possible for them to monopolize the resources in an unchecked manner. Such monopoly is not sustainable, though, because survival and reproduction of *Homo sapiens* are inevitably linked to the survival and reproduction of other species in a symbiotic interrelationship.

Mastery is not limited to the relationship between human beings and other species, though. Similar inequitable dynamics also govern the distribution of resources in human societies where race, gender, age, socio-economic status, and similar denominational affiliations disenfranchise some communities. Based on evolutionary and biological premises, module II provides a better understanding of the interconnectedness of the ecosphere to culture, politics, economy, and society. The insatiable accumulation of wealth through all conceivable means, some of which—like colonialism and militarization—are blatantly inhumane, inevitably causes the depletion of resources that are vital for the survival of multiple species inhabiting the critical zone. (This can also add a biological dimension to ecosocialism; more on that later.)

Humor and satire share affinities with the ecospheric determinants of environmental behavior. As discussed in chapter 3, they have adaptive affordances. The relationship between humor and reproduction, for instance, is extensively studied in the context of dating and mate selection (for example, Li et al., 2009). Their potentials in community building, reform, subversion, and parrhesia can render them as potent strategies in negotiating a less skewed and biased distribution of resources. And their coping function and potential in fostering positive emotions can afford psychological survival.

Sub-Model III: The Social Module

The previous two modules locate environmental behavior in a matrix of psychological and biological interconnections. Proposing a sub-model for social aspects is more challenging first because this dimension encompasses very many factors, and second, these factors inevitably overlap and impact each other. Any attempt to propose a comprehensive social module, therefore, would be incomplete, at least before more studies are conducted. Nevertheless, coming up with a more comprehensive module requires attempts

at drafting one for further revision and modification. We will try to move toward a preliminary sketch here. The incomplete list of determinants we enumerated above can be boiled down to 11 general clusters:

- Cultural identity and memory;
- Gender identity;
- Place and belonging;
- Racial and ethnic identity;
- Religious identity;
- Socio-economic status;
- Corporeality;
- Regulatory systems;
- Political system;
- Political persuasion; and
- Lifestyle.

The following figures strive to capture a simplified version of the complex relationship between these 11 clusters (Figures 4.4–4.10).

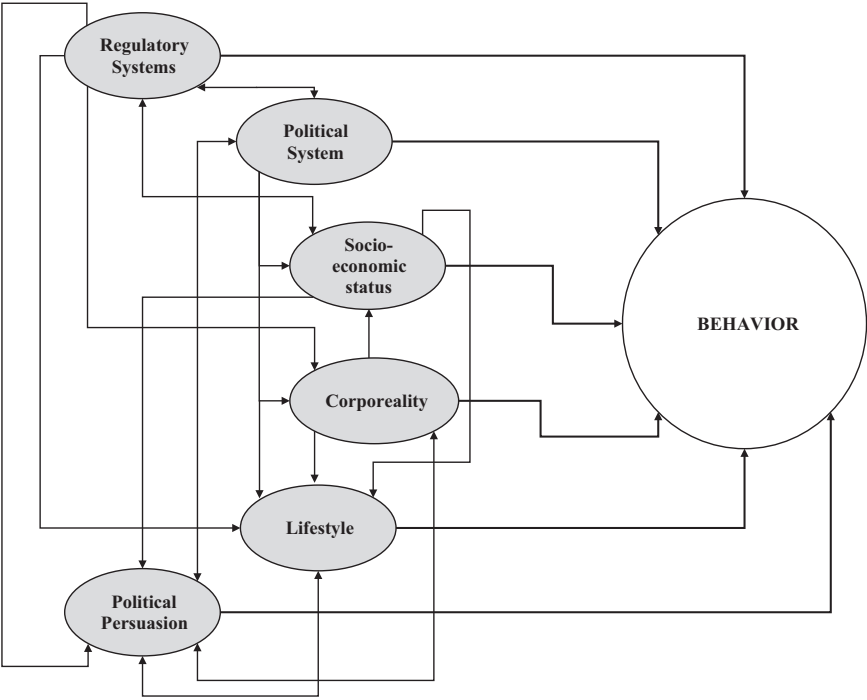


Figure 4.4 Sub-model III: social—that is, political, economic, and cultural—determinants of environmental behavior.

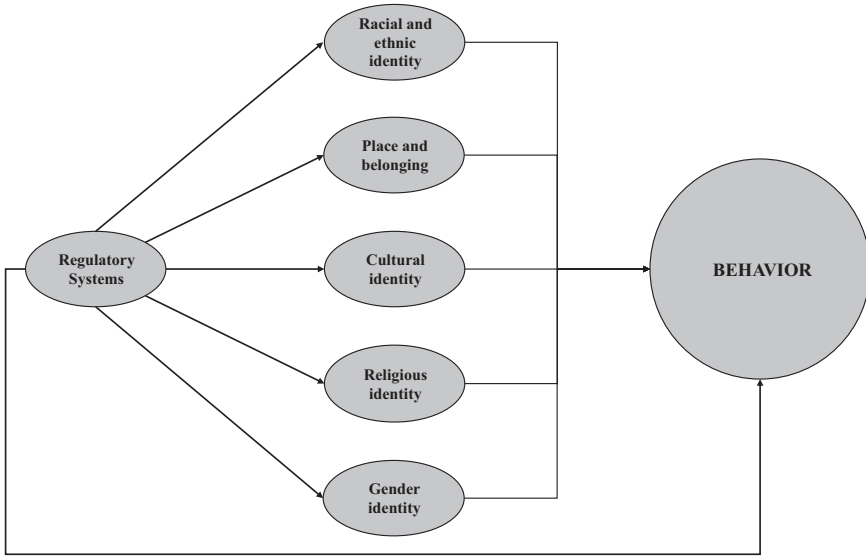


Figure 4.5 Sub-model III: the relationships between regulatory systems, identities, and behavior.

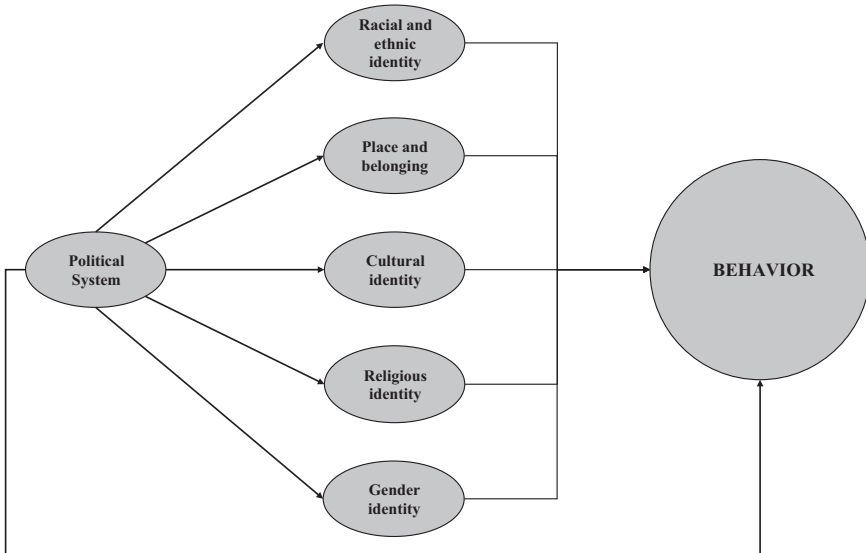


Figure 4.6 Sub-model III: the relationships between political system, identities, and behavior.

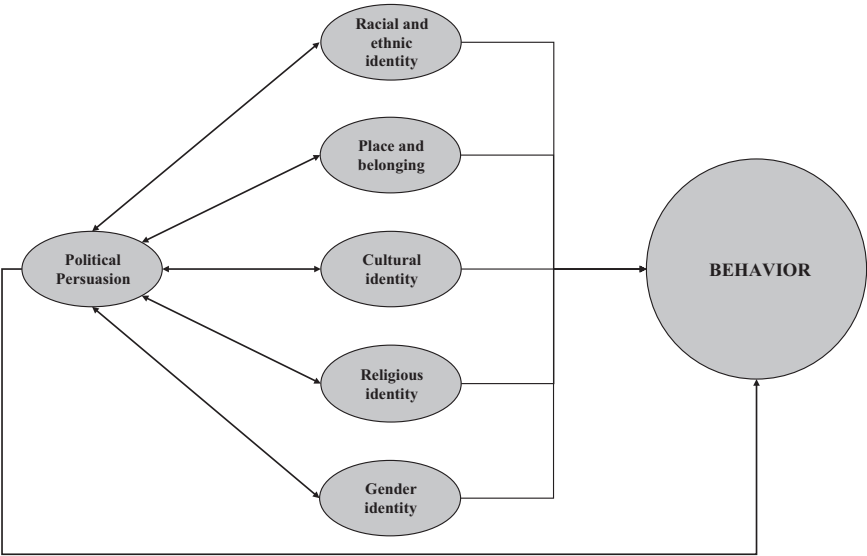


Figure 4.7 Sub-model III: the relationships between political persuasion, identities, and behavior.

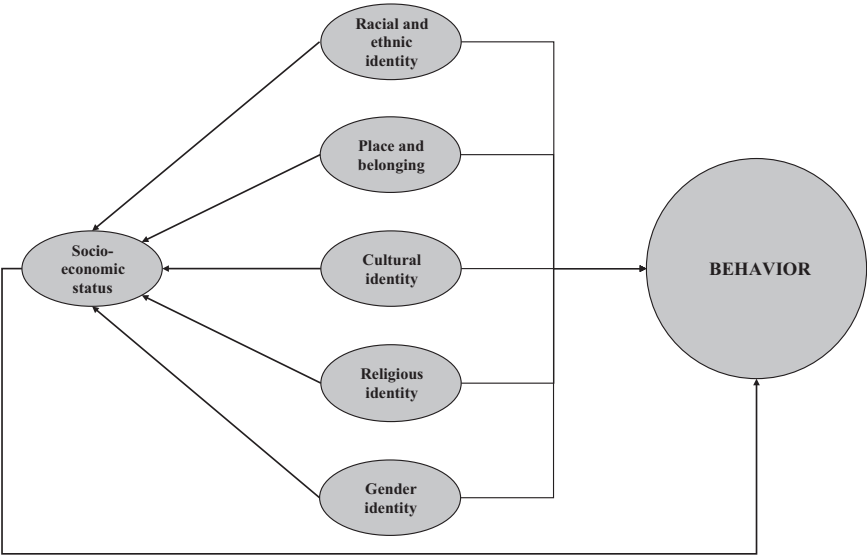


Figure 4.8 Sub-model III: the relationships between socio-economic status, identities, and behavior.

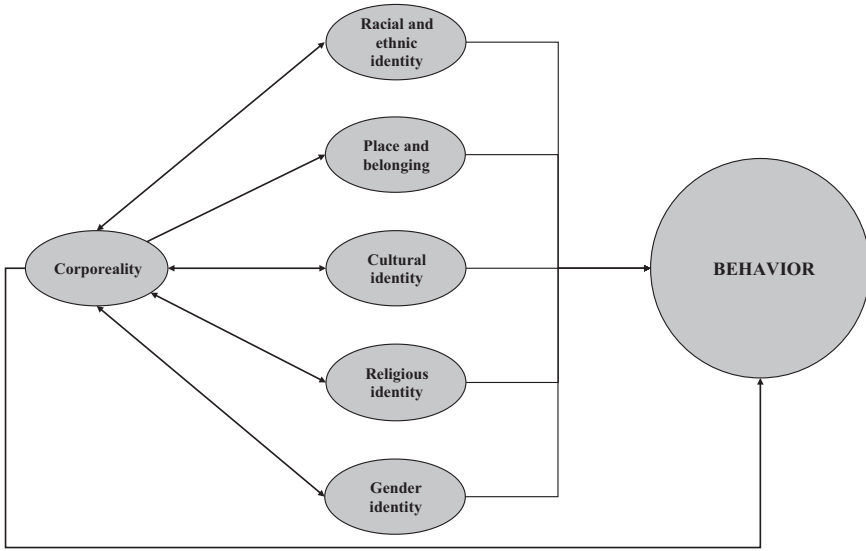


Figure 4.9 Sub-model III: the relationships between corporeality, identities, and behavior.

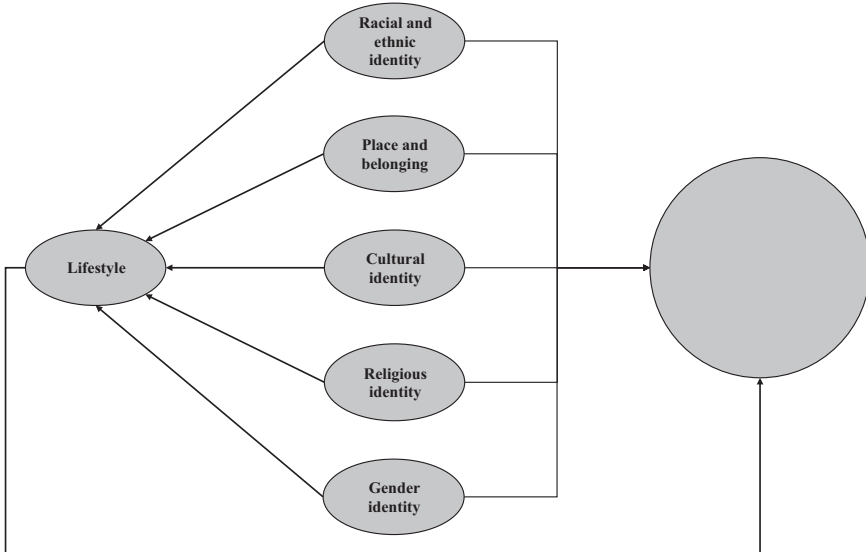


Figure 4.10 Sub-model III: the relationships between lifestyle, identities, and behavior.

These 11 clusters map into the cultural, political, and economic dimensions of the social determinants of environmental behavior in the general model. These clusters can be further developed into sub-models. Note that it is not really viable to pigeonhole these determinants as they are rather evasive and overlapping. There are traces of corporeality in gender identity, for instance. Certain national, gender, or religious identities might define one's affiliations with the mainstream and subcultures, that is, part of one's cultural identity. Belonging to a certain racial community might subject its members to being systemically underprivileged, and thus relegated to a lower socio-economic status.

One possible common denominator across these clusters might be the systems of thought and knowledge that make it possible for us to consciously or unconsciously perceive and internalize our affiliations with any of these dimensions. To cite a rather accessible example, existing gender roles provide a repertoire of behavioral norms, a system of knowledge, into which children are born and accordingly raised and socialized. Of course, these conventions vary across time and place. What usually remains constant is the overall regime of truth or discourse that interpellates subjects to predefined gender roles. This regime is heavily mediated by language, episteme, and discursive formations according to poststructuralist and postmodern thought (Foucault, 1965, 2002, 2003, 2005). Foucault (2002, p. 211) writes,

By *episteme*, we mean, in fact, the total set of relations that unite, at a given period, the discursive practices that give rise to epistemological figures, sciences, and possibly formalized systems; the way in which, in each of these discursive formations, the transitions to epistemologization, scientificity, and formalization are situated and operate; the distribution of these thresholds, which may coincide, be subordinated to one another, or be separated by shifts in time; the lateral relations that may exist between epistemological figures or sciences in so far as they belong to neighboring, but distinct, discursive practices. The episteme is not a form of knowledge (*connaissance*) or type of rationality which, crossing the boundaries of the most varied sciences, manifests the sovereign unity of a subject, a spirit, or a period; it is the totality of relations that can be discovered, for a given period, between the sciences when one analyses them at the level of discursive regularities.

Among others, an episteme makes the knowledge of the self, the environment, and their relationships possible. To a certain extent, it is the society into which one is born at a specific historical moment that defines one's gender role, cultural memory, and aesthetic standards and taste, among others. The impacts of political, economic, and juridical systems in regulating our behavior and our access to resources like wealth, land, credit, education, nutrition, and health might fall beyond our individual control. And of course, these norms and expectations change across different epistemes.

Different discourses and regimes of truth inform our motivational and cognitive processes, impacting our attitudes, norms, beliefs, values, and goals. Individual motivational and affective behavioral determinants, therefore, are partly molded by such epistemological interactions. The episteme and the decisions and behaviors it informs are sometimes regulated and reinforced by other external surveillance and disciplinary mechanisms. Systems of education and media are two rather obvious examples. This system of intricate discourses and influences interpellates subjects, dictates norms, and inculcates certain attitudes, values, and beliefs, which in their turn determine individual behavior.

Social determination, however, does not mean that subjects are divested of agency and responsibility. There has been a legitimate concern that post-structuralist and postmodern approaches might be apolitical because they tend to conceptualize individuals and their (lack of) will to be subject to external forces, denying them agency and power to initiate change. A modular model that refuses to put the individual at the center while acknowledging ecospheric, social, and individual factors across sectoral, geographic, and demographic spectra makes it possible to denounce anthropocentrism and understand the myriad variables that determine environmental behavior, and accordingly disperses agency well beyond the individual (cf. Gayatri Spivak's concept of "strategic essentialism"; Spivak, 1990, 1999). In other words, through acknowledging symbiotic relationships, this model invests agency in and across individual, social, and ecospheric elements and holds both individuals and institutions responsible. In this way, people are not reduced to subjects in the poststructuralist sense of the term. While there are factors that fall beyond their control, and factors that they might not be able to change at least in certain historical moments (like challenging corporate power or immediately changing policies before the next election), they are still held responsible for ecological crises, for stopping the destruction, and amending the situation when possible. This framework also provides a theoretical basis for explaining the role of humor and satire in environmental advocacy (see chapter 3). This is particularly important because one of the major functions of humor and satire is information provision and challenging the regimes of truth; in other words, they can serve to circulate, reinforce, and undermine certain discourses in an episteme.

The holistic approach of this modular model makes it possible to account for both motivational and need-based determinants of behavior. In other words, it helps better locate the psychological theories of behavior in their larger context. Models that argue behavior is determined by motivation, which in its turn is the result of need, acknowledge that need can be understood in both psychological and basic terms. Basic needs include safety and physiological needs. In other words, a holistic approach acknowledges the intertwinedness of individual psychology and ecosphere as determinants of (environmental) behavior. At the same time, it emphasizes that need is partly a social construct in that it is informed by our epistemological

understanding of ourselves and our relationships with the broader world; therefore, it can be manipulated to change behavior. Advertisements and social media (where humor frequently resurfaces), for instance, can work to manufacture need in capitalist systems as they rely on growth, which requires the circulation of money, hence consumerism. While unrestrained consumerism has negative ecological impacts, redefining needs can be utilized to promote pro-environmental behavior (see Davis et al., 2016; Lekakis, 2017; Wettergren, 2009).

Yet, another benefit of a holistic approach is that it does not merely and unrealistically target individuals for behavioral change. Instead of blaming individuals for what might fall outside their control, it acknowledges that there are many variables at different levels and with different impacts on environmental behavior. Rather than encouraging individuals to ride their bicycles instead of driving their cars by targeting their beliefs, values, and norms, this model acknowledges that persuading individuals is not necessarily the ultimate determinant of behavior. The social dimension of the frame model integrates regulating mechanisms like juridical procedures, and ideological and repressive state apparatuses. Instead of blaming individuals, it concedes that in some countries, like Iran, there are legal hurdles for women to bike. So even if all psychological determinants motivate the individual toward pro-environmental behavior, this is legally not possible and can have serious consequences.

It is of course understandable that previous attempts toward changing environmental behavior have delimited their scopes. Research and disciplinary conventions require that the number of variables should be limited for the purpose of designing empirical studies, collecting data, measuring impact, and reporting results in numbers. But this delimitating means that one cannot draw general conclusions from partial studies about environmental behavior or the impacts of humor and satire therein because different societies and ecospheres have different configurations. There is no single effective strategy for advocating pro-environmental behavior. Merely activating norms or tweaking attitudes does not inevitably lead to pro-environmental behavior. Different socio-economic classes cannot support organic farming or sustainable products in the same way. Environmental activities might have a different meaning in a context where they are politicized and criminalized as under some oppressive regimes. Besides acknowledging these contingencies, a more nuanced, inclusive, and holistic approach can make a greater diversity of voices audible in a field that has been mostly dominated by Western scholars whose experiences and concerns are not necessarily universal and representative of the challenges that the global south, or people who live in less privileged countries or under authoritarian regimes face.

Tailored humor and satire have the potential to influence ecospheric, individual, and social determinants of environmental behavior in this modular model. As adaptive and coping strategies, humor and satire are linked to the ecosphere. Humor is considered to be a personality trait, and there are

several psychological explanations for it, including relief and cognitive theories as discussed in chapter 2. At the same time, humor and satire are social constructs that reflect on their cultural, political, and economic contexts. Therefore, they can be wisely employed to revise norms, values, accepted symbolic and affective aspects of behavior, and challenge economic and political strongholds by exposing corruption and telling truth to power.

Potential Impacts of Humor and Satire on the Intention-Action Gap

The potential environmental impacts of humor and satire are not merely limited to the determinants of behavior as discussed in chapter 3. They can also impact the gap between the existence of behavioral determinants and lack of action (quasi intention-action or attitude-behavior gaps). Being entrenched in social, cultural, political, and economic issues, humor and satire can bridge the gap between the presence of the determinants of behavior and inaction by foregrounding the factors that lie beyond individual psychology. At the same time, they also offer potentials for addressing psychological inhibitions. In the previous chapter, we discussed how humor and satire can address the absence of perceived behavioral control, perceived risks from behavioral change, and social comparison in terms of norms, conformity, goals, and perceived equity that include subjective, descriptive, and peer norms. Humor and satire can bridge the intention-action gap through providing information, building trust, influencing judgment discounting, community building, addressing perceived risks, mitigating tokenism and rebound effect, and addressing psychological barriers.

Humor and satire can also be employed to address ignorance, uncertainty, and mistrust. They provide information, which can foster certainty. They can criticize the sources that spread or manipulate uncertainty by exposing their aims. There are two more ways for humor and satire to address legitimate scientific uncertainty in environmental messaging. First, they can diminutize uncertainty by encouraging peripheral route processing. Second, according to the theories of humor as proposed by Wyer and Collins and Apter, humor diminishes the reinterpretation of an incongruity (see chapter 2). If humor takes uncertainty about climate change as the incongruity on which it is based, it can diminish its significance (also see Chattoo & Feldman, 2020).

Trust is more complicated and cannot be addressed simply by a humorous intervention; however, satire and humor can acknowledge and address the reasons behind skepticism and mistrust. They can expose and criticize the ways politicians and corporations manipulate or co-opt environmental attempts for consolidating their authority or as a way of marketing their products, that is, greenwashing. This will bring the topic into attention and encourage public debate. It can put pressure on those who manipulate green pretensions to advance their vested interests. In a democratic and open

social space, this can trigger and eventually contribute to trust building. But this function is even more significant in situations in which there is no way of democratically debating these issues, because there is no independent outlet for publicly expressing legitimate concerns. Acknowledging mistrust in these situations can help distinguish it from environmental causes. That is to say, humor and satire can agree that we do not trust authorities, but this does not mean we should give up on environmental activism, an action that is valid and invaluable in and of itself and can even neutralize or react against pretensions and abuses of power. Humor and satire can be particularly effective not only because of their parrhesiastic functions but also because they do not require traditional outlets like television or newspapers in authoritarian regimes. Their flexibility and malleability allow them to promptly proliferate on decentralized social media. In these cases, humor and satire underlie mistrust, acknowledge the concerns of citizens who are disheartened to act pro-environmentally, expose corruption, and shame political and economic power.

Humor and satire also impact denial and judgmental discounting. If information is provided successfully and persuasively, and concerns over mistrust and uncertainty are addressed effectively, there is very little room left for denial. Nonetheless, humor and satire can engage deniers head-on through shaming and criticism, as well. They can increase the salience of distant ecological crises by framing them in familiar and immediate terms and building communities that go beyond geographic borders to erode denial (for priming social and political issues through humor, satire, and comedy, see Chattoo & Feldman, 2020 and chapter 3).

Likewise, the role of humor in community building can be an effective strategy for addressing place attachment and belonging. Humor and satire can be employed to reframe parochialism into a symbiotic relationship between different species in the ecosphere. They can also underscore other common grounds like race, gender, or socio-economic status as the basis of affiliation instead of place. And their reformative potentials can be employed to change habits.

Two perceived risks from behavioral change might also be addressed by using humor and satire. Seeing or hearing other people change their behavior can provide a sense of assurance that behavioral change does not damage one's ego or reputation. Humor and comedy are safe means to showcase behavioral change because they can create a distance between the audience and the topic, hence saving face on the part of the audience. They can also make it possible for one to test the impact of behavioral change in a playful mode before embarking on a permanent transformation. In other words, one might playfully and humorously examine the psychological risks of behavioral change before endorsing and actually associating oneself with it. If one is actually supported by one's significant others when one is joking about behavioral change, one can presume that changing behavior does not impose any serious psychological risks.

Tokenism and rebound effect can be partly mitigated by providing feedback (Abrahamse, 2019). Humorous feedback is more memorable and can provide positive emotions, while satiric feedback can provide ambivalent emotions and shame the audience into action. Humor and satire can expose and disparage acts of tokenism at political and corporate levels. And through providing information, reinforcing norms and expectations, and censuring inaction (that is, framing ecological crises within a shame rather than guilt culture), satire and humor can reduce the impact of belief in solutions beyond human control (see Tom, 2020, for an example).

On a general level, humor and satire can help create awareness of cognitive biases, and consequently overcome or consciously counteract their inhibiting influences on pro-environmental behavior. They can also counter the attentional bias (Azriel & Bar-Haim, 2020) by directing the audience's interest to the pro-environmental core of the message. Likewise, campaigns, messages, or jokes might humorously represent and demonstrate environmental behavior even when one is surrounded by inaction, and consequently dissolve the diffusion of responsibility. They can also bridge the gap between a present action and its future consequence and help overcome the barriers erected by the delay of gratification (Mischel & Ebbesen, 1970).

Therefore, humor and satire can bridge the gap by facilitating the realization of behavioral change by providing information, educating, fostering positive emotions and good mood, shaming and censure, subverting the binary logic and destabilizing power-knowledge, and functioning as effective communicative strategies to make science accessible to public audiences. Furthermore, their subversive and rhetorical functions and persuasive powers, distancing effect, and potentials in mobilizing advocacy efforts and raising awareness can help close the intention-action and attitude-behavior gaps. They can promote behavioral and cultural change as a result of their narrative quality and ability to engage imagination, experiential, affective, visceral, tangible, emotional, and aesthetic appeals, and simultaneously evoke positive and negative emotions. Moreover, their function as a coping and adaptive mechanism can foster resilience against climate change and facilitate its management.

However, humor can at the same time breach the existence of behavioral determinants and their realization into action and behavior through several ways: cognitive allocation of resources, expectation of positive affect, its non-serious nature and tone, and potential for being misread and misunderstood. Satire can also further breach the gap through its inherent divisiveness and the tension between its communication goals and the authenticity of satiric performance. Humorous distance can be discouraging, and environmental humor might be funny only for those who are already aware of ecological hazards. We will further discuss these inhibitions and the mitigating measures to address them below.

Even when humor and satire do not cause an immediate change in environmental behavior targeted by a single intervention, they can have impacts

that go beyond the immediate moment and emerge on a broader level and/or unfold only in time (see Chattoo & Feldman, 2020). For instance, satire and humor might fail to change the use of plastic immediately (for example, due to the plastic packaging of grocery and vegetables as a behavioral control) but can gradually and incrementally change attitudes or personal norms. When this change in attitude persuades an individual to consider green policies as a priority in voting, humor and satire will eventually fulfill their gradual pro-environmental role.

Strengths and Shortcomings of MIM

The sectoral, geographic, and demographic Modular Interdependency Model (MIM) is more complex as compared to previous models, which makes it more difficult to validate. But this is the only way we can provide a less reductive framework for understanding environmental behavior that goes beyond individual psychology and acknowledges that human beings like other species are enmeshed in intersecting and symbiotic relationships within the critical zone. Moreover, all modules are not pertinent in every situation depending on the ecological problem, context, target audience, and medium; therefore, they are not all necessary for designing every study (this does not mean these factors are not present: it simply means they are not among the variables that might change the results of a study). When the objective is to send environmental messages to children at a school in a certain district of a town, then age, socio-economic status, and the ecological issue that requires attention might remain rather constant across the population.

Another drawback is the tension between individuals as agents and external factors to which they are subject and that can undermine their agency. This is particularly important in the wake of poststructuralism and postmodernism. Ecocriticism and environmental humanities have had ambivalent and uneasy relationships with poststructuralist thought, representation, and language. This was primarily because it was presumed that addressing ecological problems requires two basic assumptions: first, understanding nature and the environment as real, tangible, and vulnerable rather than as discursive constructs or simulacra; second, acknowledging that individuals are agents who bear responsibility and can and must take steps to stop and mitigate the ecological damage. Although undeniably significant, attributing agency to external forces undermines individual agency and allows subjects to shirk responsibility or evade pro-environmental behavior. That is why MIM strives to distribute agency while integrating social, ecological, and individual factors without reducing the complexities of their multiple interconnections.

Moreover, MIM as a multidimensional and decentralized model strives to eschew anthropocentrism by being holistic and diffusing agency. Putting the individual and human psychology at the center inevitably lapses into anthropocentrism. MIM tries to relocate individuals and institutions within the ecosphere, emphasizing their ties with nature, environment, place, space, and other critters. We believe people should acknowledge and

appreciate their interconnections with the ecosystem as a significant step toward behavioral change. Unless we are aware of our symbiotic interdependencies, we cannot truly appreciate how urgent ecological crises are and how devastating the consequences of our neglect and inaction might be. This again should not give way to shifting responsibility for our behavior; rather, it should make us aware that our behavior has brought about the crises that are affecting us and other species, and that changing behavior is the only viable solution to avert disaster. The ecosphere is among the determinants of individual behavior, but it is *Homo sapiens* and their behavior that upset the ecological equilibrium.

Acknowledging the roles of institutions and corporations, MIM also acknowledges that it is not just the individual who is bestowed with agency and responsibility. This is particularly significant because when individuals see that despite the sacrifices they make others continue to ignore the problem or act in self-interest, they are likely to sink into despair, indifference, inaction, or anxiety. Furthermore, the impact and scale of political and corporate (in)action are in no way comparable to individual initiatives. Any model should therefore integrate both individual and collective environmental behaviors.

Another unique feature of this model is that it offers room for fostering resilience. We must own up to the irreparable ecological damage we have caused, acknowledge that different communities have had dissimilar shares in causing damage to the planet, and demand that they should redress the harm proportionate to their capacities. The dynamic symbiotic relationships among all species in the ecosphere and among the society, environment, and individual imply that upsetting the balance in one part of the system will eventually impact other parts. All components, therefore, should be ready to endorse modifications to redefine and maintain the overall dynamic equilibrium. As humor and satire offer potentials for adaptation, coping, and resilience (see chapter 3), a communicative strategy that integrates them can redirect the energy and focus away from eco-anxiety (see Hickman, et al., 2021), and its subsequent inaction or indifference, to positive meaningful engagement and participation.

Implications of Humor for Environmental Messaging and Behavioral Change

This section offers a list of practical advice based on the review of literature and MIM for the purpose of hands-on interventions. Literature remains inconclusive regarding the persuasive efficacy of humor and its environmental impacts. This has led Lyytimäki (2022, p. 472) to conclude his review by saying,

humor is fickle. Use of humor in environmental communication can produce unintended effects that are almost impossible to foresee. These effects can be negative or positive from the perspective of environmental communication and environmental protection, such as inclusion or exclusion of pro-environmental viewpoints.

So far, we have tried to show that there is a plethora of determinants, hence contingencies, in the production, distribution, and reception of environmental humor. Environmental humor can land behavioral change if it engages the germane ecological problem, targets the pertinent audience, employs the appropriate medium (Cameron et al., 2021), and considers all social factors that might hinder pro-environmental behavior. A blanket humorous environmental message is likely to misfire as it can resonate with only a limited portion of its general audience that fits its content, medium, and approach. One size does *not* fit all.

Nor is humor exclusive to progressive or sustainable causes (see Lyytimäki, 2022, for a discussion). It can also be employed against environmentalism. Right-wing, populist, conservative, and authoritarian players have as much access to humor as progressives and proponents of sustainable transformations. Its functions can serve both righteous and unjustifiable causes depending on who employs it most effectively. Besides its context and cause, time is the third factor that is frequently ignored in considering the impact of humor and satire. Again, due to the conventions of designing empirical studies, impact is often understood to be a short-term, direct, measurable change of behavior as the result of being exposed to one or a limited number of humorous texts over a very short period of time. Randomly assigned participants are usually asked to watch a video that is sometimes as short as one minute, and then rate how funny they found it and if they are more likely to engage in pro-environmental behavior after watching the video. This usually fails to provide an accurate picture partly because, “The long-term societal consequences of the use of humor are particularly difficult to foresee” (Lyytimäki, 2022, p. 472). Moreover, it sounds extremely unrealistic to expect a short video or a joke to change the way we think and behave. Even less complicated behaviors are the results of years of socialization and education, among others. In the same way, the tangible impacts of satire and humor are often felt incrementally and in the long run. As Chattoo and Feldman (2020, p. 53; see also p. 38) observe, the potentials of humor and satire for social change lie “not merely or even primarily in ... [their] ability to directly impact individuals ... but also in ... [their] ability to impact the broader public sphere, as well as to provide resources for collective action.”

As a result of ongoing socialization and habits, behavioral change is gradual and incremental. According to McGuire’s information processing paradigm (McGuire, 1978), behavioral change follows message presentation, attention, comprehension, yielding, and retention (also see Young & Esralew, 2011). An effective humorous message, therefore, should entail these steps. The eventual success partly depends on carefully tailoring messages so that they are perceived as having salience, relevance, authority, credibility, and legitimacy.

So how can the use of humor and satire advance environmental causes? What are the downsides of using them? And are there any effective measures to mitigate these drawbacks?

How Can Humor Help Environmental Behavioral Change?

- Some findings suggest that humorous messages can exert a greater impact on the thoughts, feelings, and behaviors of people as compared to serious messages (Strick, 2021).
- Humor, satire, and comedy can engage people emotionally and rationally through their narrative, experiential, affective, visceral, tangible, emotional, aesthetic, and imaginative appeals (Boykoff, 2019).
- Humor can draw attention to the message and raise awareness (Bore & Reid, 2014; Chattoo & Feldman, 2020; Eisend, 2009; Lyytimäki, 2022; Strick, 2021).
- Humor can underscore the incongruity of the scale of ecological problems and our disproportionate response to them (cf. what Ghosh calls “the great derangement;” Gosh, 2016).
- Humor can make a message more memorable (Chattoo & Feldman, 2020; Martin & Ford, 2018; Strick & Ford, 2021).
- “Humor can increase the motivation of perceivers to process a message” (Strick, 2021, p. 4).
- Humor can “positively bias thoughts about persuasive arguments” (Strick, 2021, p. 4; see also Chattoo & Feldman, 2020).
- “By encouraging affectively consistent pro-arguments, humor leads the recipient to evaluate a message more favorably, and thus increase persuasion” (Martin & Ford, 2018, p. 253).
- Political humor can be an effective strategy for persuasion, “effectively discrediting politicians and negatively affecting people’s attitudes toward them” (Martin & Ford, 2018, p. 255; see also Boukes et al., 2015; Droog et al., 2022).
- Humor can stimulate the sharing and discussion of a message (Campo et al., 2013; Carroll, 2014; Chattoo & Feldman, 2020; Market Wired, 2011; Pariera, 2017).
- The capacities of humor in giving voice to the marginalized and the underrepresented, fostering group solidarity, and building communities can be invaluable resources in advocacy (Archakis & Tsakona, 2005; Chattoo & Feldman, 2020; Klein, 2007; Lyytimäki, 2022; Twark, 2007; Zekavat, 2017).
- Humor can reduce conflict and “control, perpetuate, or challenge norms and stereotypes” (Klein, 2007, p. 11; also see Lyytimäki, 2022; Ziv, 1988).
- “Humor can help reduce social anxiety” (Chattoo & Feldman, 2020, pp. 49) and ease tension as a lubricant (Lyytimäki, 2022).
- Humor can expose faulty beliefs or errors in judgment (Marra, 2017).
- The use and appreciation of humor can “improve communication, enhance learning, and promote a sense of social presence” (Meyer, 2021, pp. 57–58).
- Mediated comedy can go viral. It

has the potential to preach beyond the choir, even as it also often mobilizes a base of like-minded thinkers it exists on a practical level as a continuum that includes building public awareness, shaping individual attitudes and behaviors, shifting social norms and practices, encouraging public engagement, setting a media agenda, and influencing policy.

(Chattoo & Feldman, 2020, pp. 4–5)

Concerns over humor and satire preaching to the choir are not always relevant as even those who strive to behave pro-environmentally might benefit from reformative messages. As an example, see how the satiric TV show *Full Frontal* (TBS) tries to warn environmentally responsible people against hoarding reusable cotton tote bags and its negative environmental impact (“Full Frontal’s Spring ’22 Fashion Report: Reusable Tote Bags”).

- Humor can serve as an alternative to the dominant gloomy and apocalyptic communication that can cause eco-anxiety, paralysis, and indifference (see Kaltenbacher & Drews, 2020; Norgaard, 2011; Osnes et al., 2019; Seymour, 2018).
- “Humorous framings can increase salience of environmental issues in public debates, expose new audiences to new insights and engage people by effective and entertaining storytelling about potential solutions. Humorous juxtapositions can open up opportunities to recognize unsustainable trends, flawed problem framings or unfeasibility of proposed solutions, and reveal contested value positions” (Lyytimäki, 2022, p. 464; see also Corner, 2015; Lekakis, 2017).
- “Comic framings may help to challenge socio-technical lock-ins and inspire niche-level experimentations that may eventually lead to more wide regime-level changes. For example, innovators and early adopters of renewable energy production can benefit from comic” (Lyytimäki, 2022, p. 469).
- “[H]umor also may help to disarm audiences, lowering their defenses in the face of social and political difference. This occurs both cognitively, by reducing message counter-arguing, and emotionally, by buffering against a perceived threat” (Chattoo & Feldman, 2020, p. 45).
- The coping and adaptive functions of humor and satire can foster resilience against climate change.

Potential Inhibiting Factors in Using Humor and Satire for Environmental Advocacy and Measures for Mitigating Them

Humor and Persuasion

- Literature is inconclusive about the role of humor in persuasion. This could be partly explained by the obscurity of potential mediators in the relationship between humor and persuasion (Droog et al., 2022).

- **Mitigation:** Being more inclusive and comprehensive, MIM can provide a more solid basis for future studies.

Different Processing Procedures

- Elaboration Likelihood Model suggests that people process messages in either central or peripheral routes. While deeper central route processing, which features cognitive processes more prominently, concerns message arguments, superficial peripheral route processing, which involves affect more prominently, concerns peripheral cues. Understanding and resolving the incongruity in humor involve a certain cognitive process, yet humorous messages are more likely to be processed through the peripheral route. Thus, the relative lack of deeper, central processing leads to a lesser degree of focus of attention on the quality of the argument and diverts attention to peripheral cues like funniness or sympathy for the communicator (Baumgartner, 2021; Strick, 2021). This is while “central route-processing generates more substantial and lasting attitude change than peripheral route-processing does” (Strick, 2021, p. 4).
- When the message contains a strong argument, the use of humor decreases the number of pro-arguments that the recipient comes up with; therefore, it reduces persuasion. When the argument is not particularly strong, humor can decrease critical counterarguments and consequently increase persuasion (Martin & Ford, 2018).
- **Mitigation:** “Because humor encourages peripheral route processing, it could be particularly effective in persuading people who are motivated to avoid thinking too much about an issue, for instance, people who are high in the personality trait of masculinity” (Martin & Ford, 2018, p. 253).³
- **Mitigation:** As peripheral route processing depends on peripheral cues, it is important to use likable communicators, underline the expertise of the sources (on the use of trusted sources and messengers in climate communication see Holmes & Hall, 2019; Shome & Marx, 2009), and fine-tune the message length. Given the tension between communication goals and the authority of satiric performance, this is particularly important since being a comic might underline one’s authority to comment on a complicated scientific topic.
- Remote (physical and temporal) risks usually do not trigger urgency in response. This is partly because “the human brain has two different processing systems: the experiential processing system, which controls survival behavior and is the source of emotions and instincts (for example, feeding, fighting, fleeing); and the analytical processing system, which controls analysis of scientific information” (Shome & Marx, 2009, p. 15). Analytical processing is not sufficient for causing behavioral change:

Analytic products (such as trend analyses, forecast probabilities, and ranges of uncertainty) help people absorb facts and can be

valuable tools when people need to make big decisions, but they alone will not compel people to take effective steps to address the climate change challenge.

(Shome & Marx, 2009, p. 18)

- **Mitigation:** As “the experiential processing system is the stronger motivator for action” (Shome & Marx, 2009, p. 16), for a message to be effective, it must speak to both parts of the brain. Humor and satire can prove to be invaluable experiential resources due to their imaginative, experiential, affective, visceral, tangible, emotional, and aesthetic appeals.

The Cognitive Processing of Humor

- Processing humor is cognitively demanding; as a result, less resources are allocated to the scrutiny of the argument when humor is involved (Boukes et al., 2015; LaMarre et al., 2014; Lee, 2013; Young, 2008, 2020).
- **Mitigation:** Humor and satire can put a high demand on cognitive resources. This will deplete cognitive resources for counterarguing, and as a result increases persuasion.
- **Mitigation:** The level of difficulty should be kept reasonably moderate depending on the topic and audience.

Pre-existing Views

- People who already hold pre-existing attitudes toward a topic are less likely to be persuaded (Baumgartner, 2021; Hameiri, 2021). Nevertheless, humor is more likely to be persuasive when this pre-existing attitude toward a message is positive (Boukes et al., 2015; Strick, 2021).
- **Mitigation:**

The level of agreement with the issue presumed or engendered by humor use gives the most power to humor’s functions.... [The following table] summarizes the situational combination in terms of issue agreement and familiarity for each function of humor. The functions can be viewed as falling along a continuum, starting with identification, then clarification, enforcement, and, at the other extreme, differentiation. This continuum illustrates the division of humor’s basic communication functions into strategies that unify and those that divide.

(Meyer, 2000, p. 318; see Figure 4.11).

This is particularly important in addressing audiences who already acknowledge climate change versus those who tend to deny the overwhelming scientific evidence. In other words, different functions of humor should be activated to optimize its persuasive impact depending on the familiarity of the audience with the ecological problem, say, climate change.

- **Mitigation:** “People feel better and more positive about achieving their goals and are more likely to sustain their behavior when their goals are framed in a manner that feels naturally comfortable to them” (Shome &

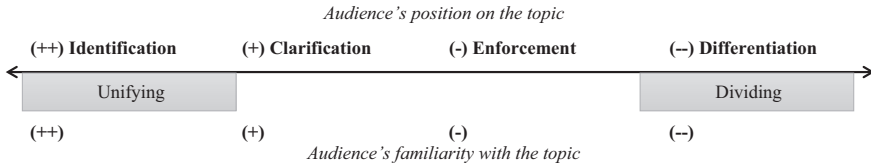


Figure 4.11 Four basic rhetorical functions of humor (Meyer, 2000).

Marx, 2009, p. 9). Individuals tend to demonstrate two major approaches to goals: those who focus on promotion see goals as ideals and are eager for advancement. They seek to maximize gains. Those who focus on prevention, by contrast, see goals as what they ought to do and want to maintain the status quo. They seek to minimize losses. Since tailoring messages to goal foci can increase response, environmental messages should be framed within different perspectives to reach out to and impact different audiences.

- **Mitigation:** Bar-Tal et al. (2021) propose paradoxical thinking as a way to encourage individuals to revisit their pre-existing beliefs. They argue that

when individuals with well anchored extreme views are exposed to consistent messages that are *formulated in an amplified, exaggerated, or even absurd manner*, their level of disagreement, resistance and/or psychological defenses are not fully triggered, and they embark on a deliberative thinking process.... Furthermore, such paradoxical messages ... raise *threats to the identity of the message recipient, instigating a re-evaluation process of the held beliefs and attitudes that in turn may stimulate their unfreezing* [i.e., an increased willingness to reevaluate held beliefs and attitudes]. Eventually, unfreezing may lead to openness to alternative viewpoints that may be adopted.

(quoted in Hameiri, 2021, p. 41)

- Paradoxical thinking messages are consistent with pre-existing beliefs but in an absurd or exaggerated manner. They are ambiguous and non-judgmental, and elicit surprise and absurdity about existing beliefs and attitudes (Hameiri, 2021). Different forms of humor, satire, and comedy exhibit the milestones of paradoxical thinking as Hameiri (2021, p. 48) contends that “both paradoxical thinking and satire reduce counterarguing and resistance to the messages.”

Discounting

- Humorous messages can also be discounted; that is, they are not taken seriously or are trivialized or considered to be less credible (Baumgartner, 2021; Boukes et al., 2015; Eisend, 2009; LaMarre & Walther, 2013; Nabi et al., 2007).

- **Mitigation:** Lighter forms of humor that are perceived to be funnier cause more message discounting, so there is a smaller chance of agreement with the message. Using less light-hearted and more complex forms of humor, therefore, might mitigate discounting (Boukes et al., 2015; LaMarre et al., 2014).
- “[P]eople tend to discount the importance of future events. Indeed, many social scientists believe that this is one of the top reasons that it is hard to motivate people to take action to prevent climate change” (Shome & Marx, 2009, p. 10).
- **Mitigation:** Make the message matter now. “It may be possible to motivate environmentally responsible behavior by tapping into people’s desire to avoid future losses rather than realize future gains” (Shome & Marx, 2009, p. 11). Moreover, “Audiences may be more likely to make changes to their behavior if climate change information is framed as ‘losing less now instead of losing more in the future’” (Shome & Marx, 2009, p. 11).

Emotions and Information Processing

- Humor seems to reduce motivation to scrutinize message arguments. It relieves anxiety and enhances positive mood. These can reduce message scrutiny due to the fear that it might spoil the good mood. Moreover, people tend to engage in heuristic rather than systematic and effortful processing when in a good mood (Martin & Ford, 2018). Strick (2021, p. 5) also observes that

Humor reduces processing depth by eliciting a positive mood which comes with a sense of comfort and certainty.... As feeling certain is an internal cue that one is already correct and accurate, it undermines people’s motivation to process a message effortfully.

Anticipation of positive affect on the part of the recipient negatively influences scrutiny of the argument (Young, 2008, 2020; see Chattoo & Feldman, 2020, for a different perspective).

- **Mitigation:** “Negative emotions cause deep information processing, while positive emotions cause shallow information processing.... A prominent explanation is that positive emotions carry information that the situation is benign, and hence, that critical processing is not necessary” (Strick, 2021, p. 11; see also Droog et al., 2022; Panda, 2020). Accordingly, the less light-hearted forms of humor and satire that elicit uncomfortable emotions can mitigate this drawback.
- **Mitigation:** There is also a different perspective on the impact of affect and emotions on the depth of processing that stems from Appraisal Theory. According to this view, it is the appraisal or cognitive components of emotions that impact processing. Emotions feature different cognitive dimensions like “the level of responsibility, pleasantness, control, and confidence they elicit” (Strick, 2021, p. 11). Rather than focusing

on the positive or negative mood they evoke, emotions can therefore be categorized according to the level of confidence they elicit. For instance,

emotions like anger, disgust, contentment, and happiness are all accompanied by a sense of certainty, even though the first two are negative and the latter two are positive. Emotions like worry, shame, surprise, and hope are usually accompanied by a sense of uncertainty. (Strick, 2021, p. 11)

It is the level of confidence an emotion elicits that influences the depth of processing.

- **Mitigation:** The use of humor and satire stimulates strong ambivalent or mixed emotions that can mitigate the adverse impact of positive emotions on persuasion (Skurka et al., 2018, 2019; Strick, 2021; see also Norgaard, 2011; Panda, 2020; Seymour, 2018). One explanation for this is that people mobilize cognitive resources to reduce ambivalence; as a result, new information is thoroughly processed. In fact, “ambivalence is associated with systematic reasoning..., higher activity of brain regions associated with elaboration..., and increased discrimination between strong and weak arguments...” (Strick, 2021, p. 12). Strick (2021, p. 12) continues to assert that

this heightened elaboration is functional, as increased receptiveness to a strong message reduces subsequent feelings of ambivalence.... Furthermore, attitudes formed through ambivalence induced processing tend to be strong and firmly grounded in reasoning. Consequently, although ambivalence itself is associated with doubt and uncertainty, it eventually leads to strong attitudes that are predictive of future behavior.

Humor therefore should either be used alongside with or elicit uncertainty emotions like sadness, shame, and concern.

Sadness may be elicited by the tragicomedy in the style of Charlie Chaplin or Woody Allen. Concern may be elicited by socially critical comedy. Shame may be elicited by harsh humor, especially when it succeeds in making people laugh and feeling ashamed about their amused response at the same time. In contrast, aggressive and disgusting humor will probably not heighten elaboration, as anger and disgust are certainty-emotions.

(Strick, 2021, p. 16)

- “Emotional appeals to the dangers of climate change impact can numb audiences” (Holmes & Hall, 2019, p. 15; see also Ettinger et al., 2021). This is partly because people “have a limited capacity for worrying about issues. Scholars refer to this limited capacity as a *finite pool of worry*” (Shome & Marx, 2009, p. 21). This could make it more difficult to retain the attention and interest of the audience and might eventually lead to emotional numbing.

- **Mitigation:** Avoid bombarding the audience with a bewildering diversity of complex information. Use narrative, human stories, experiential appeals, and humor instead.

Diminishment

- Apter and Desselles (2012), Apter (2013), and Wyer and Collins (1992) postulate that cognitive synergies lead to two interpretations in humor the second of which involves the diminishment of the reinterpretation as less important, serious, or worthy of attention (also see Martin & Ford, 2018). In the case of environmental humor, this might diminish the significance and urgency of the environmental issue.
- **Mitigation:** First, environmental crises do not necessarily constitute the incongruity in environmental humor (see Chattoo & Feldman, 2020), so this concern is not always pertinent. Second, Wyer and Collins (1992) also argue that diminishment depends on the difficulty of message comprehension. Akin to the core presumption of benign violation theory (McGraw & Warren, 2010; McGraw & Warner, 2014), they contend that we perceive funniness at its highest when the difficulty is moderate. If the reinterpretation is too easy or too difficult, it is less likely for a humor-relevant elaboration to emerge. In other words, the event should be challenging enough while avoiding bafflement. One mitigating strategy, therefore, could be to break topics that are large in scope and hefty in significance, like climate change, down to smaller sub-topics in order to keep the level of difficulty moderate. Moreover, this emphasizes once again that it is extremely important to have the audience in mind as humor should be neither above nor below their heads.

Involvement

- Involvement is a moderator of the persuasive effect of humor. It denotes “the extent to which the topic of a persuasive message has personal relevance and significant consequences for the viewer’s own life” (Strick, 2021, p. 4).
- **Mitigation:** Humor is particularly effective in persuading people about low-involvement topics (Strick, 2021). In other words, it could be particularly effective in persuading people who are not directly affected by environmental disasters and climate change.
- **Mitigation:** Framing may counteract the effect of spatial and temporal distance between the audience and ecological crises. When their audience is not immediately and overtly affected by adverse ecological impacts, for instance, US-American comics have frequently drawn on local examples like wildfires and drought in California, regional heat waves, other instances of extreme weather, and flooding to highlight the current consequences of climate change in the US.

Age

- It seems that the persuasive function of humor is strongest among young adults (Baumgartner, 2021; Boukes et al., 2015; Skurka et al., 2022).

Humor and Disengagement

- “Amusement ... involves cognitive and practical disengagement from what is going on around us” (Morreall, 2009, p. 32).
- The two harmful effects of humor include blocking action and blocking compassion, and these are based on the way humor “disengages us *practically* from what we are laughing about” (Morreall, 2009, p. 105). Similarly, “A harmful effect of humor is based on the way it disengages us *cognitively* from the object of amusement” (Morreall, 2009, p. 105).
- **Mitigation:** “Do not promote a lack of concern for something about which people would be concerned” (Morreall, 2009, p. 110).
- **Mitigation:** It is also important to remember that “engagement with serious issues need not entail serious affect or sensibility” (Seymour, 2018, p. 232).

Humor and Stereotypes

- Satire can be divisive, and humor can perpetuate and compound stereotypes (Klein, 2007).
- **Mitigation:** Carefully considering social factors in MIM and tailoring the message to the requirements of specific audiences and contexts sensitively can largely mitigate this drawback.

Humor and Distraction

- “[H]umor may distract and thereby harm memory for persuasive arguments” (Strick, 2021, p. 4).
- **Mitigation:** The problem of distraction is reduced by applying related humor, which is relevant to the message and directly tied to the persuasive arguments (Strick, 2021).

Misunderstanding

- Humor and satire are likely to be misread or misunderstood (see Lyytimäki, 2022; Seymour, 2018).
- **Mitigation:** Their difficulty should be kept moderate.

Conclusion

In this chapter, we proposed a Modular Interdependency Model for interpreting and advocating critical environmentalism, weighed the promises of humor and satire in addressing inhibiting factors in the way of sustainable

behavior, and suggested mitigating measures for their drawbacks. This will hopefully provide a more comprehensive theoretical ground for better appreciating humor and satire as alternative communicative strategies and resolving the inconsistencies that exist in previous research findings. In our quest, we noticed that some guidelines designed to help environmental communicators relied on humor but never mentioned, let alone, acknowledged, its potentials. While never mentioning the term, Shome and Marx (2009), for instance, employ humor in some of their examples and most of their cartoons.

One cannot expect much from a message that does not resonate with its audience to trigger behavioral change. For humor and satire to speak to their audience, a complex matrix of interconnections should be considered. Effective messaging starts with specifying the ecological problem (that is, content) and identifying the target group that can ameliorate the situation. The message should then be tailored to effectively reach out to the audience by considering the context, medium, outlets, and the communicators involved. This is what most case studies have somewhat missed, causing inconsistencies in research findings. Another reason might be the inherent shortcomings of self-report questionnaires that might not be ideal measures for determining the environmental impact of humor and satire. There might be disparities between what people are willing to confess to a researcher and what they actually feel, believe, do, or harbor in their minds. Social expectations and inhibitions, the working of subconscious and unconscious minds, and our unreliable, dynamic, shape-shifting, and flickering memories do little to increase the reliability of self-reports.

One way to secure more reliable and consistent results about the environmental impacts of humor and satire might be to change the indicator. Instead of asking people if watching a minute-long humorous video or reading a joke changed their attitudes and beliefs that were formed over several decades, or inquiring how likely they are to engage in a certain type of behavior in future when we know most people are conscious of what the society or at least the scientist in white coat expects them to respond, one can simply choose an indicator that is directly related to the environmental problem. For instance, if the ecological problem is the use of plastic bags in Flensburg, a small town in Northern Germany, then the first step would be to find out who uses them most. If refugees are the target, the message should then be tailored to them. Suppose that the largest number of refugees is of Arab and Afghan origins. This naturally requires specific linguistic and cultural consideration to come up with accessible and meaningful humor that can appeal to them. Maybe it is women who use more plastic bags when grocery shopping, or maybe it is school children who use disposable bags to take their lunch to school. This will make it possible to create a bespoke intervention on the consumption of plastic bags in specific shops in the city (most discount markets do not give away disposable plastic bags) or in schools. Focusing on the shops where refugees do their grocery shopping

in Flensburg and meeting them where they are is much more effective than working with random participants who are recruited by a firm to complete an online questionnaire. After the intervention, one can simply measure the number of plastic bags used or disposed in the same city after a fair exposure to tailored humorous messages instead of asking refugees to participate in a study, which also poses difficulties and legitimate concerns about data security and privacy in working with vulnerable groups.

On being asked to find a way to reduce the littering of cigarette butts in a specific district of Gothenburg, NUDGD, a Swedish company, for instance, designed and used humorous posters featuring a pigeon wearing a nicotine patch. The caption read: “Please put your cigarette butt in the ashtray over there. The pigeons are trying to quit smoking.” They reported a 70% reduction in littering after the intervention (Paoli Brunat, 2020). Likewise, John Oliver’s promotion of net neutrality in his satiric comedy show *Last Week Tonight* (HBO) in June 2014 is reported to have had some tangible consequences (Chattoo & Feldman, 2020; for more instances of environmental campaigns that employ humor and their impacts, see Borden & Suggs, 2019; Pralle, 2006).

Thus, humor and satire, like any communicative strategy, can be used or abused, can achieve their goals or backfire, and can influence one while leaving another unaffected. It is unrealistic to expect one humorous item to change attitude, behavior, or intention across a diverse range of people and in different contexts. Norms and behaviors are shaped over decades and are deeply entrenched in the society, so changing them is necessarily incremental and gradual. Behavioral change requires consistent exposure to cognitive, symbolic, experiential, affective, visceral, tangible, emotional, imaginative, and aesthetic appeals. Such gradual and incremental exposure in combination with other communication and advocacy techniques alongside organizing can proffer an effective alternative strategy to engage citizens, corporations, and policymakers in a just, inclusive, and sustainable transformation. In the next chapter, we will put the descriptive potentials of MIM into action in order to show how humor and satire have been used for environmental advocacy by analyzing works of popular culture. Chapter 6 will further investigate the predictive promises of MIM and explores ways to measure the environmental impacts of humor and satire.

Notes

- 1 While discussing *every* relevant aspect contributing to environmental attitudes and behaviors remains beyond the scope of our scientific endeavor, we aim to build a frame model that can potentially accommodate all pertinent dimensions in its general framework.
- 2 These theories are described in chapter three.
- 3 “Some scholars have suggested that toxic masculinity is inextricable from destructive attitudes toward nature” (Seymour, 2018, p. 178).

References

- Abrahamse, W. (2019). *Encouraging pro-environmental behavior: What works, what doesn't, and why*. Academic Press.
- Alderfer, C. P. (1969). An empirical test of a new theory of human needs. *Organizational Behavior and Human Performance*, 4, 142–175.
- Althusser, L. (Ed.) (1970). Ideology and ideological state apparatuses. In *Lenin and philosophy and other essays*, translated by Ben Brewster (pp. 121–176). Monthly Review Press.
- Apter, M. J. (2013). Developing reversal theory: Some suggestions for future research. *Journal of Motivation, Emotion, and Personality*, 1, 1–8. <https://doi.org/10.12689/jmep.2013.101>
- Apter, M. J., & Desselles, M. (2012). Disclosure humor and distortion humor: A reversal theory analysis. *Humor*, 25(4), 417–435. <https://doi.org/10.1515/humor-2012-0021>
- Archakis, A., & Tsakona, V. (2005). Analyzing conversational data in GTVH terms: A new approach to the issue of identity construction via humor. *Humor*, 18(1), 41–68. <https://doi.org/10.1515/humr.2005.18.1.41>
- Azriel, O., & Bar-Haim, Y. (2020). Attention bias. In J. S. Abramowitz & S. M. Blakey (Eds.), *Clinical handbook of fear and anxiety: Maintenance processes and treatment mechanisms* (pp. 203–218). American Psychological Association. <https://doi.org/10.1037/0000150-012>
- Bar-Tal, D., Hameiri, B., & Halperin, E. (2021). Paradoxical thinking as a paradigm of attitude change in the context of intractable conflict. In B. Gawronski (Ed.), *Advances in experimental social psychology* (Vol. 63, pp. 129–187). Elsevier Academic Press. <https://doi.org/10.1016/bs.aesp.2020.11.003>
- Baumgartner, J. C. (2021). Political humor. In M. Strick & T. E. Ford (Eds.), *The social psychology of humor* (pp. 20–38). Routledge.
- Borden, D. S., & Suggs, L. S. (2019). Strategically leveraging humor in social marketing campaigns. *Social Marketing Quarterly*, 25(3), 193–208. <https://doi.org/10.1177/1524500419854068>
- Bore, I.-L., & Reid, G. (2014). Laughing in the face of climate change? Satire as a device for engaging audiences in public debate. *Science Communication*, 36(4), 454–478. <https://doi.org/10.1177/1075547014534076>
- Boroditsky, L. (2011). How language shapes thought. *Scientific American*, 304(2), 62–65.
- Bouchard, T. J., & McGue, M. (2003). Genetic and environmental influences on human psychological differences. *Journal of Neurobiology*, 54, 4–45. <https://doi.org/10.1002/neu.10160>
- Boukes, M., Boomgaarden, H. G., Moorman, M., & De Vreese, C. H. (2015). At odds: Laughing and thinking? The appreciation, processing, and persuasiveness of political satire. *Journal of Communication*, 65(5), 721–744. <https://doi.org/10.1111/JCOM.12173>
- Bourdieu, P. (1989). *Distinction: A social critique of the judgement of taste*. Translated by Richard Nice. Harvard University Press.
- Boykoff, M. (2019). *Creative (climate) communications: Productive pathways for science, policy and society*. Cambridge University Press. <https://doi.org/10.1017/9781108164047>
- Butler, J. (2002). *Gender trouble: Feminism and the subversion of identity*. Routledge. <https://doi.org/10.4324/9780203902752>

- Butler, J. (2004). *Undoing gender*. Routledge. <https://doi.org/10.4324/9780203499627>
- Cameron, L., Rocque, R., Penner, K., & Mauro, I. (2021). Evidence-based communication on climate change and health: Testing videos, text, and maps on climate change and Lyme disease in Manitoba, Canada. *PLOS ONE*, 16(6): e0252952. <https://doi.org/10.1371/journal.pone.0252952>
- Campo, S., Askelson, N. M., Spies, E. L., Boxer, C., Scharp, K. M., & Losch, M. E. (2013). “Wow, That Was Funny”: The value of exposure and humor in fostering campaign message sharing. *Social Marketing Quarterly*, 19(2), 84–96. <https://doi.org/10.1177/1524500413483456>
- Carroll, N. (2014). *Humour: A very short introduction*. Oxford University Press. <https://doi.org/10.1093/actrade/9780199552221.001.0001>
- Chattoo, C. B., & Feldman, L. (2020). *A comedian and an activist walk into a bar: The serious role of comedy in social justice*. University of California Press.
- Climate Outreach. (2015). *Managing the psychological distance of climate change*. <https://climateoutreach.org/download/6744/>
- Corner, A. (2015, Jan 20). Why it’s good to laugh at climate change. *The Guardian*. <https://www.theguardian.com/environment/2015/jan/20/why-its-good-to-laugh-at-climate-change>
- Dahlstrand, U., & Biel, B. (1997). Pro-environmental habits: Propensity levels in behavioral change. *Journal of Applied Social Psychology*, 27(7), 588–601. <https://doi.org/10.1111/j.1559-1816.1997.tb00650.x>
- Davis, C. B., Glantz, M., & Novak, D. R. (2016). “You can’t run your SUV on cute. Let’s go!”: Internet memes as delegitimizing discourse. *Environmental Communication*, 10(1), 62–83. <https://doi.org/10.1080/17524032.2014.991411>
- Droog, E., Burgers, C., & Mann, D. L. (2022). Cognitive, emotional and excitative responses to satirical news. *Mass Communication and Society*. <https://doi.org/10.1080/15205436.2022.2035398>
- Eisend, M. (2009). A meta-analysis of humor in advertising. *Journal of the Academy of Marketing Science*, 37, 191–203. <https://doi.org/10.1007/s11747-008-0096-y>
- Ettinger, J., Walton, P., Painter, J., & DiBlasi, T. (2021). Climate of hope or doom and gloom? Testing the climate change hope vs. fear communications debate through online videos. *Climatic Change*, 164(1), 1–19. <https://doi.org/10.1007/s10584-021-02975-8>
- European Commission. (2019a). *A European green deal: Striving to be the first climate-neutral continent*. https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en; <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1576150542719&uri=COM%3A2019%3A640%3AFIN>
- European Commission. (2019b). *Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions: The European Deal*. https://eur-lex.europa.eu/resource.html?uri=cellar:b828d165-1c22-11ea-8clf-01aa75ed71a1.0002.02/DOC_1&format=PDF
- Feola, G., & Binder, C.R. (2010). Towards an improved understanding of farmers’ behavior: The integrative agent-centered (IAC) framework. *Ecological Economics*, 69, 2323–2333.
- Foucault, M. (1965). *Madness and civilization: A history of insanity in the age of reason*. Translated by R. Howard. Vintage Books.
- Foucault, M. (2002). *Archaeology of knowledge*. Routledge.

- Foucault, M. (2003). *The birth of the clinic: An archaeology of medical perception*. Translated by A. M. Sheridan. Taylor & Francis Group.
- Foucault, M. (2005). *The order of things: An archaeology of the human sciences*. Vintage Books.
- Gagnon, M. P., Godin, G., Gagné, C., Fortin, J. P., Lamothe, L., Reinharz, D., & Cloutier, A. (2010). Multi-level analysis of electronic health record adoption by health care professionals: A study protocol. *Implementation Science*, 5(1), 30.
- Gasperoni, J. (1996). The unconscious is structured like a language. *Qui Parle*, 9(2), 77–104. Duke University Press.
- Gastil, R. D. (1961). The determinants of human behavior. *American Anthropologist*, 63(6), 1281–1291. <https://doi.org/10.1525/aa.1961.63.6.02a00080>
- Gosh, A. (2016). *Great derangement: Climate change and the unthinkable*. The University of Chicago Press.
- Grenfell, M. J. (Ed.). (2014). *Pierre Bourdieu: Key concepts* (2nd ed.). Routledge.
- Hameiri, B. (2021). Paradoxical thinking as a paradigm of attitude change. In M. Strick & T. E. Ford (Eds.), *The social psychology of humor* (pp. 39–54). Routledge.
- Haraway, D. (2016). *Staying with the trouble: Making kin in the Chthulucene*. Duke University Press. <https://doi.org/10.1215/9780822373780>
- Hickman, C., Marks, E., Pihkala, P., Clayton, S., Lewandowski, R. E., Mayall, E. E., Wray, B., Mellor, C., & van Susteren, L. (2021). Climate anxiety in children and young people and their beliefs about government responses to climate change: A global survey. *Lancet Planet Health*, 5(12), e863–873. [https://doi.org/10.1016/S2542-5196\(21\)00278-3](https://doi.org/10.1016/S2542-5196(21)00278-3)
- Holmes, D., & Hall, S. (2019). *A literature review of best practice communication of climate science and impacts: Guide for policy makers*. Monash Climate Change Communication Research Hub, Melbourne.
- Jóhannesson, G. T., & Bærenholdt, J. O. (2009). Actor-network theory/network geographies. In R. Kitchin & N. Thrift (Eds.), *International encyclopedia of human geography* (pp. 15–19). Elsevier. <https://doi.org/10.1016/B978-008044910-4.00657-X>
- Kaltenbacher, M., & Drews, S. (2020). An inconvenient joke? A review of humor in climate change communication. *Environmental Communication*, 14(6), 717–729. <https://doi.org/10.1080/17524032.2020.1756888>
- Klein, S. (2007). *Art and laughter*. I. B. Tauris.
- Klößner, C. A. (2013). A comprehensive model of the psychology of environmental behavior—A meta-analysis. *Global Environmental Change*, 23(5), 1028–1038. <https://doi.org/10.1016/j.gloenvcha.2013.05.014>
- Lacan, J. (2006). *Ecrits: The first complete edition in English*. W. W. Norton & Company.
- LaMarre H. L., Landreville, K. D., Young, D., & Gilkerson, N. (2014). Humor works in funny ways: Examining satirical tone as a key determinant in political humor message processing. *Mass Communication and Society*, 17(3), 400–423. <https://doi.org/10.1080/15205436.2014.891137>
- LaMarre, H. L., & Walther, W. (2013). Ability matters: Testing the differential effects of political news and late-night political comedy on cognitive responses and the role of ability in micro-level opinion formation. *International Journal of Public Opinion Research*, 25(3), 303–322. <https://doi.org/10.1093/ijpor/ed008>
- Latour, B. (2005). *Reassembling the social: An introduction to actor-network-theory*. Oxford University Press.

- Latour, B. (2015). Waiting for Gaia: Composing the common world through arts and politics. In A. Yaneva & A. Zaera-Polo (Eds.), *What is cosmopolitical design? Design, nature and the built environment* (pp. 41–52). Routledge.
- Lee, F. L. (2013). The impact of online user-generated satire on young people's political attitudes: Testing the moderating role of knowledge and discussion. *Telematics and Informatics*, 31(3), 397–409. <https://doi.org/10.1016/j.tele.2013.08.002>
- Lekakis, E. J. (2017). Culture jamming and Brandalism for the environment: The logic of appropriation. *Popular Communication*, 15(4), 311–327. <https://doi.org/10.1080/15405702.2017.1313978>
- Levinson, S. C. (1996). Language and space. *Annual Review of Anthropology*, 25(1), 353–382. <https://doi.org/10.1146/annurev.anthro.25.1.253>
- Li, N. P., Griskevicius, V., Durante, K. M., Jonason, P. K., Pasisz, D. J., & Aumer, K. (2009). An evolutionary perspective on humor: Sexual selection or interest indication? *Personality and Social Psychology Bulletin*, 35, 923–936.
- Lülf, R., & Hahn, R. (2013). Corporate greening beyond formal programs, initiatives, and systems: A conceptual model for voluntary pro-environmental behavior of employees. *European Management Review*, 10(2), 83–98. <https://doi.org/10.1111/emre.12008>
- Lülf, R., & Hahn, R. (2014). Sustainable behavior in the business sphere: A comprehensive overview of the explanatory power of psychological models. *Organization & Environment*, 27(1), 43–64. <https://doi.org/10.1177/1086026614522631>
- Lyytimäki, J. (2022). Ecological crisis as a laughing matter: Uses of humor in environmental communication. In B. Takahashi, J. Metag, J. Thaker, & S. E. Comfort (Eds.), *The handbook of international trends in environmental communication* (pp. 464–478). Routledge. <https://doi.org/10.4324/9780367275204-35>
- Market Wired. (2011). *Jun Group shares 2011 social video trends and insights*. <http://www.marketwired.com/press-release/jun-group-shares-2011-social-video-trends-and-insights-1581761.htm> (accessed 29 March 2014).
- Marra, J. (2017). The phenomenological function of humor. *Idealistic Studies*, 46(2), 135–161. <https://doi.org/10.5840/idstudies2017112262>
- Martin, R., & Ford, T. (2018). *The psychology of humor: An integrative approach* (2nd ed.). Academic Press.
- Maslow, A. H. (1943). A theory of human motivation. *Psychological Review*, 50, 370–396.
- McClelland, D. C., & Burnham, D. H. (1976). Power is the great motivator. *Harvard Business Review*, 25, 159–166.
- McGraw, A. P., & Warren, C. (2010). Benign violations: Making immoral behavior funny. *Psychological Science*, 21(8), 1141–1149. <https://doi.org/10.1177/0956797610376073>
- McGraw, P., & Warner, J. (2014). *The humor code: A global search for what makes things funny*. Simon and Schuster.
- McGuire, W. (1978). An information processing model of advertising effectiveness. In H. L. Davis & A. J. Silk (Eds.), *Behavioral and management science in marketing* (pp. 156–180). Wiley.
- Meyer, J. (2000). Humor as a double-edged sword: Four functions of humor in communication. *Communication Theory*, 10(3), 310–331. <https://doi.org/10.1111/j.1468-2885.2000.tb00194.x>
- Meyer, J. (2021). Uniting and dividing in personal interactions: Four key functions of humor in communication. In M. Strick & T. E. Ford (Eds.), *The social psychology of humor* (pp. 57–73). Routledge.

- Mischel, W., & Ebbesen, E. B. (1970). Attention in delay of gratification. *Journal of Personality and Social Psychology*, 16(2), 329–337. <https://doi.org/10.1037/h0029815>
- Moody, G.D., & Siponen, M. (2013). Using the theory of interpersonal behavior to explain non-work-related personal use of the Internet at work. *Information & Management*, 50(6), 322–335. <https://doi.org/10.1016/j.im.2013.04.005>
- Morreall, J. (2009). *Comic relief: A comprehensive philosophy of humor*. Wiley-Blackwell. <https://doi.org/10.1002/9781444307795>
- Nabi, R. L., Moyer-Gusé, E., & Byrne, S. (2007). All joking aside: A serious investigation into the persuasive effect of funny social issue messages. *Communication Monographs*, 74(1), 29–54. <https://doi.org/10.1080/03637750701196896>
- Norgaard, K. M. (2011). *Living in denial: Climate change, emotions, and everyday life*. MIT Press.
- Osnes, B., Boykoff, M., & Chandler, P. (2019). Good-natured comedy to enrich climate communication. *Comedy Studies*, 10(2), 224–236. <https://doi.org/10.1080/2040610X.2019.1623513>
- Panda, P. (2020). Indigenous humor in Thomas King's *The Back of the Turtle*: An ecocritical perspective. *Studies in American Humor*, 6(2), 323–340. <https://doi.org/10.5325/studamerhumor.6.2.0323>
- Paoli Brunat, K. (2020). *Digital nudging for smart travel habits*. POLIS Network. https://www.polisnetwork.eu/wp-content/uploads/2020/12/2D_Katharina-Paoli-Brunat-Nudgd-AB.pdf
- Pariera, K. L. (2017). The influence of humor and amusement on mother-adolescent sexual communication. *Humor*, 30(3), 323–344. <https://doi.org/10.1515/humor-2016-0046>
- Patriarca, M., & Heinsalu, E. (2009). Influence of geography on language competition. *Physica A: Statistical Mechanics and its Applications*, 388(2–3), 174–186. <https://doi.org/10.1016/j.physa.2008.09.034>
- Pralle, S. (2006). “I’m changing the climate, ask me how!”: The politics of the anti-SUV campaign. *Political Science Quarterly*, 121(3), 397–423. <http://www.jstor.org/stable/20202725>
- Robson, A. J. (2001). The biological basis of economic behavior. *Journal of Economic Literature*, 39(1), 11–33. <https://doi.org/10.1257/jel.39.1.11>
- Schirato, T., & Roberts, M. (2020). *Bourdieu: A critical introduction*. Routledge. <https://doi.org/10.4324/9781003115083>
- Schwartz, S. H. (1994). Are there universal aspects in the structure and contents of human values? *Journal of Social Issues*, 50(4), 19–45. <https://doi.org/10.1111/j.1540-4560.1994.tb01196.x>
- Seymour, N. (2018). *Bad environmentalism: Irony and irreverence in the ecological age*. University of Minnesota Press.
- Shome, D., & Marx, S. (2009). *The psychology of climate change communication: A guide for scientists, journalists, educators, political aides, and the interested public*. Center for Research on Environmental Decisions, Columbia University.
- Skurka, C., Niederdeppe, J., & Nabi, R. (2019). Kimmel in climate: Disentangling the emotional ingredients of satirical monologue. *Science Communication*, 41(4), 394–421. <https://doi.org/10.1177/1075547019853837>
- Skurka, C., Niederdeppe, J., Romero-Canyas, R., & Acup, D. (2018). Pathways of influence in emotional appeals: Benefits and tradeoffs of using fear or humor to promote climate change-related intentions and risk perceptions. *Journal of Communication*, 68(1), 169–193. <https://doi.org/10.1093/joc/jqx008>

- Skurka, C., Romero-Canyas, R., Joo, H. H., Acup, D., & Niederdeppe, J. (2022). Emotional appeals, climate change, and young adults: A direct replication of Skurka et al. (2018). *Human Communication Research*, 48(1), 147–156. <https://doi.org/10.1093/hcr/hqab013>
- Spivak, G. C. (1990). *The post-colonial critic: Interviews, strategies, dialogues*. Edited by S. Harasym. Routledge.
- Spivak, G. C. (1999). *A critique of postcolonial reason: Toward a history of the vanishing present*. Harvard University Press.
- Strick, M. (2021). How humor can promote central-route persuasion: The role of ambivalence. In M. Strick & T. E. Ford (Eds.). *The social psychology of humor* (pp. 3–19). Routledge.
- Strick, M., & Ford, T. E. (2021). *The social psychology of humor*. Routledge.
- Taflinger, R. F. (1996). *Taking advantage*. Washington State University. <https://public.wsu.edu/~taflinge/advant.html>
- Tom, C. (2020, April 20). The other side of the mountain. *The New Yorker*. <https://fineartamerica.com/featured/the-other-side-of-the-mountain-colin-tom.html>
- Twark, J. (2007). *Humor, satire, and identity: Eastern German literature in the 1900s*. De Gruyter. <https://doi.org/10.1515/9783110958140>
- Webb, J., Schirato, T., & Danaher, G. (2002). *Understanding Bourdieu*. Sage.
- Wettergren, Å. (2009). Fun and laughter: Culture jamming and the emotional regime of late capitalism. *Social Movement Studies*, 8(1), 1–15. <https://doi.org/10.1080/14742830802591119>
- Wyer, R. S., & Collins, J. E. (1992). A theory of humor elicitation. *Psychological Review*, 99(4), 663–688. <https://doi.org/10.1037/0033-295X.99.4.663>
- Young, D. G. (2008). The privileged role of the late-night joke: Exploring humor's role in disrupting argument scrutiny. *Media Psychology*, 11(1), 119–142. <https://doi.org/10.1080/15213260701837073>
- Young, D. G. (2020). *Irony and outrage: The polarized landscape of rage, fear, and laughter in the United States*. Oxford University Press. <https://doi.org/10.1093/poq/nfaa020>
- Young, D. G., & Esralew, S. E. (2011). Jon Stewart a heretic? Surely you jest: Political participation and discussion among viewers of late-night comedy programming. In A. Amarasingam (Ed.), *The Stewart/Colbert effect: Essays on the real impact of fake news* (pp. 99–116). McFarland.
- Zekavat, M. (2017). *Satire, humor and the construction of identities*. John Benjamins. <https://doi.org/10.1075/thr.6>
- Ziv, A. (1988). *National styles of humor*. Greenwood Press.

5 Humorous and Satiric Environmental Advocacy in Popular Culture

After reviewing the theories and models of environmental behavior and exploring the promises of humor and satire for environmental messaging and advocacy in chapter 3, we proposed a more comprehensive model for understanding pro-environmental behavior that goes well beyond individual psychology through locating behavior within the society and ecosphere in chapter 4. Using the insights offered by the Modular Interdependency Model (MIM), we will revisit three instances of far-reaching cultural productions in this chapter in order to investigate how the determinants of pro-environmental behavior can explain their potential impact. MIM promises to have both descriptive and predictive potentials. This chapter primarily utilizes its descriptive powers, while the next chapter will further elaborate on its predictive promises.

The descriptive potentials of MIM provide an opportunity for environmental humanities and ecocriticism to break new ground and proffer refreshing critique that has the potential to be practically employed for activist purposes, to advocate behavioral change, and to foster resilience. The call for “Humanities on the Brink: Energy, Environment, Emergency” conference (Association for the Study of Literature and Environment, 2020) sponsored by the Association for the Study of Literature and Environment (ASLE) and the University of California, Santa Barbara astutely points to a major drawback of the academic discourse in,

discussions carried out among specialists in language that ordinary people find off-putting or simply unintelligible; discussions that too rarely translate to meaningful action; discussions that perpetuate academic “business as usual,” advancing the careers of individual humanists but mostly failing to spark collective change and the growth of the sorts of inter- and extra-disciplinary alliances that hold the greatest promise of actually transforming the petrocultural impasse we currently inhabit. (n.p.)

In the era of post-truth, humanities have missed many opportunities to make substantial interventions in the dominant environmental discourse that is replete with gloomy, fear-inducing news and apocalyptic premonitions.

One might even suspect some scholarly discussions were primarily aimed at perpetuating an inaccessible position reserved exclusively for Western intellectuals through inducing the illusion that they are the first responders to an impending global apocalypse, while, at least partly, they aimed at securing funding and tenure-track positions to serve their vested interests. No wonder these academic efforts have failed to be fully consequential in mobilizing the public and policymakers. This is while literature and culture have traditionally reached the masses well beyond mere aesthetic concerns and have been engaged with pertinent socio-political issues.

Several critics and thinkers, of course, have noticed this drawback. Edward Said (2002, p. 23), for one, warned against the “hermetic, jargon-ridden, unthreatening combativeness” of the intellectual discourse of humanities. Living up to the ideals of a genuine public intellectual used to be more difficult when communication outlets were more limited, easier to regulate, and manipulate, still literature did not fail to play its socio-political role despite these impediments. Ironically, however, we seem to increasingly fail to live up to our responsibilities at the age of communication and information technology. While advances in IT and social networks have opened unprecedented possibilities in easily, quickly, and inexpensively reaching out to the public, intellectuals seem to have largely failed to effectively employ huge possibilities offered by the great diversity of decentralized platforms in order to spark and perpetuate collective sustainable transformations.

The public sphere, nonetheless, entails tensions (and to a lesser degree competitions) between the interests of the powerful and the silenced. The role of an intellectual is to expose these contests and give voice to the silenced and marginalized (Said, 2002). In the words of Said (2002, p. 39),

the intellectual’s provisional home is the domain of an exigent, resistant, intransigent art into which, alas, one can neither retreat nor search for solutions. But only in that precarious exilic realm can one first truly grasp the difficulty of what cannot be grasped, and then go forth to try anyway.

By examining humor and satire as highly engaged literary and cultural forms, we attempt to reveal how humanities can make meaningful interventions in the contemporary world. By going beyond traditional disciplinary boundaries, we hope to suggest that tackling a complex, global challenge requires a holistic outlook, which can be partly realized through drawing on the methodologies and theories of other disciplines. In this way, new critical and methodological insights can emerge that may enrich and fathom our engagement with ecological crises. Besides, technology and science have failed to amend the situation, and we believe this is partly because the scale and complexity of environmental challenges require a holistic approach that encompasses scientific, technological, and cultural solutions. As humor and satire are prevalent in different walks of life, especially with

the unprecedented burgeoning of cyberspace and social networks, it is increasingly significant to investigate their potentials for bringing about pro-environmental behavioral change.

Moreover, reassessing the potentially negative and positive impacts of entertainment and popular culture on climate action is significant for several reasons. These forms of cultural production usually boast of a much larger audience as compared to ‘elite’ forms. Moreover, they usually reach a much more diverse audience partly because of the media of expression they employ and the ease with which they can travel and morph into memes or go viral on the cyberspace. Many shows that are produced in one country are also aired or streamed in many others with a very short delay, if not simultaneously. But their impacts do not stop there: there are many (intercultural) adaptations and appropriations of successful comedy shows. As a result, the role of economy in the production, circulation, and reception of these cultural artifacts is much more pronounced. Some successful comedy shows boast of impressive revenues (for example, Gray, 2006; Shaw, 2021) which they frequently supplement with producing and marketing merchandise. Likewise, the advertising industry often resorts to humor in order to attract the attention of consumers. In the context of environmental thought, humor can be used to market sustainability as a comparative advantage of a product. It is, of course, also prone to be manipulated for the purpose of greenwashing.

In this chapter, we will show how humorists and satirists have been employing some of the factors we identified as impacting environmental behavior in their practice. This does not mean that humorists and creators have always been consciously resorting to psychological insights or critical theory for the purpose of environmental advocacy. Rather, it shows how they have intuitively found these factors to be relevant and useful, so they integrated them into their creative works.

The Simpsons

We have selected the animated comedy show *The Simpsons* for our first case study. Scholarship has not yet paid due attention to animated shows that have been historically trivialized and dismissed. Nor have ecocritics been very keen in embracing animation shows (Murray & Heumann, 2011; Seymour, 2018; Starosielski, 2011; Wells, 2013; Whitley, 2008; Whitley & von Mossner, 2014). Rather, relatively limited research has been dedicated to studying what Pike (2012; see also Whealy, 2014) has called enviro-toons.

Environmental animation is defined here as a genre of environmental media that uses animated form (and its strengths of abstraction and simplification) to deliberately construct knowledge about the social and ecological processes that affect us and/or the characters and therefore assist in the creation of environmental subjectivities.

(Starosielski, 2011, p. 146)

This scarcity of scholarly attention is despite the fact that both the technical features and conventions of animation seem to allow for more flexibility and flights of fancy in production.

The Simpsons has a rather unique status among animated comedy shows due to the phenomenal success of its debut, its runs and reruns, ratings, and outreach. Relying on its vast viewership and numerous recognitions including nominations and awards, the show has proved to be very lucrative, producing an exceptionally high revenue (Gray, 2006; Stabile, 2003). Besides its success, *The Simpsons* has exerted a considerable influence on popular culture both in the US where it is produced and elsewhere in the world. Some critics have even gone so far as to call it “a front-runner for other televisual parodies and for the parodic humor ... from *South Park* to *The Daily Show with Jon Stewart*” (Gray, 2006, p. 7).

The Simpsons has been concerned with environmental problems and environmentalism in many episodes. The weird looks of Springfield people, the color of their skin, the three-eyed fish swimming in its pond, and the three-eyed crow flying in its sky are explained by the radioactive waste from Mr. Burns’ nuclear power plant. The city features a huge pile of tires constantly burning, and deforestation, environmental damage and destruction, animals and their rights, Lisa’s occasional environmental horror, and her ethically and politically correct attitudes are just some of the environmental themes that have frequently resurfaced during the show’s long history. Many episodes during the last three decades have made references to environmental issues that range from short allusions to more sustained treatments. These include environmental politics, environmental taxation, animal rights, animal cruelty in fashion industry, veganism, rainforests, fossil fuel industry, global warming, carbon emissions, renewable energy, electric mobility, pollution, light pollution, radioactive waste, and apocalyptic predictions (for example, 4.12; 8.5; 11.2; 11.3; 11.9; 11.14; 12.5; 13.21; 14.7; 14.8; 14.16; 14.18; 14.20; 14.21; 16.15; 19.19; 20.17; 20.21; 21.6; 21.8; 21.20; 22.3; 22.5; 22.8; 23.9; 25.1; 25.08; 25.10; 27.20; 29.10; 30.09).¹

As the show has been running since 1989 and its total number of episodes has so far exceeded 700 up to its currently aired thirty-fourth season, we will delimit our study to a small sample of episodes, which feature environmentalism as their primary theme. We contend that *The Simpsons* employs satire and humor to engage with the social (that is, economic, political, cultural), individual, and ecospheric determinants of behavior in order to chastise environmentally unfriendly attitudes, behaviors, and policies and to advocate critical environmentalism. The show avoids treating environmental issues in a void by locating issues like nature, flora, and animal rights in human-nature and human-human relationships, as well as in the framework of environmental justice. This, however, is not enough to ensure a consistently positive environmental impact for the show.

The urgency of saving nature and the apocalyptic consequences of its destruction at the current rate recur in different episodes. “Lisa the Tree

Hugger” (12.4; 2000) opens with commenting on how the use of paper in the advertising industry for the purpose of boosting business is expediting the rate of deforestation. While some corporations increase their negative environmental impact by wasting paper, others clear rainforests to create grazing pastures for animals that will be later slaughtered for their meat. A group of young eco-radicals named “Dirt First,” a thinly veiled variation on Earth First!, undertakes to resist these environmentally destructive activities. Although environmental activism is at the same time associated with social justice and racial diversity as Homer and Marge comment on the situation of refugees at their table,² the major theme concerns how the environment is being manipulated and destroyed by corporations in a capitalist system for financial vested interests. In other words, the episode underscores the economic aspects of environmental behavior and criticizes corrupt politicians in the figure of Mayor Quimby. Lisa and Dirt First try to stop the logging of Springfield’s oldest redwood tree, which culminates in a promise by the Texan billionaire to build a natural preserve to commemorate Lisa’s attempts to save the tree on the site. However, he actually transforms the site to an amusement park, instead.

The episode employs satirical rhetoric against the voracity of corporations in order to warn its audience about the impacts of the lifestyle they choose. Besides their immediate environmental impact, corporations do not hesitate to manipulate any other environmentally destructive means to boost their business in a consumer culture. The very same issue of saving trees turns out to be the object of satire in “Homer to Max” (10.13; 1999) when it is undertaken by Springfield’s A-List hypocrites and the self-satisfied, who are happy with mere empty gestures rather than putting their power, money, contacts, and influence into taking meaningful action. The satire of “Lisa the Tree Hugger” is ambivalent in that it criticizes not only environmentally destructive attitudes and behaviors at individual, corporate, and policy-maker levels, but it also chastises the stereotypical environmental activism. Jesse, the young Dirt First activist, practices yoga and identifies as a level-five vegan who does not eat anything that casts a shadow. Marge thinks he would be cute, if he were not an idealist. Similarly, Dirt First members grieve when the log hits and destroys a hemp factory. Elsewhere, we learn that Dirt First has a vacancy for a new member at the poser level.

The episode concludes with the log sweeping over the land, which might be interpreted as a wave of consciousness rippling the public opinion. Despite this positive note, satire clearly exposes and targets single-action bias and tokenism (see chapter 3) for hindering genuine and consequential environmental behavior. When confronted with the difficulty of living in a redwood to save it, Lisa says she had not thought it was so hard and maybe she should circulate a petition instead.³ Interestingly enough, it is the challenge of being teased, when a bird mocks her for chickening out of her promise, that cajoles Lisa into action. Moreover, her primary motivation for acting pro-environmentally is to attract the attention of Jesse. Her thoughtlessness

even costs the tree its life when it is struck by lightning because of the bucket Lisa hung on it. In other words, it is the need for being acknowledged and accepted by a peer that drives her into pro-environmental action. The episode, therefore, acknowledges that social norms and a desire for belonging and communal affiliation can entice pro-environmental action even in the absence of environmental attitudes, values, and beliefs.

Lisa adopts a different strategy in “Scuse Me While I Miss the Sky” (14.16; 2003) to reduce light pollution that has disturbed the life of both animals and human beings in Springfield. After an attempt to get people to sign a petition that eventually fails when they change their mind as the crime rate increases, Lisa, following Gandhi, chooses civil disobedience instead of head-on resistance to solve the problem. Her eventual triumph brings the night sky back at the time of a meteor shower, which makes everyone happy. Humor in this episode debunks the belief that overemphasizes the impact of lighting in crime control in cities. People and public authorities think crime will increase if they reduce lights. Given the plethora of socio-economic factors—like poverty, inequality, and discrimination—that impact crime rate in a society, this overemphasis is a misjudged perceived behavioral control that leads to adopting an environmentally unfriendly policy. Besides, the episode aspires to introduce a conceptual alternation in the attitudes of its audience through exploring and suggesting various strategies of environmental activism and socio-political resistance.

Global warming has also received a great deal of attention in *The Simpsons* (for different references, see 12.5; 16.15; 21.8; 25.8). In one instance, students of Springfield Elementary School go on a field trip only to find that the glacier has almost completely melted down in “On a Clear Day I Can’t See My Sister” (16.11; 2005). Instead of the actual glacier that is now melted down, school children see its pictures and buy its postcards. Lisa blames global warming, while the State’s standpoint is voiced by a ranger who denies global warming outright. When Lisa objects to him, he says, “I have a little girl just like you at home. That’s where she stays. AT HOME!” In this way, the episode correlates denialism and sexism and associates them with governmental policies. This attempt toward presenting a more nuanced picture of ecological issues persists to include ageism, as well. Homer and Marge go to Sprawl-Mart, a department store named to parody Walmart. At the entrance, there is a stockpile of Mono Lisa paintings followed by another stockpile of dogs. While Homer is commenting on consumer capitalism, Grandpa, who now works as a greeter at Sprawl-Mart, welcomes the couple. But his senility hinders him from offering them a cart without hurting himself.

Meanwhile, school children are visiting the glacier gift shop where the grieved Lisa expresses her envy for the “pre-modern man” at the sight of an “Ice-Age Family Life” exhibit. During the field trip that aims to raise ecological awareness, she is repeatedly singled out and derided for her environmental consciousness, but she does not give up and tries to move her

fellow students to action by employing rhetoric: "Glaciers are nature's alarm clock, and it's time for us to wake up." Yet, it is Bart's flatulence ribaldry that wins the children in the end. Besides sexism and ageism, the episode binds the destruction of nature with juridical manipulations in a suing culture when Lisa manages to get a restraining order on Bart, which leads to his quick descent into primitive barbarism and savagery. Lisa's rhetoric proves ineffective as compared to Bart's humor, but since his humor is misdirected, it inevitably leads to barbarism. This is a clear suggestion for the potentials of humor and satire to which environmental attempts must avail themselves, while warning against the unwise use of the rhetoric of satire for promoting unjust causes or silencing dissenting voices. ProSieben, a German TV station, censored this episode after the 2011 Tōhoku earthquake, tsunami, and their subsequent nuclear emergency which shows that the media seems to be fully aware (and manipulative) of the potential consequences of satire, while several scholars continue denying them.

The Simpsons repeatedly employs satire to advocate animal rights, too. Poaching and ivory trade are condemned in "Bart Gets an Elephant" (5.17; 1994) where Bart decides to ask for the foolish prize given by a radio station instead of \$10,000 in cash. "Million Dollar Abie" (17.16; 2006) is a satire against the irrational violence of bullfighting and how people abuse animals in order to compensate for their feeble social standing. Ironically, deer do not thrive at Santa's village in "The Bonfire of the Manatees" (17.1; 2005) where Marge finds a purpose in her life in saving manatees, and Homer wins her back by defending them. "Stop! Or My Dog Will Shoot" (18.20; 2007) is again concerned with animal rights in the case of police dogs, and "Maximum Homerdrive" (10.17; 1999) is about violence against animals and human greed. Human voracity for meat in the latter episode provides a contrast to Lisa's vegetarianism.

After an encounter with a cute lamb, the morality of (mal)treating animals haunts Lisa in "Lisa the Vegetarian" (7.5; 1995). As soon as others discern traces of her transgressive behavior, everyone is alarmed, and "corporate propaganda" attempts to remove the slightest signs of independent thought by brainwashing school children in the system of education as an ideological state apparatus. Lisa stands up for her just cause against everyone including her father but soon finds that opposing and condemning everyone is not the way to promote animal rights. She learns that she must be tolerant even toward those she is convinced are wrong after she finds Apu feels the same toward her as she feels toward those who eat meat because she consumes dairy products. Apu, an Indian whose culture demands respecting animals, more specifically cows, says he has learned to tolerate people instead of "forcing [his] beliefs on them." Addressing Lisa, he maintains, "you can influence people without badgering them always.... Live and let live." In order to support environmental causes, one has to be tolerant. It sounds contradictory to promote the rights of other species without being tolerant oneself. Satire censures both environmentally unfriendly behaviors

and violent treatment of animals, and, at the same time, hypocritical environmentalist attempts that achieve no more than further alienating people from green causes. The episode ties the celebration of difference and diversity and appreciation of minority cultures with its environmental concerns by showing how vegetarian identities are not homogenous, and how other cultures might offer more sustainable lifestyles as compared to the Western culture. It exposes how hypocrisy ingrained in individual attitudes can incite antipathy in the target audience of environmental messages and underlines the role of cultural, ethnic, racial, national, and religious insights in determining individual behavior in the figure of Apu.⁴ Moreover, the episode also conveys how (corporate) economic interests might shape educational policies in order to instill and reinforce norms that condition social subjects starting at an early age.

Although Bart frequently assumes the role of a foil for Lisa and almost always teases her environmental concerns, the inhumanity of animal farming is so appalling that it even repels him. In "Apocalypse Cow" (19.17; 2008), Bart joins 4-H, a youth organization, and is assigned to raise a runt to a healthy cow. On winning the contest, Lou, the calf he has raised, is chosen to go to the slaughterhouse. Bart, who has made an attachment to it, insists that the Simpsons should do all in their possibilities in order to save it. At Lisa's urge, Bart even resolves not to taste meat again if he can save Lou. Meanwhile, Lou is being fed growth hormones at the animal farm to be prepared for slaughter. Desperate to save Lou, Bart decides to make a personal sacrifice and marry in order to save the cow, but when the wedding is called off at Marge's intervention, the cow has to go to the feedlot again. The Simpsons finally manage to fly Lou to India with the help of Apu.

The inhumanity of intensive animal farming and the violence of slaughterhouses are two objects of satire in this episode. Satire draws attention to the economic aspects of environmental behavior; meanwhile, it does not spare uncritical environmentalism either. When trying to break into the feedlot and save Lou, Lisa utters "milk is murder" as a signal to ask for help from two animal activists who confirm her signal with "cheese is genocide." The show clearly pokes fun at hyperbolic and uncalculated environmental gestures that might attract criticism and skepticism to the cause of environmental movements and accordingly do more harm than good through unwise moves. Satire, therefore, provides information about the inhumanity of industrial animal farming and censures uncritical environmental attitudes that can impede legitimate concerns to be publicly voiced and debated. Further, the episode makes the viewers reconsider their role in supporting factory farming. Although faced with the fear of losing the cow he has raised and willing to make sacrifices to save its life, Bart admits, "I can't be a vegetarian. I love the taste of death." Likewise, when Homer is confronted with the cruelty of industrial animal farming, he says, "The things I saw makes me never wanna eat meat again. Just fish, chicken, burgers, veal on Fridays, deer, but only in season, and, if necessary, human."

This is a comment on the difficulty of overcoming the intention-action and attitude-behavior gaps; more specifically, it foregrounds the difficulty of changing habitual behavior.

"Whacking Day" (4.20; 1993), however, attributes irrational and unnecessary violence against animals to a different reason by historically tracing snake whacking as a traditional requirement of rituals. The reason behind the rise of such traditions, however, is an attempt to compensate for human shortcomings and failures. It is implied that the irrational mob mentality of killing snakes with a whacker is an attempt to compensate for the lack of masculinity and virility. Therefore, viewers are asked to search their individual lives and psychologies instead of projecting their fears and aggression onto nature. Bart unearths yet another cause when he finds that the whacking day was actually started as an excuse to beat up the Irish. The episode, therefore, exposes the true motives behind some environmentally destructive behaviors (one can think of other instances of hurting animals to prove masculinity in history) and challenges values, beliefs, attitudes, and norms about hypermasculinity and racism. Lisa tries to persuade people not to turn down on snakes after all they have done for them, but it is not easy to support the instrumental value of serpents by providing evidence from daily life. One senior citizen confesses that they have killed rats in her basement, and Bart suggests that another reason could be because Barry White likes them. White confirms this by saying, "I love the sexy slither of a lady snake. Oh baby!" Redefining the traditionally phallic symbols as an anthropomorphized lady and appealing to an emblem of masculinity in the figure of White might be another reformatory attempt. Eschewing deep ecology and intrinsic values of snakes to keep the argument weak, satire strives to enhance its effectiveness and persuasive powers through the mechanisms we discussed in the previous chapter. The moderate level of complexity can explain the reason why this episode was used to effectively mobilize Australian citizens in North Queensland in a recognized extermination program for pest control against the invasive non-native species of cane toads (Ahius & Schwarten, 2011).

"The Fat and the Furriest" (15.5; 2003) also takes a similar approach to understanding human attempts to dominate nature through destroying it. Suffering from the ensuing humiliation of a bear attack, Homer is advised by Abe to find the bear and fight him back. Homer responds, "Can I fight human style? By slowly poisoning his environment, until he loses his hair and becomes sterile?" Far from a heroic fight, the irony in his remark suggests treacherous cowardice. After succeeding to face his fears, Homer finds that the bear's aggression was caused by an electronic tracking device. When he removes the tag, the bear shows gratitude in return, to which Homer responds, "we are not so different." Homer tries to deliver the bear to an animal sanctuary, while an army of hunters shoot at it. Being admitted to the "vacancy" of that preserved habitat, the bear finds itself fighting with an elephant; meanwhile, Homer concludes by reflecting on the cycle

of life. Although death and suffering are parts of life for all creatures, human interventions make it much more difficult for other species to sustain themselves. In other words, the episode distinguishes the natural circle of death and revival with the irreparable destruction caused by human disruption. The satire against hypermasculinity and its negative environmental impacts also resurfaces again. The hunter who has videotaped Homer wears a mustache and lives in a place decorated by numerous head wall mounts and taxidermized animals. He drinks from a penguin drinking container and eats frozen butterflies and raw eagles for snacks. The hunter is the one who has stuck the electronic tag to the bear's ear in the first place; when Homer throws the same tag into a lake, all fish die and a scuba diver floats upside-down. Homer's initial cowardice and his sheer lack of competence in dominating nature serve as a contrast to the hunter's way of life. The hunter actually suggests at one point that Homer might be accompanying the bear as "a forest bride" toward the sanctuary. However, it is Homer's care that eventually saves the bear, while the hunter's hypermasculinity is defeated. The episode, therefore, foregrounds the social and cultural determinants of environmental behavior, underlining the significance of gender roles. Exposing the links of hypermasculinity and mastery of nature and redefining courage as care, it encourages the audience to revisit their values, beliefs, attitudes, and norms.

The Simpsons, therefore, does not stop at merely castigating destructive and environmentally unfriendly behavior through advocating alternative lifestyles. The show also strives to investigate the etiology of these behaviors and attitudes. As we saw in "Whacking Day" and "The Fat and the Furriest," the logic of domination, to borrow Warren's (2000) term, in human-nature relationship is among the reasons behind the environmentally destructive behaviors that the show identifies. Several episodes narrate the story of human beings' attempts to assert and maintain their domination over nature. For one, Springfield Power Plant's employees team up against nature to conquer a mountain and avalanche in "Mountain of Madness" (8.12; 1997).

In "Two Cars in Every Garage and Three Eyes on Every Fish" (2.4; 1990), Burns decides to run for the Governor's Office in order to secure more privileges in the business world, but the discovery of a genetically mutated fish in the pond near his power plant impedes his success. The episode shrewdly implies a parallel between voracity for power in man-nature rapport and in the relationship between politicians and people. It implies that as politicians are corrupt in their attempts to gain political power, human beings' attempts to conquer nature are also indecent. In a conversation, for example, Burns asks, "Simpson, do you realize how much does it cost to run for office? More than any honest man can afford." By this, he is seriously questioning not only his own but also all politicians' integrity and intentions in their political campaigns.

The discovery of the three-eyed fish and the attribution of its mutation to Mr. Burns' plant affect his political campaign and poll numbers. But

as he does not hesitate to manipulate anything to promote himself, he co-opts this for an advertisement to promote his campaign. While on air, he mistakenly says, "By the time this paid political announcement is done, every Johnny Lunchpail in this whole stupid state will be eating out of my hands." This shows how politics and politicians manipulate the media, polemics, and even scientific facts (as emblemized in the figure of Charles Darwin appearing in the advertisement) in order to win public opinion in the fictional world of Springfield and eventually to serve their vested interests. The genetic mutation caused by radiation and radioactive waste from Burns' power plant is framed as a stage of the evolution of the species by an actor playing Darwin. In other words, this unsettling environmental disruption is represented and interpreted as an improvement for the species. Subsequently, Burns concludes, "Say what you want about me. I can take the slings and arrows. But stop slandering poor, defenseless, blinky [that is, the three-eyed fish]. Goodnight and God bless."

This statement actually wins voters as in the case of people watching TV at Moe's and the retirement house, despite the fact that Burns unashamedly condescends citizens based on their socio-economic status. He contemptuously refers to working-class voters as Joe Sixpack, Johnny Lunchpail, Joe Meatball, and Sally Housecoat. When his opponent, Bailey, accuses him of appealing to "gullible fools," while she plans to "rely on their intelligence and good judgments," the reporters ironically wish her good luck. This can have two different effects on the audience: it might expose how politicians manipulate rhetoric to sway public opinion for the purpose of securing the interests of a small group. Thus, it invites us to critically reflect on and reassess political polemics and media debates. Alternatively, it might be an ironic strategy that targets the audience. By attributing gullibility to others, we are falling into the trap of satire as Jonathan Swift saw it. In his "Preface" to *The Battle of the Books*, he defines satire as "*a sort of Glass, wherein Beholders do generally discover every body's Face but their Own; which is the chief Reason for that kind of Reception it meets in the World, and that so very few are offended with it*" (Swift, 1965, p. 140, original italics).

Meanwhile, Mr. Burns resorts to all sorts of possible pretensions to win more votes. He resorts to populist polemics to attract voters and looks for dirt on his opponent. His campaign manipulates the media to spread lies and promote his candidacy, and his manager makes Lisa ask Mr. Burns about the reasons behind his popularity, but when she says she would rather ask him about the environmental impact of his business, the manager and Homer insist that she should simply memorize and ask the scripted questions she is given to. While Marge and Lisa object to Burns' campaign, Homer supports his employer. Resorting to the same strategy that women employ to end the war in Aristophanes' *Lysistrata*, Marge refuses to snuggle with Homer in bed. She complains that she does not get a chance to express herself, but Homer tells her she must be happy with keeping the house and serving food. This is apparently a condescending attitude toward a

woman with some intellectual and artistic aspirations and moral compass. So alongside man-nature and politician-public relationships, a third power relationship is criticized: man-woman. This reductive association of women with homemaking gives Marge an idea to undermine the whole charade. She cooks for the dinner that is supposed to be the ultimate boost to Burns' campaign at the night before the election and serves him with the same three-eyed fish. His political prospects diminish as he cannot swallow even a single bite.

Subordinating and silencing women, therefore, is associated with environmental oppression. Interestingly enough, it is a woman who can save the day through the household chores, namely, cooking, she has been associated with. This shows how a predefined gender role can be turned into an effective resistance strategy: women might co-opt the very norms and expectations that have impeded their social lives in order to resist and subvert them. Marge astutely employs her domestic role as a wife, mother, and housemaker in order to bring down a corrupt aspirant to political power who seeks public office for the purpose of circumventing environmental regulations. Besides gender identity, regulatory systems, and bodies, this episode underlines the role of society, namely, politics and economy, in environmental behavior. It depicts how the socio-economic situation of middle and working classes determines their values, attitudes, and beliefs. It further reflects on representative democracy as an institution, its dynamics, and (in) efficacy, with a focus on ecological challenges.

"The Wife Aquatic" (18.10; 2007) tells the story of the Simpsons' voyage to an Island and Homer's attempts to revive its glory in order to make Marge happy again. It ties Marge's childhood nostalgia and subsequent disillusionment (see our discussion on memory in chapter 3) to putting a strain on the environmental resources by human beings. The brutality of clubbing fish and the rage in Homer's facial expression is incongruously juxtaposed with romantic music to satirize false notions about idealizing nature and romanticizing natural adventures. The episode also warns against the impending threat of climate change and sheds critical light on denialism. When an object on exhibit shows how climate change will cause sea level rise and inundate cities in just three years' time, Marge says, "Three years is a long way away." This is an instance of the delay of gratification and judgmental discounting where risks are underestimated because of their temporal distance (see chapter 3 for a more detailed discussion).

Homer's sheer ignorance and its resulting inappropriate and destructive environmental attitude and belief is satirized in his incongruent and desperate prayers when he is drowning:

Oh, Mother Sea, giver of fish, taker of boats, toilet to the world, the Greeks call you Poseidon, the Romans—Aquaman. Look into thy starfish heart and protect our souls so we might live to go tubing on thee again.

After their ship is wrecked, the crew is ironically fished out in the net of a Japanese fishing ship. Immediately after the disaster, townspeople decide to celebrate the survival of the crew by fishing yum yum fish, but Lisa intervenes to remind them that “overfishing and greed has brought this town nothing but rack and ruin.” Standing at the door of a New England church, Lisa enthusiastically urges people to repent their environmental sins. This binds environmental destruction with the American history of puritan settlement colonialism and racial and ethnic strife. Lisa’s perspective redefines the role of belief systems by expanding beyond the notion of otherworldly duties that grant humans stewardship and unrestricted liberties to exploit nature for their needs. Rather, she emphasizes the need for a broader perspective that recognizes sin as a violation not only of religious teachings but also of the universal harmony and balance of the world.

This addresses yet another reason behind the intention-action gap, namely, belief in solutions outside of human control. Lisa strives to incite a sense of guilt in order to channel religious zeal for the purpose of persuading people to live up to their religious responsibility in protecting nature.

Agreeing with Lisa, the community decides to find another way to make money without depleting the oceans, so they start logging. Excessive timber extraction, however, triggers deforestation and soon gives way to the next environmental crisis. The grim irony indicates that people are over-consuming natural resources in one way or another and that *Homo sapiens* are draining the nourishing and sustaining resources of the planet. Satire manages to locate different but related ecological crises into the ecosphere and underscore the symbiotic relationship between communities, place, and animal and plant species. This episode, therefore, gives a strong premonition about impending apocalyptic doom in good nature and a clear and loud warning against the inevitable result of our motives, attitudes, beliefs, and values. It further acknowledges that environmental degradation leads to poverty and that its impacts are largest among vulnerable communities.

In “The Squirt and the Whale” episode (21.19; 2010), a similar cautionary message is conveyed regarding the adverse effects of excessive human consumption of electrical energy. After receiving a high electricity bill, the Simpsons try to save power. Meanwhile, Lisa maintains, “While I agree reducing consumption is great, it’s hard to make permanent changes in your lifestyle.” In other words, the show underlines the impact of lifestyle on environmental behavior and acknowledges the difficulty of changing it. Instead of changing their consumption habits, therefore, they decide to resort to renewable energy. Renewable energy, however, has two important drawbacks: first, it is expensive; second, it is not always reliable. When Homer asks how he can afford wind power, he is told “well, there are tax credits, government rebates. It will pay for itself in twelve to eighteen—” “Months?” “Lifetimes.” Besides, since wind does not always blow, the Simpsons have to live only “intermittently.” The object of satire, therefore, is our unwillingness to embrace more radical changes and alter our lifestyles. We are not willing to make any

real sacrifices and easily become complacent on rather superficial changes. While the episode roots for more fundamental transformations, it also disavows a false belief that leaving lights on when you are away makes your home safer against robbers. When the family leaves for the renewable energy expo, leaving their lights on, Snake Jailbird arrives at their home, saying, "Do you think I'm like an idiot? I'm gonna enjoy pooping on their carpet."

After depicting the inconvenience of renewable energies, a storm hits Springfield. Bart and Lisa find medical waste alongside a beached whale on the shore. Lisa tries to save the whale, but her attempts come to nothing, and the whale dies. While keeping the whale's company, she dreams that army helicopters have come to her rescue. This is a satire on how our resources are misplaced where they can bring destruction, that is, through militarization and war, instead of ameliorating difficult situations for all creatures. After the whale dies, people explode her corpse, which causes even more damage. While human beings consume all parts of the dead animal, baby whales, or as Lisa calls them, Bluella's children, visit the beach only to be surrounded by sharks. Lisa sinks into environmental anxiety and then despair by concluding that these whales are also doomed and that this must be nature's way. But Homer appears on the scene, demurring "Nature is a toothless, dying hag. We are gonna save those whale babies." Their plan is interrupted by eco-activists trying to save the lives of sharks. They aver that "being a true eco-activist means supporting every animal's struggle for life—except for cockroaches." Homer condemns it that the "eco-jerks ... use words to talk" and attempts to harpoon a shark, but Lisa intervenes, which leads to his shooting down an innocent bird. Satire attacks the inaction and complacency of some environmental activists and human interventions in nature whether in upsetting its balance, or in attempting to restore it. Ironically, their father saves the baby whales and Homer who is about to be devoured by sharks. It is nature that eventually saves human beings rather than vice versa. This episode, therefore, appeals to behavioral determinants rooted in economy, beliefs, and lifestyle to encourage pro-environmental behavior.

We have already noted how some episodes approach environmental justice mainly by demonstrating the connections of different types of oppression and linking environmental issues with pertinent socio-political ones. Environmental justice is the focus of "The Old Man and the Lisa" (8.21; 1997) that investigates the relationship between capitalism and laissez-faire system with environmental problems through contrasting a progressive sensitive girl with an old man fixated in the past with his stock shares in slave trade over the issue of recycling. Burns, the owner of the Springfield nuclear power plant, assumes animosity with nature as he believes human beings can do without "her" despite Lisa's objection. Burns maintains that "Family, religion, friendship. These are the three demons you must slay if you wish to succeed in business." Yet, Burns' fortune is lost, and he is broke and moves to Smithers' before his lack of basic social skills persuades people

he has lost his mind, leading to his commitment to the Springfield Retirement Home. Meanwhile, Lisa has been trying to support recycling—which she believes to be arduous and should not be fun—by producing more waste in an inherently paradoxical move. When she cannot find enough trash, the drunk Homer advises her to search the “old folks’ home ... [who] practically live in their own filth.” Ageism, therefore, resurfaces again. At the retirement home, Burns tries to win Lisa back and persuade her to help him rebuild his empire.

Besides emphasizing the ineptness of some environmental moves, this episode conveys how these attempts are frequently co-opted to reinforce capitalism. Burns manipulates Lisa’s advice on how six-pack holders trap fish to sweep the seabed, overfish, and manufacture a multipurpose product. Having learned that Burns has not changed, or more accurately, he has changed for the worse, Lisa concludes that recycling is murder as it would help Mr. Burns. The environmentalist world she previously envisioned and took pains to promote turns out to be a dystopic nightmare that causes unprecedented environmental destruction while serving capitalism and its “we-can-do-without-nature” motto. Lisa’s integrity stops her from accepting 10% of the considerable price of Burns’ Little Lisa Recycling Company, but this does not change the fact that the company is still sweeping the sea and that Burns has won his nuclear power plant back again. Alongside a mild satire of misguided environmental attempts and their ineptitude, this episode accuses capitalism not only of causing and aggravating environmental problems but also of co-opting, and hence defeating, environmental activism. Besides, satiric treatment of Burns’ and Homer’s misconceptions about nature and its relationship with human beings and culture aims to raise consciousness as a reformative move. Thus, economy and behavioral controls are foregrounded as major determinants of environmental behavior.

Burns, however, continues to maintain his animosity against nature. Alluding to colony collapse disorder, “The Burns and the Bees” (20.8; 2008) is about Bees dying all over the world. They suffer from measles, so Professor Frink proposes that Lisa should attract enough healthy bees in order to start a new colony. Appealing to prevention goals, Lisa tries to persuade Homer to help her save bees by summoning their instrumental values, that is, not what they do for nature including pollinating flowers but what they bring human beings, that is, honey. She makes sacrifices by providing a provisional habitat for the healthy bees to thrive on her face, before Marge is reminded of the abandoned greenhouse that provides a place for the colony to live until Burns demolishes it to construct his new basketball arena to attract fans who will ensure the prosperity of the team he has won in gambling. Lisa responds by a passionate speech to win the favor of townspeople against the demolition when she implies that saving bees is saving people’s souls. Nevertheless, Burns eventually wins and bees lose their sanctuary. As they are not strong enough to survive on their own, Homer and Moe arrange for them to copulate with African bees to breed and populate a

stronger species that can survive harsh conditions. When Burns is welcoming spectators to “the American Dream: a billionaire using public funds to construct a private playground for the rich and powerful,” that is to say, into his newly constructed arena, the evolved species invades the stadium and turns it into their home by repelling people away. In his confrontation with nature, the billionaire Burns again loses some of his assets and is expelled from the billionaire’s club as a result. The impact of economic interests, consumer, and popular culture on environmental decisions and behaviors is again foregrounded in this episode. It employs prevention goals and instrumental values of nature to reach out to those whose personalities are lower on altruistic and biospheric values, and strives to appeal to universalism and benevolence as behavioral motivations.

“Mr. Lisa Goes to Washington” (3.2; 1991) also satirizes the way corporations employ dishonest rhetoric to win corrupt politicians whose main concern is to deceive people and secure their own vested interests. After winning an essay contest, Lisa and her family visit Washington, D.C. The visit is manipulated by a corrupt politician as a photo op to sway public opinion; still worse, Moe and Barney fall for his populist strategy when they see his picture with Lisa in a newspaper. Lisa’s ecstasy over her championing the rights of women and environment is short-lived, though. On witnessing political corruption in the form of bribery at the cost of Springfield woods, she is totally disillusioned with the “Root of Democracy,” the title of her essay that won her family the free tour. On being disillusioned, she sees all public figures at the White House as squealing pigs being fed with Uncle Sam’s dollars and using the US flag as their napkin. This compels Lisa to write an acerbic essay in order to expose the corruption she has recently unearthed. In her conclusion to her new essay, she writes “this will be one nation under the dollar with liberty and justice for none.” The fact that a little girl is losing faith in democracy stirs a political commotion ending up with restoring law and order at the highest political level. In fact, this turns out to be a reassertion of the efficacy of representative neo-liberal democracy as a superior economic and political system in the end (which might remind one of Fukuyama’s thesis about the end of history; see Fukuyama, 1989, 1992). Her Asian-American fellow student and essayist lauds Lisa and her “inflammatory rhetoric” for reminding everyone that “the price of freedom is eternal vigilance.” Despite its ur-text *Mr. Smith Goes to Washington* (1939; directed by Frank Capra; for yet another reference to this movie, see “Mr. Spritz goes to Washington” 14.14; 2003), this is not the only way Lisa’s concluding remark—“The system works!”—can be read. This remark can be interpreted as ironic and as a nudge to give the US another chance (Anderson, 1998, p. 365); that is to say, satire hopes to change the system and its inefficacy by shocking the audience. It attacks chauvinism, hackneyed nationalist fervor, and the absurdity of the myth of the land of opportunities. It holds up the political and economic determinants of environmental decisions and actions to scrutiny and encourages individuals to deepen

their discernment, maintain their integrity, and stand up to corruption in order to uphold humanist, feminist, and environmental values. Satire is at the same time ambiguous. The intertextual allusion to the movie *Mr. Smith Goes to Washington* frames Lisa's role humorously as an innocent abroad whose sad fate we can already guess, making her as much a target of the satire as the corrupt establishment. Simpson's satire in this episode seemed to have been fairly successful as it provoked a strong reaction on the part of timber industry (Durbin, 1991; Ferguson, 1992; Reinhard, 1991).

"Opposites A-Frack" episode (26.5; 2014) explores the environmental consequences of human interventions in depleting natural resources by drawing connections to political corruption. Using the 'perfect' pretense of "Women's Basketball Hall of Fame" to hide his industrial site, Mr. Burns is fracking for natural gas to boost his profits. Democratic Assemblywoman, Maxine Lombard, threatens Burns' capitalist venture by shutting down his fracking operation. Monty Burns harangues Maxine by calling her "capitalism castrating suffragette ... [and] a soft-hearted liberal," and she retorts by calling him "a hard-hearted capitalist." Still their passion overpowers their differences, and they sleep together, while deciding to be enemies by day and lovers by night. Political hypocrisy and indecency in manipulating any situation to win publicity resurfaces again as the object of satire. Politicians are so incompetent that their "most powerful weapon [is] an invitation to a committee hearing." In an attempt to create a monopoly in Springfield, Burns persuades Homer to buy mining rights from all residents in his neighborhood by arguing that natural gas secures national economic and energy independence, creates jobs, and is safer than nuclear power. This is reminiscent of the erroneous non sequitur and sophistic rhetoric sometimes employed by politicians, corporations, and certain media sources to manipulate the truth and rationalize environmentally destructive decisions and actions. Politicians condemn capitalist greed in public and pretend to advocate the cause of people, while they are sleeping with capitalist tycoons and securing their prerogatives behind the scenes. Despite posing as a liberal who stands up to the elite, Lombard fails to act in the interests of her constituents, while Burns enjoys "a 'beneficial' friendship with a woman with whom... [he has] nothing in common."

Thus, *The Simpsons* chastises environmentally unfriendly attitudes, behaviors, and policies and advocates critical environmentalism by discussing natural preservation, resource depletion, animal rights, and the human-nature relationship. Besides the individual determinants of environmental behavior, the show frequently probes the social, particularly economic and political, factors and in this way strives to locate ecological problems in their larger context. It repeatedly underlines the relationship between capitalism, power, and environmental degeneration and examines the interrelatedness of environmental crises with adjacent issues including sexism, ageism, displacement, and environmental justice, and sometimes even proposes resistance strategies. Different episodes employ a range of satiric

and humorous functions coupled with social and individual determinants to advocate pro-environmental behavior and to address the intention-action and attitude-behavior gaps. *The Simpsons* does not even spare misguided environmental activists and messages. The show strives to eschew reductive approaches and solutions to ecological problems and avoids stimulating eco-anxiety and indifference in its audience.

We argued that censuring corporations and politicians, as well as disparaging unbridled consumerism are two ways through which humor and satire may promote a change in attitude, and subsequently behavior, in *The Simpsons*. The show criticizes the advertising industry for manipulating consumers, creating the illusion of need, and encouraging unchecked consumption. As Gray (2006, p. 71) also observes, it “parodically criticizes the advertisement and the whole culture of consumerism that advertising begets.” However, the show is complicit in capitalism and the media hype it frequently criticizes. It broadcasts on Fox, which it satirizes, sometimes not too subtly as when it calls it the “voice for evil” (14.14, “Mr. Spritz Goes to Washington”). It also criticizes Republicanism as when the Springfield Republican Party convenes in Transylvanian castle with Dracula in attendance (13.7, “Brawl in the Family”). Still, *The Simpsons* is part of a media conglomerate that has regularly waged war on the environment. It has had a major role in the success of Fox as a right-wing media owned by Rupert Murdoch (Gray, 2006). Gray (2006, p. 18) calls the show “a powerful limb of an even more powerful capitalist giant.”

Besides the considerable revenue it has generated for Fox, the economic role of *The Simpsons* extends to the wide range of merchandize that it has been marketing (see Gray, 2006). The show has been lucratively capitalizing on its success, while it continues to criticize commercial television and promotional culture. As Gray (2006, p. 9) notes, “its success serves as fuel for the system, and its merchandizing and advertising wing has made *The Simpsons* into exactly the type of brand that the show regularly derides.” *Simpsons* merchandise undoubtedly has a massive carbon footprint and is among the worst culprits in television history for creating endless plastic nothings. This contradiction (hypocrisy, if you will) can undermine the ecological message of the show. For some audiences, however, the message from the show might be of primary importance (Gray, 2006).

The show seems to be aware of this uncomfortable tension. Most couch gags are rerun (sometimes repeatedly) in the history of the show. I could not find a rerun of one gag, though (22.3, 2010, “MoneyBart”). It opens with a three-eyed crow carrying a seemingly dead rat and a homage to the graffiti artist Banksy who has tried to stand against the commercialization of his art. Then, it moves to a very bleak animation lab in Southeast Asia where dozens of sad-looking artists are drawing frames for *The Simpsons* on celluloids. Two aggressive-looking guards are overseeing the process, and the arms of many artists are bandaged. The scene is very dark, the colors are gloomy, and the music is mournful. After finishing a celluloid, one artist gives it to a child

who takes to dip it into a green, bubbling toxic chemical before hanging it to dry. The scene is covered with skulls and bones one of which a rat steals away. The chemical is dripping into a basement where armies of child laborers are processing *Simpsons* products including T-shirts. Again, everything is dark and gray except for the colorful merchandise. On the floor, two children are putting kittens into a machine to harvest their fur. Another child is using the fur to fill Bart dolls that are put on a cart afterward. The cart is drawn by a panda bear. One worker is taping *Simpsons* boxes by using the head of a slayed dolphin, and another is packing DVDs by abusing a very sad, collapsing unicorn. These end up to be happening in the center of the letter O in the logo of 20th Century Fox when the frame zooms out. Though tongue-in-cheek and maybe even apologetic, this gag nevertheless recapitulates many environmental concerns about the show. It depicts how consumerism leads to environmental degradation and how wealthy nations relocate production not only to avoid its negative environmental impact but also to exploit the poor, shirking their moral or legal responsibilities. It binds racism, classism, ageism, place of origin, globalization, and indentured labor together, starkly depicts their environmental consequences, and acknowledges the negative impacts of the show and Fox thereon. This bleak depiction inevitably invites the audience to reassess their role in perpetuating these injustices. Though complicit in the capitalist promotional culture, the show manages to reflect on the process of production, at least very briefly. As Gray (2006, p. 88) contends,

Ads rarely if ever tell us about the process of production, for instance, or of how the product came to be, instead obscuring details of wages, factory conditions, environmental fallout, the design process, and so on. Thus, as Jhally argues, advertising 'does not give a false meaning per se to commodities, but provides meaning to a domain which has been emptied of meaning' (1987: 51). This is part of the genre's ideology. And yet, as part of its parody/satire of advertising, in Brechtian fashion, *The Simpsons* often reveals aspects of production, not only denying advertising its new meanings, but also working toward refilling products and services with their fuller meanings. It works as an anti-advertisement.

In this section, we tried to show some of the ways satire and humor can be employed to advocate critical environmentalism by investigating how *The Simpsons* has used them to drive its environmental arguments home to its audience. One ready objection might be to inquire if the show has resolved environmental issues after three decades. What is for sure is that all environmental challenges are not solved yet. Many of those that show has tackled are still ongoing or have even aggravated. World's largest producer of greenhouse gases per capita decided to leave the Paris Agreement, and recent COP conventions have disappointed many environmental activists. Satire can influence pro-environmental behavior at different levels, but

it is not a panacea as no other single thing could possibly be. We tried to mention some tangible historical results that *The Simpson's* satire has had in social, political, and economic spheres, but the show has probably been most successful in raising consciousness and persuading its audience about the urgency of environmental crises and the necessity of changing attitudes, policies, and lifestyles over three decades.

Although humans and dogs compete over dominance in “The Dogtown” (28.22; 2017), dogs lose it to *Homo sapiens* in the end despite their brief take-over. The logic of domination is not yet disposed, but at least the audience is presented with a candid view of the logic that governs the human-nature relationship in hopes of persuading them to refrain from or to modify it. Such attempts are not always successful though, nor is satire inevitably consequential. An apocalyptic vision leads Lisa to environmental despair in “The Good, the Sad and the Drugly” (20.17; 2009), while Bart strives to make the world a better place only to impress a girl. Her therapist prescribes “ignorital” for Lisa that takes her to “dizzyland” where all disturbance and squalor look innocuously happy. Sometimes, unintended action might happen to be more effective than carefully crafted satire and humor, and sometimes environmental activists might resort to idealist illusions to make life more bearable. This ambivalence is facilitated by the use of satire in animation. As Starosielski (2011, p. 159) argues,

Instead of concentrating solely on media forms that excel in the mobilization of clear-cut messages and images of environmental danger, we might look to animation as a practice that occurs at the interstices between different framings of the environment, a speculative form that asks us first to imagine and then to draw environmental movements.

Last Week Tonight with John Oliver

In the previous section, we tried to show how an acclaimed comedy show employs humor and satire to reach out to and engage citizens, policymakers, and institutions. This section investigates how a US-American late-night show with international reach uses humor and satire in order to communicate critical environmental messages and advocate behavioral change. A British comedian (now dual national), John Oliver came to prominence in the US as a correspondence on *The Daily Show with Jon Stewart* (Comedy Central). *Last Week Tonight with John Oliver* (LWT) premiered in April 2014 on HBO. Currently in its ninth season, LWT reflects on current events and the developments of the week in rather short segments, while the main story in each episode is a more extended treatment of a single topic. The length of episodes is around 30–45 minutes, and the show touches upon a wide range of topics. The episodes are usually made available on YouTube for free which gives the show even a larger audience. High-profile targets, bold rhetoric, and the polemical tone of the show have succeeded in drawing

public attention to significant issues and in stirring controversy. It has been distinguished by numerous Emmy and Peabody nominations and awards.

LWT has repeatedly touched upon environmental topics over the years. This is sometimes in the form of a straightforward attempt to advocate natural conservation. In “Duck Stamps: Last Week Tonight with John Oliver (HBO)” (2021), for instance, the show draws on an annual contest and the disagreements surrounding it to inform people how buying duck stamps can fund conservation efforts in the US. Oliver does not stop there though. He commissioned several duck paintings to take part in the competition. In this way, the show sets an example and encourages its audience to participate in conserving nature.

The environmental topics that *LWT* touches on are not always straightforward, though. The show tends to engage environmental and ecological issues at a deeper and more nuanced level. Besides many occasional references, the show has discussed climate change as a pending global problem in several episodes. A rather short segment “Climate Change Debate: Last Week Tonight with John Oliver (HBO)” (2014), opens with references to popular culture but quickly moves to a recent White House damning report on the immediate urgency of climate change. Oliver underlines that people tend to ignore distant threats and identifies an emphasis on the immediate dangers that climate change poses as a key shift in communication. He says, “We’ve been repeatedly asked, ‘Don’t you want to leave a better earth for your grandchildren?’ And we’ve all collectively responded, ‘Meh! Fuck ’em!’” But judgmental discounting (see chapter 3) is not the only factor that hinders people and policymakers to take meaningful and serious action. Oliver exposes the inherent fallacy of relying on people’s opinions and polls to challenge a scientific fact instead of focusing on finding solutions. Moreover, he chides the way the media choose to cover the scientific uncertainty involved in climate change. Reports that feature a believer and a skeptic are inherently misleading as they give the impression that the scientific fact is a matter of belief and open to debate. To address this, Oliver brings three skeptics and 97 scientists to have a statistically representative image of the uncertainty surrounding climate change in the Anthropocene. In other words, this episode strives to reframe the climate debate through humor and satire.

This episode addresses scientific uncertainty, skeptics, and the overwhelming scientific consensus in several ways. First, it increases the salience of distant ecological crises by framing them in immediate terms. Second, it provides information that can foster certainty. It also criticizes the media and exposes the way their misrepresentations can stoke unfounded uncertainty about climate change. Fourth, as using humor can increase persuasion since it encourages peripheral route processing, the episode increases persuasion by humorously communicating climate change as a fact to its audience. Finally, the show takes the uncertainty about climate change as its central incongruity. Since humor diminishes the reinterpretation of

incongruity (see chapters two and three), it can diminish this uncertainty in effect.

On the occasion of President Trump's move to pull the US out of the Paris Agreement, *LWT* aired "Paris Agreement: Last Week Tonight with John Oliver (HBO)" (2017). The episode sets out to expose how Trump manipulates numerous spurious statements to misleadingly argue that the Agreement puts the US at an economic disadvantage. Exposing Trump's inconsistency in reasoning and his paranoia, Oliver calls him an "egomaniac" who is deluded to think that "the whole world is ... secretly conspiring against the United States." He debunks many false statements by Trump on which he based his reasoning for leaving the accord and discredits his false claims by underlining that many US-American businesses actually favor and support the agreement. The host concludes,

Trump's description of the agreement is so flamboyantly deceptive, it would have been equally accurate for him to say compliance with Paris Agreement would likely require all docks to wear jean shorts and then it would potentially cost each and every American citizen five fish and a dump truck full of hamsters. That would be as true as what he just said....

Oliver continues to add, "to his [that is, Trump's] credit, that is actually an impressive amount of misleading bullshit in very few words."

Having informed his audience about the nature of climate change and the 2°C goal, Oliver insists that each nation sets its own goals, that the Agreement is voluntary, and that it does not punish, but rather has an integrated mechanism that shames countries into compliance. This information provision does not have a didactic tone since it resorts to popular culture to drive its point home to the viewer. Visual aides are also used to communicate facts including the illustration of very large numbers. Besides, Oliver never frames the Paris Agreement as an ideal accord and even mentions its imperfections; nonetheless, this does not stop him from underlining its significance.

The episode also exposes how climate change is conflated with populism and nationalism. Trump frequently used the US-China bipolarity, a topic that was likely to resonate with his base, to undermine climate change. John Oliver debunks these attempts outright by calling the move a "globalist cock surrender or a light jog." Context is particularly important in this case as the episode aired in the wake of the nasty 2016 presidential election campaign and in the first year of Trump's presidency when right-wing, populist, and nationalist movements were gaining traction elsewhere in America and Europe. The episode actually briefly refers to Brexit that was then threatening to rip the EU apart. Oliver does not only denigrate populist nationalism, but even goes further to say that refuting climate change does not even serve its less than justified causes. The counterargument is crafted into the episode when Oliver asks, if the Agreement is voluntary then what is the harm in

leaving it. He enumerates several reasons including that this move isolates the US on world stage, its subsequent reputation harm will have economic consequences for US-American corporations; that it will do harm to American workers who will be left behind in the shift to renewable energy; and that the US leaving the Agreement will make other countries less inclined to meet their commitments. Besides co-opting the rhetoric of nationalism to promote the Agreement, his contention encompasses both promotion and prevention goals to appeal to a larger audience. He even goes so far as to appeal to Trump's populist-nationalist logic to show how China will actually benefit from Trump's decision to leave the Paris Agreement, which is likely to be at the forefront of a green transformation that will bring jobs and prosperity to the country. This is while Emanuel Macron, the French President, is inviting American entrepreneurs to move their business to France.

The episode, therefore, provides information, speaks truth to power, and tries to use humor and satire for reformatory purposes, while it does not shy away from censure and ridicule. The focus is on politics, economy, and society rather than the individual determinants of environmental behavior. After discussing the negative economic impacts of leaving the Agreement, Oliver continues to suggest solutions despite the odds. He explores options in a situation when the Federal Government has failed citizens and corporations. One solution is to seek and achieve the goals of the Paris Agreement on a local level. Another is for people to discover the position of their representatives on the topic before the elections and vote the deniers out of office. The episode again acknowledges that

the problems with climate change is that it's always felt so abstract, impersonal, and far off into the future and the usual symbols that we use don't do much to fix or help that.... And it's hard to get emotionally fired up over that.

Finding a common cause can provide a remedy, and Oliver suggests that our collective loathing of Trump can provide a common ground and a motivation for combating climate change. In this way, he is using the polarizing potentials of humor and satire to build a community for the purpose of advocating critical environmentalism.

The political and economic contentions that surround the mitigating measures to respond to climate change are again focal in "Green New Deal: Last Week Tonight with John Oliver (HBO)" (2019). The episode opens with an ambivalent attitude toward climate change in the public discourse when it tries to distance itself from the coverage of the topic on TV. It complains that when environmental challenges come up on TV, "the solution is presented as a bunch of fun recycling ideas." While Oliver reveals he has a basket recycled from a garden hose, thus acknowledging that *LWT* is also susceptible to the same criticism it makes, he insists that these measures are absolutely insufficient. After citing the Intergovernmental Panel on Climate Change (IPCC) report, he tries to frame climate change as an immediate

threat through using pop culture references. Having stated the problem and established its significance, the episode moves on to the Green New Deal as a potential yet partial solution. Before delving into this, Oliver points out to the attitudes of Trump and the MAGA (Make America Great Again) movement toward the Green New Deal to argue that it is probably a good thing, even if you do not know anything about it, since people boo it in Trump's MAGA rallies.

Oliver acknowledges that the Green New Deal has been polarizing regardless of its general and non-binding nature. Republicans have been demonizing it by attributing terms to the Deal that it never stipulates. A speaker in CPAC (Conservative Political Action Conference), for instance, says, "They wanna take away your hamburgers. This is what Stalin dreamt about but never achieved." In another reference to popular culture, John Oliver says this is not Stalin's dream but rather that of the Hamburglar, a McDonaldland character who features in McDonald's commercials. However, the quotation that he cites from Stalin persuades one that this is not just a simple joke. He quotes Stalin when he says, "The State is an instrument in the hands of the ruling class" The exact quote from Joseph Stalin's *The Foundations of Leninism* (1932) reads,

The state is a machine in the hands of the ruling class for suppressing the resistance of its class enemies. *In this respect* the dictatorship of the proletariat does not differ essentially from the dictatorship of any other class, for the proletarian state is a machine for the suppression of the bourgeoisie. But there is one *substantial* difference. This difference consists in the fact that all hitherto existing class states have been dictatorships of an exploiting minority over the exploited majority, whereas the dictatorship of the proletariat is the dictatorship of the exploited majority over the exploiting minority.

Briefly: *the dictatorship of the proletariat is the rule-unrestricted by law and based on force-of the proletariat over the bourgeoisie, a rule enjoying the sympathy and support of the laboring and exploited masses* (Lenin, *The State and Revolution*).

(n.p.)

This is a clear reference to a Marxist understanding of State. Simply put, the instrumentalist position postulates that the ruling class manipulates the State in order to maintain and enforce the class hierarchy. Accordingly, "the functioning of the state is understood in terms of the instrumental exercise of power by people in strategic positions, either directly through the manipulation of state policies or indirectly through the exercise of pressure on the state" (Gold et al., 1975, p. 34; cited in Hay, 1999, p. 154).

In his subtle yet daring reference to Marxism, Oliver seems to seek two goals. First, it clearly implies that the interests of the ruling class are among the reasons why progressive and sustainable legislation fails to be codified. Second, he strives to reverse the bipolarity that associates the left and

progressive side of the isle in the US-American political sphere with Marxism and socialism. It exposes the inherent irony that undercuts the conservative discourse. While Republicans stoke fear at both the Green Deal and Marxism (and communism) and strongly object to State interference in the free market, they are actually the ones who perpetuate a Stalinist discourse that manipulates the State to secure the interests of the wealthy and ruling classes who actually benefit from extractivism and the petroculture. This could also be a genuine critique that had to be veiled because such a left-leaning position is very unlikely to be endorsed by US-American audiences.

The episode continues to provide information about the Green New Deal, reiterating that it is simply a non-binding resolution that sets out some (rather) ambitious goals, while excluding any specific details, only to start a conversation. Oliver amuses that “The Whole Green New Deal is just 14 pages long, that is seven pages shorter than the menu for the Cheesecake Factory.” Yet, all it has done is to start conversations in bad faith. One reason behind its failure was an attempted joke in a Q&A news briefing draft that the office of Alexandria Ocasio-Cortez, the young progressive democrat representing New York’s 14th congressional district, mistakenly released. The humor there misfired and provided the right with a strategy in manipulating flatulent cows and hamburgers as scarecrows. Oliver makes sure to clarify that the Green New Deal is not about meat consumption, but he also gives voice to concerns about the environmental impact of cattle farming by cracking a joke about the misconception about “which end of the cow is responsible” for the most part of methane emissions (they largely result from cows eructing, rather than breaking wind).

While repeating that “no one solution is going to be nearly enough” to address climate change, Oliver focuses on carbon pricing as one viable option. He again resorts to humor and visual aids to explain carbon pricing, but the “complicated logic” behind carbon pricing turns out to be “when something costs more, people buy less of it.” In this way, the show chastises people who expect something fun in everything including serious and potentially catastrophic developments like climate change. And again, this partly undercuts Oliver’s own attempt as well since the show uses humor to make its point in the first place and that the host’s persona, “a 42-year man who needs his attention sustained with tricks,” is very eager to witness something fun like a cool stunt. Oliver lays himself open to criticism for his immature behavior, but the actual target is the irresponsibility of people in not genuinely engaging climate crisis on their own when the stakes are so high.

After citing evidence why carbon pricing could be effective, Oliver partly explains the resistance by contending that the problem is actually the use of the word “tax.” To illustrate this, he shows a clip of the Canadian Prime Minister Justin Trudeau who desperately tries to avoid using the word tax in his address to the Parliament, as the sheer use of the word exposes politicians to “fear mongering for what ... [their] policies mean for regular people.” However, Oliver explains that the Canadian government is actually

pooling its revenue from carbon pricing and giving it back to their citizens as rebate, with the lowest income household seeing the highest benefit from this program.

Interestingly enough, the episode also includes a limerick recited by an opponent of Trudeau to object to his carbon pricing policy. This instance of self-reflection shows how humor as a double-edged sword is not merely limited to progressive causes and ideals. At the same time, the episode also proffers a way to counter this effect in containing the opposing humor (cf. Stephen Greenblatt's concept of "subversion-containment dialect" as introduced in his "Invisible Bullets"). *LWT* manages to effectively contain humorous opposition in its progressive framework by subjecting it to ridicule.

The episode concurs that the situation seems desperate but insists that there is some hope. The Green New Deal has sparked some public debate, yet this is not much unless this debate translates into action. The episode attempts to convey the urgency of the situation by framing it as an immediate threat. It closes on this high note: "Grow the fuck up! You're not children anymore ... You're adults now and this is an actual crisis ... motherfuckers," while a terrestrial globe of Earth is on fire on screen. While underscoring the political and economic aspects of environment decisions and behaviors, therefore, the episode does not deny the significance of individual action.

LWT returns to this topic again in "Floods: Last Week Tonight with John Oliver (HBO)" (2017) where it conveys how climate change impacts the less privileged communities, and how disaster funds support wealthy people and their intentionally wrong financial decisions instead. The episode opens with depicting the increasing prevalence and impacts of floods that are exacerbated due to climate change, admittedly a complex issue. Though floods are natural disasters, the damage they cause is further aggravated because of unchecked urban growth. However, Oliver quickly acknowledges that people live near water for many reasons. In other words, he does not exclude social and ecospheric variables in the decisions people make regarding where they live. Nevertheless, some tend to slight the risks of living close to water, and "sometimes aggressive development can exacerbate the risk of flooding even considerably inland." Climate change and unchecked growth are not the only reasons behind devastations. Here, Oliver points to ineffective (perceived) behavioral control in the form of relief funds. People live in flood-prone areas because they have discounted flood insurance that is underwritten by the government. The initial objective of this program was not to encourage people to stay in high-risk areas but rather to help them move to a safe one, but "that has not proven true," to which Oliver responds, "No. But of course it hasn't, because that's not how people work. We will gladly accept huge risks to our personal safety for the sake of a discount, that was the entire premise behind the McDonald's Dollar Menu." The episode continues to explicate why the eligibility criteria, expenditure of funds, and incentives of this program are in need of quick reform. In other words, behavior can be changed through modifying behavioral controls in this case. Discussing

the decision of a low line community that refuses to leave their homes, Oliver also appeals to the adaptive function of humor in saying, “people in Broad Channel will eventually be leaving, whether it is by moving truck or by boat because environmental conditions are going to get worse” before a talking seagull joins him to explain that “leaving your home is hard, being forced out when it is uninhabitable is ten times harder.”

LWT, therefore, does not blame individuals and put an unbalanced burden on them. It acknowledges the myriad external forces that make people behave as they do and strives to disperse the responsibility among citizens, corporations, and governments. There is very little, if anything, that a citizen can do to reduce lead in the environment by fixing infrastructure of a country or to reduce the risk of radioactive waste by constructing a safe depot. Changing individual behavior, in other words, does little, if anything, to address these ecological issues. Instead of pointing fingers at individuals, therefore, the show tries to prime such topics for inclusion in public media agenda, diffuse information, raise consciousness, and urge politicians and decision-makers to take timely and effective action. Nor does it confine its scope to advocating behavioral change. *LWT* acknowledges that some of the damage is irreversible and encourages fostering resistance and coping strategies instead. These can be effective and pragmatic solutions that avoid causing eco-anxiety and indifference.

“Nuclear Waste: Last Week Tonight with John Oliver (HBO)” (2017) resorts to two metaphors comparing the stranded nuclear waste to keeping dolls for a very long time and building a house while forgetting the toilets. The episode censures the government for its inaction in properly storing nuclear waste since the 1980s. At the wake of the exposure of an environmental disaster in Flint, Michigan, “Lead: Last Week Tonight with John Oliver (HBO)” (2016) censures institutional problems and “all the bureaucratic clusterfuckery involved” in governmental incompetence in managing lead contamination and poisoning. The episode continues to explore the correlation between socio-economic status and the risk of being exposed to lead contamination. Oliver also censures cost-benefit calculations that prioritize economic considerations over the health of children.

“PFAS: Last Week Tonight with John Oliver (HBO)” (2021) concerns chemicals used to create no-stick surfaces. Besides their numerous health hazards, they also have a very long lifetime, but corporate interests outweigh their risks for people in prioritizing profit over the public good. Corporate greed coupled with ineffective policies has therefore failed to regulate their production and use. Oliver goes on to convey that “the world is basically soaked in the devil’s piss [that is, hydrofluoric acid, a highly toxic chemical] right now and not in a remotely hot way.” He exposes how corporations like 3M and DuPont have continued to produce and market PFAS (per- and polyfluoroalkyl substances) although they were fully aware of their serious hazards and longevity, “proving once and for all corporations are people, specifically sociopaths.” When a white girl appears in an ad, claiming that

Teflon has liberated her from being a “slave to scraping and scrubbing pots and pans,” Oliver demurs that this is a sentence that

should not be coming out of a white child’s face unless it is Pinocchio after he becomes a real boy. And even then he is still not really free, is he? He’s a slave to society in a prison of his own mind just like the rest of us.

In this, Oliver both binds ecological issues to racial injustice and passes a non-compromising comment on the relationship of individuals with the society. This leads to the conclusion that “it shouldn’t be just on us as individuals” to behave pro-environmentally, so he advocates legislation that regulates the production and use of these class of chemicals because “no matter how responsible consumers choose to be, if the factory that makes the chemical does not dispose of its waster properly, it’s likely getting into your bloodstream anyway.”

The significant impact of the social determinants of environmental behavior and the interrelatedness of ecologically destructive policies and behaviors with different forms of discrimination constitute the two main arguments that are further elaborated in other episodes. “Chickens: Last Week Tonight with John Oliver (HBO)” (2015) weaves together environmental issues, corporate power, and justice by taking on four gigantic companies dominating the poultry industry. The story does not primarily concern the cruelty of animal farming but rather focuses on farmers. Oliver avers that

Multiple studies have shown that many growers whose sole source of income was chicken farming live below or near the poverty line which sounds insane. How can the people who make the meat we eat the most barely be making a living?

This is due to contract farming or what Oliver calls “chicken daycare” whereby the companies drop chickens at a farm and collect them when they are grown. In other words, the companies outsource all the costs to farmers and keep all the profit to themselves. Rather than being necessarily the farmers’ choice, the cruelty of animal farming is also stipulated in the contract that the companies conclude with the farmers. The unfair condition and heavy expenses imposed on farmers can cost not only their homes but sometimes even their lives. Meanwhile, farmers cannot speak out and complain because they will be subject to retaliations from the companies. Although a law is passed to protect the right of farmers to speak out, it includes a rider, known as the GIPSA Rider, that stops it from being enforced. Oliver attributes this to a representative who has vested interests in allegedly rooting in for the poultry industry. In other words, the show underlines the social aspects of behavior including legislation and other state apparatuses. At the same time, it informs the audience about how their behavior impacts animal welfare and how it can cause human suffering. Oliver concludes, “I know this story has

been depressing and you might be wondering what you can do. I mean you could stop eating chicken, but you're not gonna do that." As a more viable, though partial, solution, he supports a second attempt to pass a provision that aims to give farmers and companies equal standing. In doing this, Oliver shows the pictures and names of the voting members of the decision-making committee on the screen and continues to say, if any of these representatives vote against the bill, it is because they are "chicken fuckers. They fuck chickens. That's what they do. Every day, every which way." Thus, he warns them not to vote against the amendment "because chicken fucking accusations do not come off a Wikipedia page easily, or if they do, they tend to come right back up." In this way, Oliver speaks truth to power and employs the shaming power of satire and invective to push for policy change. Moreover, he subtly mobilizes his fans to root in for farmers' freedom of expression to speak out against the companies by providing them with a strategy to target the reputation of politicians online in order to force them into taking meaningful action. The GIPSA Rider was left out in 2015, but this has not stopped power struggles and lobbying since then (for a short overview, see <https://foodwhistleblower.org/a-history-of-the-gipsa-rules/>).

LWT takes on other shortcomings in legislation and policies in two episodes that concern the coal industry. "Coal: Last Week Tonight with John Oliver (HBO)" (2017) strives to expose the reasons behind Trump's affinity for and support of the coal industry and warn that coal will eventually be phased out so mining communities need support to retrain for future jobs. The episode starts off by tracing "arguably a key reason that we have this cautionary Bible story in the White House [that is, President Trump] was his ability to connect with mining communities during the campaign." Then, Oliver plays a video clip where Trump, in a blatant display of populism, puts on a miner's cap and gives false promises of thriving and prosperous miner communities on his campaign trail in West Virginia. The episode does not focus on the fact that coal is environmentally catastrophic because Trump clearly does not care about that. Oliver simply conveys how deranged Trump's environmental policies have been by listing the environmentally destructive decisions he has made and implemented. Instead, Oliver fully acknowledges the significance of mines to the communities formed around them, as well as the economic impact of shutting down coal mines on community members who subsequently lose their jobs. But he adds nuance to this conversation by first explaining multiple reasons why coal mining jobs have actually been decreasing in number regardless of their environmental impacts. He then reassures his audience that "the rise of alternative energies is a good thing for the earth and some point out that as coal jobs go away new green jobs are opening up which is true but not where coal miners live." At the same time, he is fully cognizant of how devastating it is to lose one's job and face an uncertain future for a coal miner. Having shown understanding and empathy, Oliver emphasizes that it must be totally normal for people in this situation not to take his words for it as he does not know anything

about their experiences and situation. In other words, he is aware that his position as a celebrated and well-to-do satirist might undermine the impact of his message. The episode is wary that the medium, distribution, recipient, and context are not enough to trigger behavioral change; therefore, it creates sympathy, acknowledges the complexity of the situation, foregrounds the unequal standing of the creator with the audience, and refuses to speak for mining communities in order to build trust.

In his quest to find a way to help—rather than represent—these communities, Oliver clarifies that “people often conflate coal, coal miners, and coal companies and imply that when you help one you help them all. But they are not all in the same boat, although they may insist otherwise.” He exposes how hypocritical coal companies cut the health benefits of their retirees, while lavishing substantial bonuses on their top executives. This is even worse if you put Trump’s affection for mining CEOs in the picture. Oliver wants his audience to know that serving the interests of coal companies or their executives does not mean supporting miners. And he persuasively argues that “if Trump really cares about miners, he’ll be putting a plan for their futures as mining continues its long-term decline. But he isn’t doing that.” Oliver cites a *Playboy* interview where Trump condescends coal miners by saying, “If I had been the son of a coal miner, I would have left the damn mines. But most people don’t have the imagination—or whatever—to leave their mine. They don’t have ‘it.’”

“Coal: Last Week Tonight with John Oliver (HBO)” also exposes how the owner of the largest privately owned coal mining company in the US manipulates the legal system to harass the media and chill free speech. The *LWT* clash with the company led to a lawsuit aiming to muzzle the show. The lawsuit was in litigation for about two years and cost *LWT* more than US\$200,000 and made their libel insurance premium to triple before *LWT* could return to it in “SLAPP Suits: Last Week Tonight with John Oliver (HBO)” (2019) only after it was dropped. On providing some background to the lawsuit and its history, the episode continues to discuss how SLAPP suits (Strategic Lawsuit Against Public Participation) are designed to stifle public debate or dissent and punish or intimidate critics. Oliver explains that the litigious Trump is also very fond of opening up the libel law and of SLAP suits and that journalists and activists have long been the targets of these bullying and scare tactics. Oliver advocates federal well-crafted anti-SLAP laws “to deter powerful people ... from using the courts to shut down people’s legitimate dissent.” This is a push not only on a specific corporation’s intimidation tactics, but rather at scrutinizing all parties implicated in the formulation of environmental regulations, as well as the individuals and factors exerting sway within this system. This episode, therefore, advocates a change in the social, more specifically political and legislative, determinants of environmental behavior in order to facilitate critical environmentalism and pro-environmental behavior.

LWT also touches on the implications of gender for a sustainable transformation in “The Power Grid: Last Week Tonight with John Oliver (HBO)”

(2021). In the wake of the failure of power grid after a storm hit Texas, the episode takes a closer look at how the infrastructure in the US is not ready for a green transformation and warns about the new challenges caused by changing conditions caused by climate change for the power grid. It opens with an old electricity advertisement from 1959 showcasing an electric home where “the pride and joy of the man of the house is the weather control center.” Later on, the voiceover narrative in another video from 1940 heralds that

Here is what the women ask for after light itself. If you have ever ironed for an hour, you’ll know why. An electric iron may not look important to a man but it lightens one whole day’s burden for a woman.

After scolding the gender roles and the sexist attitude that associates women with housekeeping, Oliver says, “You thought getting lights would make things better [in promising higher safety at nights for women], but it only made things clearer, didn’t it?”

Besides the gender issue, Oliver is also quick to notice that political persuasion as tied to socio-economic status is among the reasons why policymakers are unwilling to take more aggressive measures to combat environmental problems like climate change. After examining the map of regions with the greatest potential for generating sustainable energy, Oliver concludes when updating the grid requires “a Princeton researcher telling a midwestern farmer we need to build something in your backyard so someone in California can power their electric car, you already called the next eight election cycles for Republicans.” In this, he underlines the impact of the two-party system, political persuasion, and place on environmental behavior at the collective level. He also cautions that a transformation that is anything less than just and inclusive is bound to fail because it will further breach the inequalities whereby some have to bear the costs it incurs and others benefit from it. Oliver continues to expose the flaws of the argument that sees investment in clean energy and infrastructure merely in cost-benefit terms by giving a simple example: we don’t invest in fire departments for their return on investment. This episode touches on climate change, infrastructure, gender, personal, and political interests in order to depict a more accurate and comprehensive picture, and uses humor and satire to urge adaptation to a future when the repercussions of a changing climate will constitute everyone’s daily experience.

“Environmental Racism: Last Week Tonight with John Oliver (HBO)” (2022) goes even further by exploring the disproportionate impact of pollution on different communities, more specifically on African-Americans, and conveys how racial prejudices perpetuate environmental injustice. The host argues that exposure to pollution is not necessarily mediated by income and economic status as even African-Americans who earned substantially more than White US-Americans were still more likely to be exposed to

pollution, proving that “racism is one of the few things in this country more powerful than money.” He discusses different examples to show that many decisions that lead to such racial-environmental inequalities are simply blatant. After concluding that “the fact is ... black neighborhoods in particular can get targeted with incredible precision and the stakes could not be higher here,” Oliver rightly foregrounds the negative impacts of pollution on health along racial disparity.

History is the first major factor that has caused environmental injustice as in the case of housing segregation otherwise known as redlining. The government zoned residential areas across racial lines and regulated the zoning system by denying loans to racial minorities who intended to purchase real estate in white districts. At the same time, neighborhoods home to racial communities are usually zoned for industrial use. This system has driven racial communities to live side by side with heavy industry. The practice of “racist zoning policies” led to disparities even within single cities across different districts. But there is more to environmental injustice along racial lines, as Oliver avers, “history and zoning are only part of the story here because it is also about who has the power to push back and polluters often assume that black communities in particular won’t be able to stop them.” In other words, since these communities are disenfranchised in one way or another, they do not have a voice and the social, political, or economic power necessary to stand up to injustice. And white people, who have been aware of the situation, took full advantage of it.

It is even sadder to find that environmental movements and activists have largely failed to stand by these racial communities and advocate their cause. In the words of John Oliver, “the priorities of the environmental movement have tended to leave certain communities out.” Even seemingly progressive groups and environmental activists have missed to tackle environmental problems holistically because of their racial oversights despite the fact that justice and inclusion must be the cornerstones of critical environmentalism. This alongside an inefficacious “government that continues to prioritize the profits of the industry over the health of people” mounts up to a massive problem which requires immediate solutions that cannot be race-blind. Oliver concludes by advocating zoning reform on the level of governments and encouraging larger organizations and leading environmental movements to support local activists. He insists that we cannot solve this problem as long as

this country designates communities of color as ‘sacrifice zones’. The clear message there is that the people who live in them are expendable, that it is OK for their kids for not being able to play outside, and for their lifespans to be shorter.

Although this episode encourages activism at the individual level in the absence of political support and legislative reform, it makes it clear that it is impossible to address environmental issues without considering political

and economic issues that determine behavior at the collective level. It persuasively connects environmental behavior to racial and ethnic identity, place and belonging, regulatory and political systems, while using satire and humor to prime racial and environmental justice in hopes of agenda setting. It builds communities in the peripheries, employs censure, as well as the reformatory and subversive potentials of humor and satire to push for reform and behavioral change among authorities and policymakers.

Underlining the social determinants of behavior, interrelatedness of different forms of oppressions, and the interconnection of ecologically destructive policies and behaviors with different forms of discrimination does not come at the cost of ignoring the individual, though. “Food Waste: Last Week Tonight with John Oliver (HBO)” (2015) focuses on both the individual and social determinants of behavior and addresses risks, motives, and goals. Yet, Oliver does not stop there; he also blames the costs of food donation and challenges unfounded concerns over legal liability, which are instances of perceived behavioral control.

He opens the episode by appealing to (egoistic) values through summoning a sense of national identity, by saying “We love food in America” and that “celebrating America often goes hand in hand with celebrating its food.” He summons tradition and power as motivations, but does not dwell on them. On the contrary, Oliver immediately subverts this illusion of national identity by revealing the reason for this love of food: Americans want to “let food replace sadness.” Therefore, he starts by challenging values, but he is cautious in his approach not to be reductive as he touches upon and dismisses nationalism and chauvinism, gender bias, military adventures, and racism (emblemized in the confederate flag). In other words, he is aware that environmental problems are a thread in the larger social, political, economic, and cultural texture, and that they cannot be treated in isolation. Besides egoistic values, he also draws on other values to make sure that his argument appeals to the largest audience possible. He says,

What if I am an asshole who couldn't give a shit about America's hungry families [i.e. altruistic values] or the long-term viability of life on earth [i.e. biospheric values].... There is a selfish financial reason [i.e. egoistic values] for you to care about this story, too.

He manages to foreground universalism and benevolence as motivations by explicitly addressing people who do not care about the planet and only care about their personal interests and by insisting that their wasteful behavior further undermines food security and increases suffering for others.

This episode makes its audience aware of the problem and ascribes responsibility to them. It clearly sets out, and achieves, to provide information, drawing on several means including statistics and references, thereby raising problem awareness in its audience. Besides explicating the significance of the issue and its grave consequences, it also underscores outcome efficacy in that

it illustrates how food waste is inevitably connected to other urgent issues including poverty, food insecurity, water scarcity, and greenhouse gas emissions.

Oliver uses satire and humor to modify perceived behavioral control in two ways. First, they can challenge and amend our wrong perceptions that actually hinder us from adopting pro-environmental behavior. Expiration dates on products usually dissuade people from buying and saving food. Consumers dispose of items when they are passed their sell-by dates, because they are afraid they might not be safe to eat anymore. This is while, except for rare cases like infant formula, these are simply sell-by dates that recommend the best time for consuming the product according to the manufacturer. It is natural for manufacturers to make the date as tight as possible to encourage consumers to buy a new set of their products as frequently as possible. Questioning tradition and calling for reform in debunking the myth that expiration dates have anything to do with safety, Oliver challenges his audience's perceived behavioral control, and encourages them to "take these dates with a pinch of salt" to stop the waste of healthy food products by exposing their arbitrary nature and poking fun at it.

Second, satire and humor can also foreground behavioral controls and encourage changing them. Farmers dump a considerable proportion of their produce because they do not comply with the aesthetic standards regulating the market. Before attitudes are changed, therefore, a short-term solution is to donate 'below the standard' produce to those who need and consume it. This, however, does not happen because of the costs donation incurs for farmers. The costs include those of packing and transportation, which are actual behavioral controls. Oliver, therefore, directs satire against legislators who have failed to provide ample incentives, like permanent tax cuts, for farmers to compensate for their donation costs and encourage them to put a stop to food waste. He insists that putting in place permanent incentives like tax credits is important because "when something's not permanent it affects our behavior. That's why we treat rental cars like we're in a *Fast and Furious* movie." Moreover, many retailers also throw away, instead of donating, products even before their sell-by dates because of a common misconception that they can get sued if someone gets sick because of eating what they have donated. The episode provides legal evidence that this is an unfounded fear.

Besides values, motivations, and behavioral control, Oliver blames "our own habits and misconceptions" for the problem of food waste in the US. These include overstocking products in grocery stores and unrealistic aesthetic standards for farm produce, which eventually lead to 40% of the food produced in the country to go wasted. Retailers overstock because customers' biases tell them that if the shelf is not packed with produce, there must be something wrong with what is left there. This cannot be true partly because inflated aesthetic standards for food inhibit even slightly flawed produce to make it to the market in the first place. "Our produce aisles have become a lot like Leonardo DiCaprio's penis exclusively accessible to the physically flawless. And that's not right."

The episode appeals to different values and demonstrates not only the wasteful nature but also further consequences of discarding food as in emitting methane—an extremely potent greenhouse gas—in landfills since “when we dump food into a landfill, we’re essentially throwing a thrash blanket over a flatulent food man and Dutch ovening the entire planet.” John Oliver also proposes viable solutions. He calls for measures at both individual and collective levels, urges legislators to pass permanent tax incentives (that is, behavioral control), and calls for personal resolutions: “resolving to eat uglier fruit, to taking expiration dates with a pinch of salt, to no longer being worried about getting sued by high-power lawyers representing the hungry. And we all have to address our relationship with food waste.” In these, he again touches on the ascription of responsibility, calls for outcome efficacy, and self-efficacy.

While *LWT* taps into both individual and social aspects of environmental behavior, it does not ignore the pitfalls of environmentalism. “Plastics: Last Week Tonight with John Oliver (HBO)” (2021) conveys how concerns over plastics and recycling are frequently co-opted by corporations. The episode opens with providing information about the ubiquity of plastic products, their environmental impact, and examples of environment campaigns that advocate recycling. While the production of plastics has exponentially spiked since their introduction in the 1950s, only 8.7% of plastics produced in the US are recycled, and the vast majority ends up polluting the environment. This is while only 2% of plastic packaging materials end up in a closed-loop, and most recycled plastics are actually down-cycled and cannot be recycled again. Oliver, however, immediately adds, “But before you start blaming yourself or your neighbor for not sorting their trash and separating items, it’s actually not that simple.” Assuming that what they purchase will be recycled, people buy food in plastic packaging most of which is not actually recyclable. In other words, recycling campaigns might leave citizens with the false impression that all is well if they simply sort the plastic they buy and use for recycling. Oliver is careful not to appeal only to altruistic and biospheric values as they are not enough to galvanize everyone. Instead, he also makes this a personal issue by citing the health hazards of plastics for every one of us including citing the results of a study that has showed one can weekly ingest “a credit card’s worth of microplastics.”

The plastic people assume is recycled ends up inside them, instead. Littering was met with a backlash starting from the early days of the history of plastic production. Playing back one PSA advertisement dating back to 1971 that concludes, “people start pollution, people can stop it,” Oliver exposes “how the plastic industry has managed to convince us that it’s our fault.” He is quick to note how this advertisement appropriates native American identities and values in order to downplay both the dark history of racial discrimination and violence and the role of corporations in the production and use of plastics. The episode, therefore, binds plastics and environmental pollution to racial politics. The irony cuts even deeper with the revelation

that the company that produced that advertisement was partly funded by the plastic industry. This has been “a major through line in the recycling movement; a movement often bankrolled by companies who wanted to drill home the message that it is your responsibility to deal with the environmental impact of their products.”

Oliver goes on to show how the recycling symbol one finds on the products one buys is emblematic of this co-option of environmentalism. With only two out of seven types getting recycled, the chasing arrows symbols seem useless until we understand that the plastic industry lobbied to put these symbols on all their products regardless of the fact that many of these products are never recycled. In another instance, despite investing in curbside recycling, Coca Cola has expressed serious doubts about the viability of recycling behind closed doors. Despite the evidence, corporations have not had a hard time convincing us, because people want to believe that the impacts of their lifestyle and decisions are actually offset. As Oliver puts it, “Lies go down easier, if you want them to be true.” Oliver correctly identifies cognitive and confirmation biases as causing intention-action or attitude-behavior gaps. But his take is more nuanced: he shows how corporations and the advertising industry manipulate these psychological mechanisms in order to minimize the ascription of responsibility, sense of guilt, and fear for the consequences of behavior in individuals and perpetuate reckless consumerism. In other words, he acknowledges that individual psychology is not enough to understand wish-cycling; rather, it is how the economic interests are poised to manipulate these mechanisms that incites a sense of complacency and perpetuates the status quo.

Having informed the audience that all the plastics we put into the recycling bin cannot be recycled and that wish-cycling could even cause harm, the host explains why no one really cares about this: most of the plastic waste produced in the US is shipped out to other countries that might not have the capacity to manage even their own plastic waste. Oliver reveals how poor people around the world are paying the health and safety costs of the US-American consumer-capitalist lifestyle. The economic status of nations, therefore, is a determinant of their environmental behavior at a vast scale and with global consequences for everyone.

The response of corporations like Nestlé Waters North America and Coca Cola has remained to keep consumers responsible for their products through blatant misrepresentation and mendacity. Despite all this, Oliver insists that these revelations should not be demoralizing and people should know that mindful recycling is important. The point, however, is that

our personal behavior is not the main culprit here, despite what the plastics industry has spent decades and millions of dollars trying to convince us.... But it can be hard on an individual level to end their use. A better move would be to implement smart, thoughtful targeted bans that force the introduction of alternatives.

Yet, when the plastics industry is faced with regulations forbidding disposable products, they push back, despite the fact that “the real behavior change has to come from plastics manufacturers themselves.” One solution is extended producer responsibility (EPR) to internalize the costs of the pollution the plastics industry is causing. The responsibility and cost of collecting and recycling plastic waste would be shifted from individuals and the public sector to producers and polluters. Oliver closes the episode by advocating the passage of a national EPR law. The episode holds different sectors, corporations, politicians, and individuals responsible. It convincingly demonstrates how individual psychology or the campaigns that target citizens are by no means sufficient to solve a problem of this scale and magnitude and reminds us of the social, that is, economic, political, and cultural, dimensions of environmental behavior.

In this section, we tried to show how *LWT* employs humor and satire to impact the social and individual determinants of environmental behavior, reveal interconnections between environmental crises and socio-political issues, and explore their disproportionate impacts on marginalized communities. This discussion has two major implications. First, environmental campaigns must diversify and consider the wide range of behavioral determinants in order to be able to appeal to the diverse range of individuals in the public sphere. Some trends, for instance, should foreground egoistic values to appeal to people lower on environmental values, while others can draft people with higher altruistic and biospheric values. In other words, there is no one way (like depicting apocalyptic warnings against impending danger as has been dominant so far) to propel an environmental campaign. A reductive approach, which is not sensitive to the wide diversity of people, only risks losing their attention and driving them to anxiety or despair. Second, the insights afforded by an interdisciplinary approach to cultural productions underscore the significance of developing new methodologies in environmental humanities and broadening its horizons in order to develop capacity to encounter current and emerging challenges. Such an approach has more pertinent and consequential implications for sustainable transformations as compared to convoluted publications on the use of metaphors that might interest very few people and do very little to help advance a green cause in a timely manner. The backlash and controversy *The Planet of Humans* (2019) has caused is a testimony to the power of satire and (dark) humor for attracting public and scholarly attention to environmental issues. What John Oliver can achieve by using humor and satire could exceed poorly informed campaigns or less than sensitive scholarly efforts, but it is still not nearly enough (see Chattoo & Feldman, 2020; Meier & Berg, 2022; Zekavat, forthcoming).

***New Yorker* Cartoons**

The significance of employing visual aids to communicate environmental messages was conveyed in the previous chapter (see also Hee et al., 2022).

In this chapter, we have so far analyzed a comedy show and a late-night show, two different genres among multimedia cultural productions. In this section, we take another step by analyzing cartoons, that is, visual and sometimes linguistic media. For this purpose, Condé Nast Store and the Cartoon Bank were searched for *New Yorker* cartoons, and Cartoonstock.com was searched to retrieve results published in other venues. We used “nature,” “environment,” “climate change,” and “global warming” as keywords for our search queries. The results were delimited only through tags that described themes or content, and no other filters—for example, medium, shape, color, products—were applied to make sure we retrieve an inclusive and large corpus. The cartoons were analyzed within the framework of qualitative content analysis (Hsieh & Shannon, 2005; Mayring, 2000; Neuendorf, 2016) as informed by MIM for the potential impacts of humor and satire on environmental behavior. In our understanding of terminology, we follow Hempelmann and Samson (2008, p. 614) who understand cartoon as “a humor-carrying visual/visual-verbal picture, containing at least one incongruity that is playfully resolvable in order to understand their punch line”. This is while,

A caricature is a pictorial representation of an object, usually a politician, exaggerating some of its features, in order to allow a more distinct characterization (someone with a big nose gets an even bigger one in the drawing) or metaphorical meanings (someone with a big belly is voracious in a figurative sense).

(Hempelmann & Samson, 2008, p. 615)

As the cost of reprinting the cartoons is quite formidable and due to our restraints in space, we will discuss and reprint a delimited sample of these cartoons in this section.

Many cartoons comment on how human beings have been disrupting the ecological balance and depleting planetary resources. Lee Lorenz’s work (*The New Yorker*, February 25, 2008) depicts a scene where one man sitting at his desk is talking to another sitting in a chair in front of him. The office where they are sitting has two windows on each side. A large flock of birds are entering through the window on the right and leaving through the one on the left. The speaker is ducking his head as a result. The caption reads: “All we know so far is that something seems to have disrupted their migratory pattern.” This cartoon uses caustic irony to comment on the ignorance, or rather pretension to ignorance, of people who pretend they do not understand the reason behind the disruption of natural balance. While we might be looking into natural patterns to find the causes of some phenomena, the root cause of natural disruption lies in the unrestrained and unwise human interventions in the Anthropocene. The cartoon further exposes how uniformed beliefs do not allow for the ascription of responsibility. This impedes reforming the norms and subsequently intentions. In other words,

(pretension to) ignorance thwarts one from adopting pro-environmental behaviors. As the irony clearly tries to comment on how pretense or denial can hinder the realization of the determinants of pro-environmental behavior into actual behavior, this is also a comment on the attitude-behavior gap.

Another drawing similarly resorts to dark irony to comment on the impact of rampant industrialism on natural resources. Peter Kuper's "Postcards from the Interior" (*The New Yorker*, October 26, 2017) depicts two postcards and one overleaf. The postcard on the left is a picture of Alaska. The snow-covered plain is punctuated with a pumpjack at which a polar bear seems to be staring. The picture is identified as "Arctic national oil and gas refuge." The one on the right shows the Grand Staircase-Escalante National Monument in Utah. The picturesque scenery is soiled by the smoking chimneys of a factory and an enormous mining equipment that has dug the Grand Staircase hollow. Under the picture is written: "Industrial National Park." The overleaf reads: "Having a Grate [*sic*] time LOL! XXOOIL." The sceneries that were once celebrated because of their natural beauty are now tainted with drilling and mining operations. Once again the irony warns us about the potentially grim consequences of the unbridled extraction of natural resources. It also exposes the role of greed, economic interest, and lifestyle as ecospheric and social factors in our environmental behavior as a species.

The voracious extraction of resources will eventually lead to their depletion as Joe Dator's "Earth's Natural Resources" (*The New Yorker*, August 15, 2019) depicts. A man who has taken his dog for a walk runs into two aliens ascending their flying saucer. He exclaims: "F.Y.I., if you're here to plunder the Earth's natural resources, you'd better hurry."

The cartoons that try to raise the alarm about the negative impacts of industrialization on the depletion of natural resources can be interpreted within the ecospheric module of MIM. Human beings are eager to accumulate resources to optimize their chances of survival and reproduction. Unhinged and unchecked greed in accumulating resources on the part of *Homo sapiens*, however, can threaten not only the survival of other species but also the overall balance of ecosystems and the critical zone, and subsequently endanger the survival of all the species depending on them for their sustenance. These cartoons, therefore, tend to draw on the ecospheric and biological determinants of behavior to give us a warning about the potential consequences of our unchecked greed in accumulating resources. In this way, they encourage their audience to take responsibility, and revisit their beliefs and lifestyles. These can in their turn lead to changing norms, intentions, and eventually behavior. In using satire, they further employ minimalistic narratives and censure to challenge our attitudes and beliefs and advocate behavioral change. Though dark, their warnings about the future are not entirely depressing as appreciating the cognitive incongruity inherent in them is rewarded with intellectual pleasure that can incite hope rather than despair or anxiety in dealing with ecological crises.

This is also true when cartoons give premonitions about ecological disasters other than the depletion of resources in an extractive economy. Climate change, for instance, attracts a great deal of attention. Barry Blitt's painting "Not So Frosty The Snowman" (*The New Yorker*, December 20, 2021; Figure 5.1) explores alternatives for making a snowman in a warmer world where it does not snow. Mashed potato, sand, and bags of flour, among other things, are used to create snowmen. The frame acknowledges that global warming is real and that it is already here: we should find ways of adapting to it. In other words, it explores emotion-focused coping strategies for fostering resilience in facing the consequences of climate change. In the extreme case, the snowman is reduced to a tractor wheel with a hat placed on the top of it. We are to cope with the dire situation with the help of "liquor." As text alignment is left to right in English and since the English reader-viewer tends to view a composition in a similar linear direction, the item on the right side of the picture tends to be the last one in the row that attracts their attention. While the picture proposes coping strategies at the individual level in the first four items on the left, it eventually underlines its message in the last item and makes the reader-viewer wonder if there is any real remedy at all. This might leave the reader-viewer with a sense that prevention is probably the most viable solution. While providing relief amid the anxiety-producing evidence of the causes and consequences of climate change, this painting heightens awareness of consequences, and thus can lead to the ascription of responsibility.

Pat Byrnes' "Enjoy the Fall Colors" (*The New Yorker*, September 30, 2019) has a different take on climate change. By contrasting a sense of indifference and a reasonable if aghast reaction, it strives to differentiate alarmism from a justified sense of urgency. A couple is at the edge of the woods in an autumnal day. The man is petrified at the view of the burning woods; meanwhile, the woman has turned to him with a facial expression that clearly indicates strong objection, saying, "Can't you lay off the climate change for

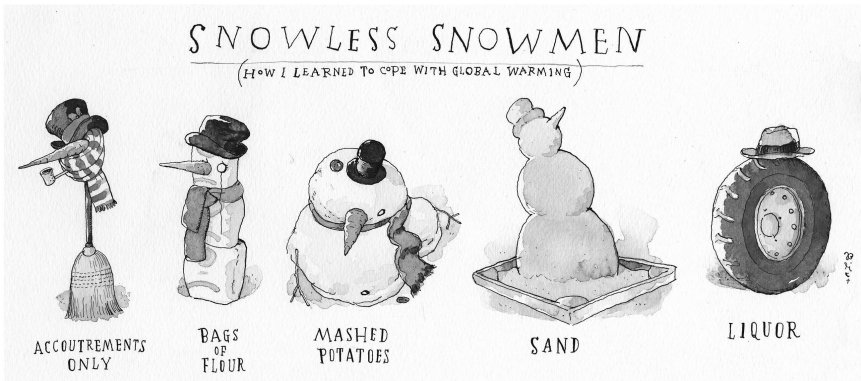


Figure 5.1 "Not So Frosty The Snowman"

one minute and simply enjoy the fall colors?” There are similarities between fire and fall colors, but this is not the only source of incongruity here. The fact that the woman is unmoved by the crisis and even criticizes her companion for overreacting to the situation clearly contrasts with the urgency of the situation and the reaction it requires. In fact, the inaction of the petrified man does not help either. This cartoon tries to offer an unretouched and stark depiction of the situation and invites the reader-viewer to evaluate how far the two reactions of being overwhelmed or indifferent can actually remedy the situation. It calls for reformatory action by exposing how our beliefs, attitudes, and self-efficacy can form the way we behave in response to environmental catastrophes.

Climate change, however, is not a problem that can be solved at the individual level. It requires collective decisions and actions. Sofia Warren’s “Just a Bunch of Papers” (*The New Yorker*, November 28, 2018) shows two raccoons at night just outside the White House. While rummaging waste containers, they find sheets of paper thrown away. One tells another, “Let’s keep moving. This is just a bunch of papers about climate change.” The White House has dumped paper policies on climate change, implying that the government does not deem climate change a priority. Even the raccoons find those sheets useless.

Likewise, Mary Lawton’s “Polar Bear Invasion” (*The New Yorker*, February 13, 2019) depicts a sleuth of polar bears walking toward the White House. The caption reads: “Polar bears invade Russian outpost.” In the wake of concerns over the Russian interference in the 2016 Presidential election in the US, which culminated in the Mueller report, officially titled *Report On The Investigation Into Russian Interference In The 2016 Presidential Election* (2019), the White House is reframed as a Russian outpost that Russian Arctic polar bears *invade*, a reaction in response to the lack or deficiency of environmental policies during the Trump Administration. Both these cartoons underscore the roles of political and regulatory systems in determining pro-environmental behavior at both individual and collective levels.

The impact of regulatory systems is similarly foregrounded in Peter Kuper’s cartoon (2022, Figure 5.2) that depicts the columns of the building of the Supreme Court as disjoint smoking and firing chimneys. The caption reads, “I missed it—what was the decision on that E.P.A. case?” Obama was denied to appoint a justice to the Supreme Court in the last year of his presidency. Having assigned one justice early in his term, Trump got to pick yet another conservative justice after the death of Ruth Bader Ginsburg in the last year of his term. This disrupted the balance of power along party lines in the Court, with a six to three majority for conservatives. In 2022, the conservative-led Supreme Court landmark ruling restricted US Environmental Protection Agency (EPA)’s power to regulate emissions. This decision was interpreted as a major setback to Biden’s climate plans (Stallard, 2022). The two diminutive figures in the foreground of a colossal structure emphasize the disproportionate roles of individual and structural factors in determining



"I missed it—what was the decision on that E.P.A. case?"

Figure 5.2 "That Scotus EPA Case"

pro-environmental behavior. The disjoint columns show that the idea of justice is unhinged, so the whole structure is in jeopardy of collapsing. And the proportion of standing to disjoint smoking and firing columns reflects the 3/6 fraction of conservative and liberal justices on the court.

Some cartoons are more specific in targeting the former US President himself. Evan Lian's "Observing the Holiday" (*The New Yorker*, December 5, 2018), for instance, attacks Trump for skipping the climate meeting at the G7 summit. The cartoon depicts a cheerful Trump lighting a candle on a menorah that resembles a factory with smoking chimneys. Under the picture, we read: "Trump skips the climate conference to observe the holiday." It attacks how the President abused a religious occasion as an excuse to skip a meeting that could potentially bear significant consequences for tackling climate change on an international level, despite the fact that he is not a particularly pious person. This frame binds economic interests, the political system, and religion to expose how politicians manipulate them in order to shirk their environmental responsibilities.

Similarly, Kim Warp uses Trump's cartoonish outfit and stature, as well as his obsession with Golf in her "In A Just World" (*The New Yorker*, January

10, 2020). His game is thwarted by a pipeline that crosses his golf course. The painting suggests that had the world been just, those who degraded the environment should have paid for it. But since this is not actually the case as there are no pipelines indenting Trump's golf courses, the cartoon foregrounds the inequality of subordinate classes bearing the costs of the decisions and actions of those who enrich themselves by exhausting natural resources and extracting and burning fossil fuels. In other words, this frame effectively binds environmental and social justice together and comments on the injustice of the disproportionate impacts of environmental crises on people who enjoy a smaller share of power and have a much more limited access to resources. It emphasizes that environmental issues are enmeshed in politics, economy, and cultural politics.

Besides underlining the social aspects of environmental behavior, the cartoons that directly target Trump employ satire as a regulatory mechanism to shame and censure him and his Administration for the purpose of changing the behavior of policymakers.

Political system and political persuasion belong to one dimension of the social aspects of environmental behavior; culture constitutes another dimension. Some cartoons concern the ways in which faith and religious identity can determine our environmental behavior. Edward Koren (*The New Yorker*, October 31, 1994) uses faith to encourage pro-environmental behavior. We see a young boy kneeling down in front of his bed behind which his parents are standing. Looking upward and with praying hands, the boy says, "Please help us reduce our garbage and improve our energy efficiency and our water quality. Help us to be eco-wise and—above all—to empower others." He is pleading with God to help him improve his environmental behavior and preserve natural resources. This can be interpreted in two ways. A straightforward reading shows how religious beliefs can be employed to incite pro-environmental behavior in people who believe in a faith. Read ironically, however, this might be understood as a disapproving comment that refutes divine intervention as a solution to materialist challenges caused by human beings and criticizes how attributing the responsibility to a transcendental power can lead to inaction. In other words, satire is striving to bridge the gap between attitude and behavior in that it exposes how the belief that divine or otherwise higher forces will take care of what needs to be done can actually hinder meaningful and consequential pro-environmental behavior. It is not up to God to solve anthropogenic ecological crises. Besides pointing to attitude-behavior gap, this cartoon ties ecological issues with environmental justice in coupling them with "empowering others." In other words, it acknowledges that tackling ecological crises is not possible unless we empower everyone to take action in an inclusive attempt and make sure no one is left behind.

Lee Lorenz's "And May We Continue To Be Worthy Of Consuming" (*The New Yorker*, July 20, 1992) also touches upon faith in depicting a man kneeling on the side of his bed saying, "And may we continue to be worthy of

consuming a disproportionate share of this planet's resources." This is a Biblical allusion to Book of Genesis:

And God blessed them, and God said unto them, Be fruitful, and multiply, and replenish the earth, and subdue it: and have dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth.

(Genesis 1:28)

This idea of mastery and dominion over other creatures has licensed human beings to "disproportionately" consume natural resources. In other words, this is an ironic comment on the negative impacts of untested religious beliefs as determinants of environmental behavior and calls for a reformative approach.

Likewise, Donald Reilly's "Because It's A New Category" (*The New Yorker*, September 3, 1990) also comments on how belief systems might not be entirely heedful of ecological crises and their roles therein because religions rarely address ecological concerns. People who are queuing in front of an entry gate against a dark background with flying infernal creatures are greeted by a demon who informs them that "Because it's a new category, they haven't settled the details of what to do with those who have sinned against the planet." Organized religions do not speak to ecological problems probably because they did not exist in their contemporary form and urgency back when these systems of belief were being conceived. As a result, contemporary people who follow these systems might not be guided by effective pro-environmental attitudes, beliefs, and norms due to their religious identities.

This is not exclusive to revealed religions, of course. People and corporations might cherry pick elements of belief systems to purge themselves or their businesses of their environmental sins. Ed Fisher (*The New Yorker*, October 16, 1989) compares selling indulgences to exchanging carbon offsets. We see executives lining up waiting to visit a guru with long hair and beard. One man waiting in line tells another: "It's great! You just tell him how much pollution your company is responsible for and he tells you how many trees you have to plant to atone for it." This cartoon addresses two more impediments in the way of realizing behavioral determinants into actual pro-environmental behavior. One is the single-action bias where individuals respond to ecological crises only by one action that may not even be the most effective option. They take no further action presumably because the first action has already reduced their feeling of worry or vulnerability. Although planting trees is one solution, it is not nearly enough and cannot replace attempts to stop polluting. A related mechanism is tokenism where people would take low-cost environmental actions with little effect in terms of mitigation. Planting trees is much less expensive as compared to what more aggressive and effective measures might cost for a corporation.

Promising to plant 10 billion trees to tackle climate change while you continue producing 12.5 million barrels of oil a day is an example of (hypocritical) tokenism. This cartoon emphasizes that these gestures cannot really offset the irreparable environmental damage that corporate power causes. Besides its individual and psychological aspects, therefore, it also comments on the role of corporate greed in environmental degradation.

Ellie Black's "A Younger Generation Problem" (*The New Yorker*, May 9, 2022) exposes yet another mechanism behind the breach between attitudes or beliefs and behavior. It depicts a frog in a pot on a stove saying to another frog sitting beside the stove, "I know the water is slowly heating up, but I figure that's the younger generation's problem." This is a reference to an apologue describing how frogs cannot sense a slow change in the temperature of water around them, so if placed in water at room temperature, one can slowly cook them to death without them noticing it. Though a myth, this is an appropriate metaphor for how we perceive the impacts of climate change as a slow and incremental process. The climate crisis is not comparable to a terrorist attack or a devastating earthquake as the impact of the equally destructive process is gradual, therefore not as overwhelming. Many of us, therefore, fail to respond appropriately and proportionately to ecological crises because we do not perceive them as immediate problems impacting our own lives. This is true at several levels including the behavior of citizens, policymakers, and corporations. This is an instance of judgmental discounting that underestimates temporally distant risks. This mechanism bears similarities with the delay of gratification that can make the greater accomplishment of saving the planet in the future less appealing.

Satire, therefore, can not only impact the determinants of environmental behavior but also address the intention-action and attitude-behavior gaps. It can urge people to reconsider their perception of climate change and take responsibility for what might not immediately impact their lives but those of their children.

It is not just the future generation that will experience the impacts of climate change however slow and gradual it might be unraveling. In Liz Montague's "Projected Sea Levels" (*The New Yorker*, September 30, 2019), two children are holding an executive hostage. After tying him to a chair and taping his mouth, one kid asks the other to "Now show him projected sea levels on his golf course." Besides its sinister consequences for future generations, climate change poses serious threats even for those who do not care for what might happen when they are no longer living on Earth and those who prioritize their vested interests. While Black's "A Younger Generation Problem" might appeal to people who focus on promotion and are eager for advancements, Montague's cartoon tries to reach out to those who concentrate on prevention and are eager to preserve the status quo. What primarily matters for them is to minimize losses rather than maximizing gains. Satire, therefore, can serve to reach out to people with different goal foci in order to advocate pro-environmental behavior.

Taking a bolder and more direct stance, Karl Stevens' "Don't Overthink It" (*The New Yorker*, September 20, 2021) summons the impact of our behavior on future generations to argue that climate change is the most basic and urgent issue in the world and that making progress in other domains will eventually be pointless unless we can reverse climate change. The cartoon depicts four children at a birthday party, blowing candles on a cake. The caption reads: "Don't overthink it—any wish that's not about reversing climate change is pretty pointless anyhow." This cartoon manages to communicate an apocalyptic message in a palatable way, relying on positive reinforcement rather than stirring eco-anxiety or indifference. Moreover, these three cartoons underscore the impact of age on environmental behavior and comment on the reasons why it might hinder pro-environmental behavior.

We have already discussed politics and culture as potential determinants of pro-environmental behavior. Economy is yet another dimension of the social aspect of pro-environmental behavior. The behavior of energy companies is particularly obvious for the purpose of illustrating this factor. Petrochemical industries are clear targets for satire not only because they fuel climate change, but also because they have been responsible for numerous and recurrent environmental disasters. Joe Dator's cartoon "You get a free baby seal covered in oil" (*The New Yorker*, January 16, 2015) depicts a filling station attendant who is promoting their offer to a customer: "It's \$1.85 a gallon and with every fill-up you get a free baby seal covered in oil." The flagrant promotion of fossil fuels despite their numerous negative impacts on the planet is the object of satire here. The petrochemical industry continues its destructive practices; however, Big Oil is not the only culprit. The perspective in the picture is that of a person sitting inside the car; that is to say, the reader-viewer is looking at the attendant in his face and sees the back of the driver's head. We are an accomplice in the suffering that is being imposed on marine life in that we are also riding the same car. This cartoon, therefore, works on several levels: it criticizes how the environment is being sacrificed for economic interests, and by extension political reasons. At the same time, it tries to encourage us to revisit our attitudes, beliefs, and norms on a personal level through providing a stark but inoffensive representation of our complicity in the process. It manages to effectively use shaming and censure at both personal and collective levels and call for change.

Roz Chast's "Why Oil Spills Are Good" (*The New Yorker*, May 14, 1990; Figure 5.3) also takes a multilayered perspective toward the environmental impact of oil production. The text lists five absurd reasons why oil spills are good, and the illustrations only add to the absurdity. This is, of course, sponsored content authored by the CEO of a petrochemical corporation, but the oil industry cannot continue its ventures without external support. First, the pointless (pseudo)scientists who resort to malpractices such as statistical sophistry, data fabrication, and falsification are castigated for being the henchmen of corporate power. In other words, the cartoon sets out to fight

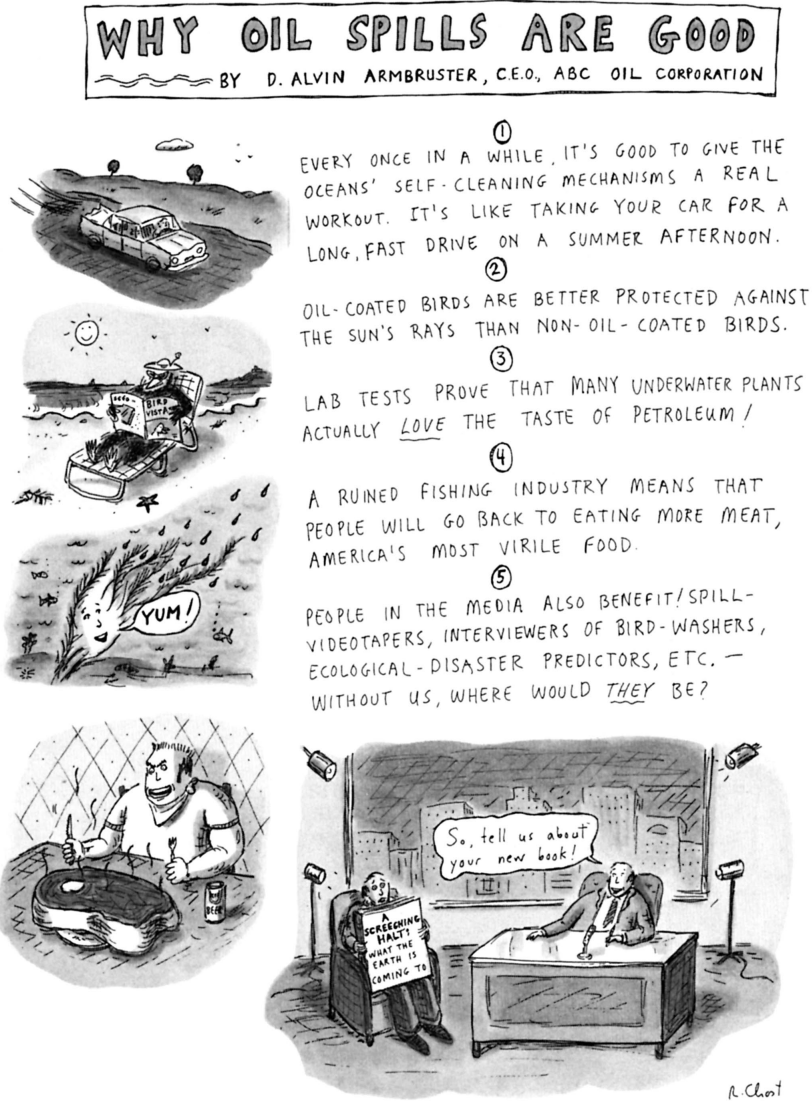


Figure 5.3 "Why Oil Spills Are Good"

misinformation in an ironic fashion as it acknowledges that information provision can determine our environmental behavior. Second, national chauvinism is tied to hypermasculinity and meat consumption in calling meat "America's most virile food." In other words, this frame exposes how gender, national, and cultural identities are abused to justify the environmental behavior of corporations and temper the reaction and response of citizens. Demystifying these, this cartoon employs the destabilizing, reformative, and

subversive potentials of humor and satire to call for change. Culinary and dietary conventions and their cultural values further link these determinants of environmental behavior to the ecosphere. Third, satire also castigates the media and aspires to set a new agenda for them. It criticizes how the coverage of environmental catastrophes can perpetuate vague discourses, numb the audience response, and allow corporations to continue their abusive practices. Fourth, it also exposes how different players commercialize and commodify ecological disasters for their personal economic interests. This is reflected in the way the host and guest on the TV show are plugging a book. This frame, therefore, uses caustic satire and humor and appeals to several determinants of environmental behavior in order to advocate reformative attempts at several individual and collective levels.

As it is evident in Dator's "You get a free baby seal covered in oil" and Chast's "Why Oil Spills Are Good," corporations need the support of other actors in the social sphere to be able to further their agenda. Celebrities sometimes join politicians and the media to ensure the complicity of citizens. Even when they are not promoting a product or brand, their insincere environmental pretensions can sometimes do much harm. Michael Crawford's cartoon (*The New Yorker*, August 2, 1993) focuses on acts of tokenism among influential people like celebrities. A photographer is taking pictures of a woman in what looks like a shooting session in an atelier. The photographer tells her, "O.K., now I need a few shots of you looking concerned about the planet." In attacking the hypocrisy of celebrities who fall short of going beyond empty gestures and into genuine environmental engagement and activism, this cartoon employs censure and ridicule to castigate people who do not channel their potential social or political influence in a meaningful way to benefit the society and the planet. This is particularly effective because the celebrity culture is primarily a shame culture as it feeds on publicity and scandals. In doing so, this cartoon also chastises the industry of public relation, marketing companies, media services, and advertising agencies. Crawford manages to specify his audience and devise a tailored satiric strategy to approach them. Shaming public figures and the celebrity branding industry, he co-opts the discourse of publicity and turns it against them. This is a good example of the subversive potentials of satire.

Like celebrities, other influential people and public figures are not immune to the sting of satire. Jason Patterson attacks the wealthy on their acts of tokenism in his "I Try to Do My Part" (*The New Yorker*, August 27, 2007). The cartoon depicts two white men flying on a private jet. There is a recycling bin on the left side of the picture, and a paper ball lies on the floor. One man is throwing another paper ball, aiming for the bin. Meanwhile, he says, "I try to do my part." This is yet another hypocritical act of tokenism as the carbon emissions of a private flight are by no means even remotely comparable to the mitigating impact of recycling. This is symbolized in the man missing to throw the ball into the bin. Irony and satire are again used to expose and disparage acts of tokenism.

Hypocrisy and tokenism are of course not limited to celebrities and executives. Edward Koren's cartoon (*The New Yorker*, January 27, 1992) takes a different perspective by commenting on the relationship between one's socio-economic status and one's ecological impact. Three paintings on the wall, a long table and dishware, formal dress, and jewelry all suggest a feast attended by wealthy people. There is still food on the plates the waiter is removing from the table. When he collects another plate laying in front of a woman, she tells him, "I certainly hope you're composting the leftovers." This is again an act of tokenism as composting leftovers cannot mitigate food waste and its ecological and economic consequences. While many are struggling to put food on their tables or are suffering from malnutrition, high-class snubs are more interested in pretending that they care about the environment. The sense of economic inequality is amplified by the register and style that the woman uses to address the waiter. Appropriating an indirect and detached tone to make a suggestion with a distinct use of an adverb, she uses etiquette and a sense of hypocritical politeness and environmental concern to further distance herself from the waiter. This cartoon, therefore, depicts how socio-economic status can be a determinant of environmental behavior. The ironic criticism waged on the hypocritical behavior of upper social classes and their manners is an attempt to raise consciousness and a call for change.

Another instance of tokenism appears in Lee Lorenz's drawing (*The New Yorker*, May 7, 1990) when a waitress giving a bill to a customer adds, "The extra fifteen per cent is for the rain forest." Some might think they can simply offset their environmental impact by spending a small amount of extra money. This will ease their conscience and stop them from genuinely engaging in meaningful and consequential environmental activism that might demand abstinence. Lorenz also criticizes how businesses capitalize on the public sentiment and desire to offset their carbon footprint. This can be understood as a comment on how environmental messages are framed and communicated to the public. While managing to incite a sense of guilt in people, environmental communication frequently fails to follow up and translate this sense of guilt into pro-environmental behavior and frequently stalls at acts of tokenism. This opens a space for commercializing the sense of guilt, which is likely to further aggravate environmental problems.

Demystifying the inefficacy of tokenism calls for revisiting our beliefs and norms and rethinking our sense of self-efficacy at an individual level and endorsing behavioral change. Confronted with a stark warning about numerous extreme weather events including tropical storms, hurricanes, wildfires, and heatwaves, two women sitting on a sofa and drinking, using straws, anxiously say, "I don't think reusable straws are going to be enough" in Sarah Kempa's cartoon (*The New Yorker*, September 17, 2021). Humor and satire are again targeting tokenism and single-action bias in hopes of bridging the intention-action gap. Besides providing information, they are reframing climate change to jostle the audience and encourage them to

rethink the sufficiency and efficacy of their efforts in reducing and mitigating their negative environmental impact.

As we argued above, cartoons do not merely hold individuals responsible for ecological problems and acknowledge and try to intervene in the social aspects of environmental behavior. We showed, for instance, how petrochemical corporations manage to pursue their destructive agendas regardless of numerous legitimate concerns. This, however, is not merely limited to the oil industry. Some cartoons attempt to cut deeper, offer an etiology, and expose the roots of the problem. Several identify the greed inherent in economic liberalism or capitalism as an important root cause of environmental crises. Lee Lorenz (*The New Yorker*, April 21, 1986), for instance, depicts a grandiose office facing the smoking chimneys of a factory. Three well-dressed executives are smoking cigars in the office. The one who is sitting at a large desk comments, "I think we agree, gentlemen, that one can respect Mother Nature without coddling her." The irony is enhanced by using a pun on coddle/cuddle with its intimate connotation when juxtaposed with *Mother Earth*.

One cannot identify a single cause for ecological crises (we insist on using the term in plural). Among others, capitalism and consumerism are blamed not only for environmental destruction but also for ecological and social injustices. Although far from the mainstream, this is reflected in environmental sociology (Burkett, 2005; Foster, 2020, 2022; Foster & Burkett, 2017; Foster & Clark, 2019; Magdoff & Foster, 2011), ecosocialism, and among the proponents of degrowth and "sustainable human development." Ecosocialism grants the Marxist discourse a pivotal role in addressing ecological crises. The basic argument is that capitalism depends on profit, creation of material wealth, and growth as its essential features and, at the same time, primary justifications. These, in their turn, are mainly driven by constant consumerism and inevitably cause the depletion of natural resources. Advertisement and fashion industries, for two rather obvious examples, create the illusion of need in individuals to persuade them to buy material goods that they do not actually use. Unbridled production links consumerism to the depletion of resources and environmental destruction. While capitalism, therefore, is driven by "cancerous production and addictive consumption" (Kovel, 2019, p. 24), ecological thought requires "*reciprocity, mutual recognition, and interconnection*" (p. 16; original italics). This is probably the main reason why many States shun their responsibilities in reducing their emissions, despite the fact that they are aware of the gravity of the situation, because they do not want to compromise their economic growth. On the contrary, ecosocialism calls for revolutionary responses to capitalism as the root cause of ecological crises by substituting ecocentric ethics and a form of socialist alternative. This is partly possible through modifying and curtailing the notion of "need" in order to curb ravenous consumerism if ecological crises are to be genuinely addressed. Disparaging unbridled consumerism can be one of the ways through which humor and satire can

promote a change in attitude, and consequently behavior (Burkett, 2005; Cohen et al., 2017; Crane, 2010; see also Albritton, 2019; Baer, 2018; Borgnäs et al., 2015; Croeser, 2020; Gibbs, 2019; Huan, 2010; Kelly & Malone, 2008; Kovel, 2013, 2019; Löwy, 2015; Pepper, 1993; Saito, 2017; Wall, 2010).

Joseph Mirachi (*The New Yorker*, April 1, 1985) shows two middle-age white men, one with a full figure, looking at a factory and its smoking chimneys from an elevated perspective. The caption appropriates the common proverb to state that “Where there’s smoke, there’s money” rather than fire. Similarly, J. B. Handelsman’s “So Be It” (*The New Yorker*, February 7, 1970) depicts two men in formal outfit smoking and talking. One says to the other: “All I can say is that if being a leading manufacturer means being a leading polluter, so be it.” Large manufacturers have accepted and can live with this premise that they have to be leading polluters to maintain their leading position in the market. The economic incentive is too strong for them to bother about the environment. Rob Esmay (*The New Yorker*, May 14, 2007) features a more nuanced take as it also reflects on greenwashing and how corporations tend to spend a lot of time and energy on pretending that they care about the environment rather than genuinely addressing the problem. Two male executives are staring out of their office window onto the smoking chimneys of their factory. The caption reads: “Can’t we just dye the smoke green?”

These last four cartoons underline the correlation between capitalism and environmental degradation. They show how some (male) business owners are willing to sacrifice the common good and indeed the planet for their vested interests. They might go to great lengths in order to represent a false public image by investing more resources on marketing themselves as environmentally friendly entities rather than actually working to minimize their actual environmental impact. In other words, these cartoons show how the economy, and by extension the political system, can shape our environmental behavior and strive to shame corporations into authentic pro-environmental engagement.

We showed how *New Yorker* cartoons have touched on many pertinent individual and collective determinants of pro-environmental behavior over several decades. The magazine has had its shortcomings, though. For one, it has failed to fairly represent the intersectionality and intricacies involved in environmental justice. This is not unexpected since it is a ‘prestigious’ venue addressing a relatively high-brow target audience and shares certain interests with corporate power. This is best symbolized in Charles Saxon’s cartoon (*The New Yorker*, March 21, 1983) in which a woman in high society in a tea party turns to another woman and says, “I don’t know why I don’t care about the bottom of the ocean, but I don’t.” This cartoon is a superb metaphor for why the editors of *The New Yorker* do not seem to care, or seem to be blind to, more nuanced takes on environmental issues that encompass social issues in relation to ecological crises for the same reason.

While acknowledging the impacts of capitalism on environmental degradation, the cartoons shy away from taking a bolder stance by targeting

specific people or corporations or acknowledging that there is a very urgent need for disposing of imperialist attitudes and policies and demilitarizing in the world including in countries that cherish values originating from liberal democracy and economic liberalism. In a cartoon, Sneuro (2010), for instance, depicts a colossal tank in front of which a man is explaining to a woman that “By upgrading our tanks & trucks to burn 50% less harmful fuel emissions [*sic*], Rona, we can kill and destroy with a clear conscience.” It targets not only the arms industry but also governments and politicians. It tries to strike a chord with its audience at both individual and collective levels by binding social (including political and economic) determinants of behavior to individual ones by challenging the values, attitudes, beliefs, norms, and motives that have been inculcated in us.

The New Yorker cartoons largely fail to illustrate the imbrication of environmental issues with social issues (Edward Koren’s “I’m in herbs – celebrating the ancient link between women and plants.” *The New Yorker*, February 3, 1992, is a rather apolitical exception). But other cartoonists have not been always heedless of pertinent adjacent issues. Rod Rossi (2014) shows two women jogging in a park. One tells the other, “Tony’s denying climate change, and I’m denying sex.” This is reminiscent of Aristophanes’ *Lysistrata* in which women succeed in ending the Peloponnesian Wars by refusing to have sex with their husbands. This cartoon, therefore, not only entwines gender identity with environmental issues and behavior, but it also implies that women are disproportionately impacted by environmental crises and encourages head-on measures and responses to address this.

Rohan Chakravarty (2020, Figure 5.4) goes even further by adding more nuance to the woman-nature relationship. In one cartoon, he contrasts the perspectives of the white Western female academic with downtrodden “marginalized majority” to bitterly comment that mere liberal gestures are not really sufficient to genuinely address climate change. The disparity in position and the top-to-bottom perspective of the Western academic only reinforces the message.⁵

In another work (Figure 5.5), Chakravarty (2020) manages to pack even more factors including religion, race, ethnicity, ability, colonialism, and conflict of interest, while attacking academics again. When asked what he can contribute to a diverse, grassroots environmental campaign, a white, male, Western academic responds, he can bring his “power to make decisions.” Instead of empowering marginalized communities, giving them voice, and supporting them to make decisions for themselves, the Western academic is deluded to think he knows best and can proudly impose his ‘authority’ on the subaltern. Ironically, his authority comes from the funding he has secured. The unamused retort of the hijab-wearing woman, “You mean that bag of colonial wealth that belongs here anyway?” acerbically undermines his whole authority and assumed superiority. This cartoon offers a very incisive and insightful critique not only on the dynamics of decision-making about environmental crises and the unfair dynamics of exclusion therein,

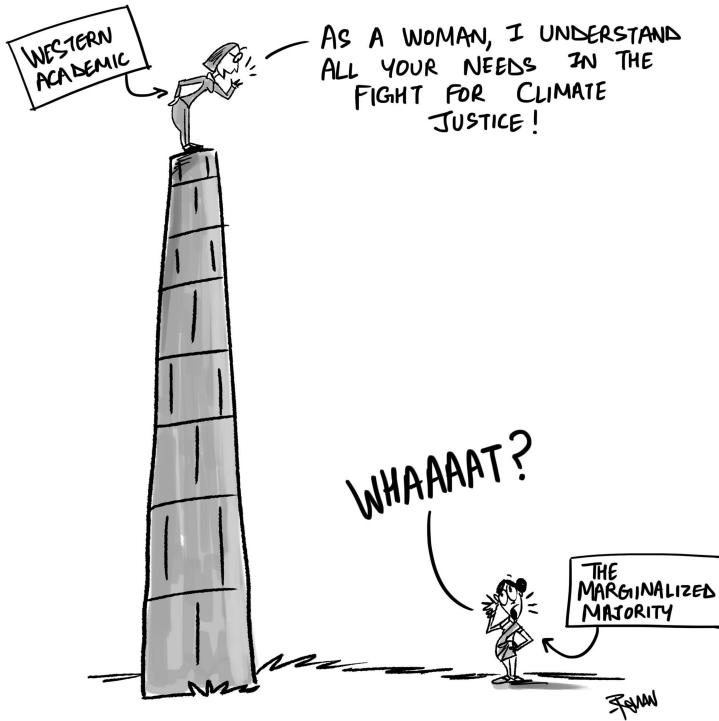


Figure 5.4 Intersectionality and climate justice [I].

but also on the hallow self-claimed authority of Western academics over environmental issues. It shows us how empty claims about environmental *justice* sound when voiced by Western academics and rightly undermines the dynamics and factors that contribute to academic prominence. It manages to include many determinants of environmental behavior we explicated in the previous chapter under the individual and social modules of MIM.

Blindness to nuance and falling short of committing to more radical and progressive causes are not the only drawbacks of *The New Yorker* cartoons. Like *The Simpsons*, *The New Yorker* also capitalizes on the environmental initiatives of its artists. Besides the exuberant resale prices, you can order a wide range of their merchandise such as wall art, home décor (like cushions), stationery, phone cases, coffee mugs, face masks (during SARS-CoV-2 pandemic), and apparel with these cartoons printed on them. The fact that environmental attempts are co-opted to maximize corporate profits regardless of their negative environmental impact is yet another evidence to show that humor and satire are not exclusive to progressive causes. The very fact that they sell indicates that they exert an impact, but since they are ‘double-edged swords,’ their impacts could be both negative and positive.



Figure 5.5 Intersectionality and climate justice [II].

In this section, we contended that cartoons employ satire and humor in order to advocate pro-environmental behavior. They explicate the individual, social, and ecospheric determinants of environmental behavior and use many strategies—including parrhesia, framing, agenda setting and intermediality, censure and ridicule, as well as their reformatory and subversive potentials—to intervene and reshape these determinants, which can eventually lead to behavioral change. As the caustic edge of cartoons moves toward acerbic satire, they tap into social justice and their criticism further resonates with socio-political causes. Nonetheless, there is also a note of caution, as their interventions could be limited in changing behavior since they are prone to producing counterproductive results as when they can be co-opted to serve what they criticize.

This chapter illustrated the significance of using humor and satire for effectively communicating environmental messages. Tom Toro's cartoon (2019) good-naturedly illustrates why mere apocalyptic and grim messages are not sufficient for the purpose of environmental advocacy and behavioral change at different levels. Holding the remote and in front of the TV, a boy



Figure 5.6 Intersectionality and climate justice [III].

is talking to his friend, while his mother is anxiously hiding in a make-shift shelter of cushions. The boy says, “Whenever I want my mom to play fort, I just turn on news about climate change.”

Another extremely important point that we underlined in our model and discussion is that no green transformation could possibly be truly effective without being just, inclusive, and holistic. No one should be left behind; all must fairly benefit from the outcomes of green transformations, and those who have had a larger share in causing the current situation must bear larger costs of the transformations as they have long benefitted from depleting all sorts of resources. A sustainable transformation inevitably requires reckonings and reparations. It must be extremely sensitive to the wide diversity of contingencies in different situations, contexts, times, geographies, and communities, among others. We cordially concede the last word to Rohan Chakravarty (2020, Figure 5.6).

Notes

- 1 Season#.Episode#; original airdates.
- 2 Homer: Shish! Look at these refugees [in the newspaper]. How about a smile?
Marge: They’ve undergone terrible hardships!
Homer: Well, moping won’t make it better.
- 3 For another humorous treatment of the single action bias and tokenism, see “Homerland” (25.1; 2013) in which Homer turns vegan, and becomes aware of

the harms done by the nuclear plant where he works. He gives up drinking and eating pork in order to offset the negative environmental impact of working at a nuclear power plant. The episode cleverly ties environmental concerns with prejudice against ethnic communities and Islamophobia.

4 This is not to claim that *The Simpsons* is flawless in its representation of racial and ethnic communities, of course.

5 The authors are fully aware that they are also enjoying the privileges, inconsistencies, and blissful yet haughty ignorance Western academia is home to.

References

- Ahius, K., & Schwarten, E. (27 March 2011). Thousands killed in “Toad Day Out”. *The Sidney Morning Herald*. <https://www.smh.com.au/national/thousands-killed-in-toad-day-out-20110327-1cbbnu.html>
- Albritton, R. (2019). *Eco-socialism for now and the future: Practical utopias and rational action*. Palgrave Macmillan. <https://doi.org/10.1007/978-3-030-05183-9>
- Anderson, B. R. (1998). *The spectre of comparisons: Nationalism, southeast Asia, and the world*. Verso.
- Association for the Study of Literature and Environment. (2020, July 7). *Humanities on the brink: Energy, environment, emergency, ASLE 2020 virtual symposium*. <https://www.asle.org/stay-informed/asle-news/humanities-on-the-brink-energy-environment-emergency-asle-2020-virtual-symposium/>
- Baer, H. A. (2018). *Democratic eco-socialism as a real utopia: Transitioning to an alternative world system*. Berghahn Books. <https://doi.org/10.2307/j.ctvw048m4>
- Black, E. (2022). A younger generation problem. *The New Yorker*, Cartoon.
- Blitt, B. (2021). Not so frosty the snowman. *The New Yorker*, Cartoon.
- Borgnäs, K., Eskelinen, T., Perkiö, J., & Warlenius, R. (Eds.). (2015). *The politics of ecosocialism: Transforming welfare*. Routledge. <https://doi.org/10.4324/9781315749471>
- Burkett, P. (2005). Marx’s vision of sustainable human development. *Monthly Review*, 57(5), 34–62. https://doi.org/10.14452/mr-057-05-2005-09_4
- Byrnes, P. (2019). Enjoy the fall colors. *The New Yorker*, Cartoon.
- Chakravarty, R. (2020). Cartoons on #intersectionality and #climatejustice for a Cartoonathon with @Cartoonstock and the @CJRFund. <https://twitter.com/thetoonguy/status/1331426561031999490>
- Chast, R. (1990). Why oil spills are good. *The New Yorker*, Cartoon.
- Chattoo, C. B., & Feldman, L. (2020). *A comedian and an activist walk into a bar: The serious role of comedy in social justice*. University of California Press.
- Cohen, M. J., Comrov, A., & Hoffner, B. (2017). The new politics of consumption: Promoting sustainability in the American marketplace. *Sustainability: Science, Practice and Policy*, 1(1), 58–76. <https://doi.org/10.1080/15487733.2005.11907965>
- Crane, D. (2010). Environmental change and the future of consumption: Implications for consumer identity. *Anuario Filosófico*, 43(2), 353–379. <https://revistas.unav.edu/index.php/anuario-filosofico/article/download/1394/1274/>
- Crawford, M. (1993). O.K., now I need a few shots of you looking concerned about the planet. *The New Yorker*, Cartoon.
- Croeser, E. (2020). *Ecosocialism and climate justice: An ecological neo-Gramscian analysis*. Routledge.
- Dator, J. (2015). You get a free baby seal covered in oil. *The New Yorker*, Cartoon.
- Dator, J. (2019). Earth’s natural resources. *The New Yorker*, Cartoon.

- Durbin, K. (1991, October 15). Loggers get bad vibes from Lisa. *The Oregonian*, p. D01.
- Esmay, R. (2007). Can't we just dye the smoke green? *The New Yorker*, Cartoon.
- Ferguson, R. (1992). Opus, Doonesbury and friends ruffle some feathers. *The Plain Dealer*, p. 16A.
- Fisher, E. (1989). It's great! *The New Yorker*, Cartoon.
- Foster, J. B. (2020). *The return of nature: Socialism and ecology*. Monthly Review Press.
- Foster, J. B. (2022). *Capitalism in the Anthropocene: Ecological ruin or ecological revolution*. Monthly Review Press.
- Foster, J. B., & Burkett, P. (2017). *Marx and the Earth: An anti-critique*. Haymarket Books.
- Foster, J. B., & Clark, B. (2019). *The robbery of nature: Capitalism and the ecological rift*. Monthly Review Press.
- Fukuyama, F. (1989). The end of history? *The National Interest*, 16, 3–18.
- Fukuyama, F. (1992). *The end of history and the last man*. The Free Press.
- Gibbs, J. (Director). (2019). *The planet of humans*. <https://youtu.be/Zk1lv1-7czE>
- Gold, D. A., Lo, Y. H., & Wright, E. O. (1975). Recent developments in Marxist theories of the capitalist state: Part II. *Monthly Review*, 27(6), 36–51. https://doi.org/10.14452/mr-027-06-1975-10_4
- Gray, J. (2006). *Watching with The Simpsons: Television, parody, and intertextuality*. Routledge.
- Greenblatt, S. (1988). Invisible Bullets. In S. Greenblatt (Ed.), *Shakespearean negotiations: The circulation of social energy in Renaissance England* (pp. 21–65). The University of California Press.
- Groening, M., Brooks, J. L., Simon, S., Clausen, A., Castellaneta, D., Kavner, J., & Cartwright, N. (2007). *The Simpsons*. Twentieth Century Fox Home Entertainment, Inc.
- Handelsman, J. B. (1970). So be it. *The New Yorker*, Cartoon.
- Hay, C. (1999). Marxism and the state. In Gamble, A., Marsh, D., & Tant, T. (Eds.), *Marxism and Social Science* (pp. 152–174). Palgrave. https://doi.org/10.1007/978-1-349-27456-7_8
- Hee, M., Jürgens, A.-S., Fiadotava, A., Judd, K., & Feldman, H. R. (2022). Communicating urgency through humor: School strike 4 climate protest placards. *Journal of Science Communication*, 21(05), A02. <https://doi.org/10.22323/2.21050202>
- Hempelmann, C. F., & Samson, A. C. (2008). Cartoons: Drawn jokes? In C. F. Hempelmann & A. C. Samson (Eds.), *The Primer of Humor Research* (pp. 609–640). De Gruyter Mouton. <https://doi.org/10.1515/9783110198492.609>
- Hsieh, H.-F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research*, 15(9), 1277–1288. <https://doi.org/10.1177/1049732305276687>
- Huan, Q. (Ed.) (2010). *Eco-socialism as politics: Rebuilding the basis of our modern civilization*. Springer Netherlands. <https://doi.org/10.1007/978-90-481-3745-9>
- Kelly, J., & Malone, S. (2008). *Ecosocialism or barbarism*. Resistance Books.
- Kempa, S. (2021). I don't think reusable straws are going to be enough. *The New Yorker*, Cartoon.
- Koren, E. (1992). I certainly hope you're composting the leftovers. *The New Yorker*, Cartoon.
- Koren, E. (1994). Please help us reduce our garbage. *The New Yorker*, Cartoon.

- Kovel, J. (2013). *The enemy of nature: The end of capitalism or the end of the world?* Zed Books.
- Kovel, J. (2019). *The emergence of ecosocialism: Collected essays by Joel Kovel*. Edited by Quincy Saul. Leaf Press.
- Kuper, P. (2017). Postcards from the interior. *The New Yorker*, Cartoon.
- Kuper, P. (2022). "I missed it—What was the decision on that E.P.A. case?". *The New Yorker*, Cartoon.
- Lawton, M. (2019). Polar bear invasion. *The New Yorker*, Cartoon.
- Lian, E. (2018). Observing the holiday. *The New Yorker*, Cartoon.
- Lorenz, L. (1986). I think we agree, gentlemen, that one can respect mother nature without coddling her. *The New Yorker*, Cartoon.
- Lorenz, L. (1990). The extra fifteen per cent is for the rain forest. *The New Yorker*, Cartoon.
- Lorenz, L. (1992). And may we continue to be worthy of consuming. *The New Yorker*, Cartoon.
- Lorenz, L. (2008). All we know so far is that something seems to have disrupted their migratory pattern. *The New Yorker*, Cartoon.
- Löwy, M. (2015). *Ecosocialism: A radical alternative to capitalist catastrophe*. Haymarket Books.
- Magdoff, F., & Foster, J. B. (2011). *What every environmentalist needs to know about capitalism: A citizen's guide to capitalism and the environment*. Monthly Review Press.
- Mayring, P. (2000). Qualitative content analysis. *Forum: Qualitative Social Research*, 1(2). <https://doi.org/10.17169/fqs-1.2.1089>
- Meier, M. R., & Berg, S. V. L. (2022). The activist potential of networked satire: *Last Week Tonight with John Oliver* and the struggle for net neutrality. *Western Journal of Communication*. <https://doi.org/10.1080/10570314.2022.2130003>
- Mirachi, J. (1985). Where there's smoke, there's money. *The New Yorker*, Cartoon.
- Montague, L. (2019). Projected sea levels. *The New Yorker*, Cartoon.
- Mr. Smith Goes to Washington*. (1939). Directed by Frank Capra.
- Murray, R. L., & Heumann, J. K. (2011). *That's all folks? Ecocritical readings of American animated features*. University of Nebraska Press.
- Neuendorf, K. A. (2016). *The content analysis guidebook*. SAGE.
- Oliver, J. (2014). *Climate change debate: Last Week Tonight with John Oliver*. YouTube. HBO. <https://www.youtube.com/watch?v=cjuGCJJUGsg>
- Oliver, J. (2015). *Chickens: Last Week Tonight with John Oliver*. YouTube. HBO. <https://www.youtube.com/watch?v=X9wHzt6gBgI>
- Oliver, J. (2015). *Food waste: Last Week Tonight with John Oliver*. YouTube. HBO. <https://www.youtube.com/watch?v=i8xwLWb0lLY>
- Oliver, J. (2016). *Lead: Last Week Tonight with John Oliver*. YouTube. HBO. <https://www.youtube.com/watch?v=GUizvEjR-0U>
- Oliver, J. (2017). *Coal: Last Week Tonight with John Oliver*. YouTube. HBO. <https://www.youtube.com/watch?v=aw6RsUhw1Q8>
- Oliver, J. (2017). *Floods: Last Week Tonight with John Oliver*. YouTube. HBO. <https://www.youtube.com/watch?v=pf1t7cs9dkc>
- Oliver, J. (2017). *Nuclear waste: Last Week Tonight with John Oliver*. YouTube. HBO. <https://www.youtube.com/watch?v=ZwY2E0hjGuU>
- Oliver, J. (2017). *Paris agreement: Last Week Tonight with John Oliver*. YouTube. HBO. <https://www.youtube.com/watch?v=5scez5dqtAc>

- Oliver, J. (2019). *Green new deal: Last Week Tonight with John Oliver*. YouTube. HBO. <https://www.youtube.com/watch?v=JDcro7dPqpA>
- Oliver, J. (2019). *SLAPP suits: Last Week Tonight with John Oliver*. YouTube. HBO. <https://www.youtube.com/watch?v=UN8bJb8biZU>
- Oliver, J. (2021). *Duck stamps: Last Week Tonight with John Oliver*. YouTube. HBO. <https://www.youtube.com/watch?v=bl-ABuxeWrE>
- Oliver, J. (2021). *PFAS: Last Week Tonight with John Oliver*. YouTube. HBO. <https://www.youtube.com/watch?v=9W74aeuqsiU>
- Oliver, J. (2021). *Plastics: Last Week Tonight with John Oliver*. YouTube. HBO. <https://www.youtube.com/watch?v=Fiu9GSOmt8E>
- Oliver, J. (2021). *The power grid: Last Week Tonight with John Oliver*. YouTube. HBO. <https://www.youtube.com/watch?v=qBpiXcyB7wU>
- Oliver, J. (2022). *Environmental racism: Last Week Tonight with John Oliver*. YouTube. HBO. <https://www.youtube.com/watch?v=-v0XiUQIRLw>
- Patterson, J. (2007). I try to do my part. *The New Yorker*, Cartoon.
- Pepper, D. (1993). *Eco-socialism: From deep ecology to social justice*. Routledge. <https://doi.org/10.4324/9780203423363>
- Pike, D. M. (2012). *Enviro-toons: Green themes in animated cinema and television*. McFarland & Company.
- Reilly, D. (1990). Because it's a new category. *The New Yorker*, Cartoon.
- Reinhard, D. (1991, October 25). I've got a 'Brooklyn Bridge' to sell you. *The Oregonian*, p. C08.
- Rossi, R. (2014). Tony's denying climate change, and I'm denying sex. *Cartoonstock*, Cartoon. <https://www.cartoonstock.com/cartoon?searchID=CS409414>
- Said, E. W. (2002). The public role of writers and intellectuals. In H. Small (Ed.), *The Public Intellectual* (pp. 19–39). Wiley. <https://doi.org/10.1002/9780470775967.ch1>
- Saito, K. (2017). *Karl Marx's ecosocialism: Capital, nature, and the unfinished critique of political economy*. Monthly Review Press.
- Saxon, C. (1983). I don't know why I don't care about the bottom of the ocean, but I don't. *The New Yorker*, Cartoon.
- Seymour, N. (2018). *Bad environmentalism: Irony and irreverence in the ecological age*. University of Minnesota Press.
- Shaw, L. (2021). 'South Park' creators sign massive new \$900 million deal with Viacom CBS. Bloomberg.com. <https://www.bloomberg.com/news/articles/2021-08-05/south-park-creators-sign-900-million-deal-for-more-episodes-movies>
- Sneuro. (2010). By upgrading our tanks & trucks. *Cartoonstock*, Cartoon. Retrieved July 13, 2022, from <https://www.cartoonstock.com/cartoon?searchID=CS378399>.
- Special Counsel Robert S. Mueller, III. (2019). *Report on the investigation into Russian interference in the 2016 presidential election*. Vols. I & II. <https://storage.courtlistener.com/recap/gov.uscourts.dcd.205521/gov.uscourts.dcd.205521.122.1.pdf>; <https://storage.courtlistener.com/recap/gov.uscourts.dcd.205521/gov.uscourts.dcd.205521.122.2.pdf>
- Stabile, C. (2003). *Prime time animation: Television animation and American culture*. Routledge.
- Stalin, J. V. (1932). *Foundations of Leninism*. <https://www.marxists.org/reference/archive/stalin/works/1924/foundations-leninism/index.htm>
- Stallard, E. (2022). Supreme court limits Biden's power to cut emissions. *BBC News*. <https://www.bbc.com/news/science-environment-62000742>.

- Starosielski, N. (2011). 'Movements that are drawn': A history of environmental animation from the Lorax to FernGully to Avatar. *International Communication Gazette*, 73(1–2), 145–163. <https://doi.org/10.1177/1748048510386746>
- Steven, K. (2021). Don't overthink it. *The New Yorker*, Cartoon.
- Swift, J. (1965). The battle of the books. In H. Davis (Ed.), *A tale of a tub: With other early works, 1696–1707* (pp. 136–165). Basil Blackwell.
- Toro, T. (2019). Whenever I want my mom to play fort, I just turn on news about climate change. *Cartoonstock*, Cartoon. <https://www.cartoonstock.com/cartoon?searchID=CX902661>
- Wall, D. (2010). *The rise of the green left: A global introduction to ecosocialism*. Pluto Press.
- Warp, K. (2020). In a just world. *The New Yorker*, Cartoon.
- Warren, K. J. (2000). *Ecofeminist philosophy: A western perspective on what it is and why it matters*. Rowman & Littlefield.
- Warren, S. (2018). Just a bunch of papers. *The New Yorker*, Cartoon.
- Wells, P. (2013). *Understanding animation*. Taylor and Francis.
- Whealy, C. A. (2014). *Eco-animation: Expanding the world of environmental animation* (thesis). Theses and dissertations collection open access repository of University of Idaho. https://www.lib.uidaho.edu/digital/etd/items/whealy_idaho_0089m_10218.html
- Whitley, D. (2008). *The idea of nature in Disney animation*. Ashgate Publishing.
- Whitley, D., & von Mossner, A. W. (2014). Animation, realism, and the genre of nature. In A. W. Mossner (Ed), *Moving environments: Affect, emotion, ecology, and film* (pp. 225–247). Wilfrid Laurier University Press.
- Zekavat, M. (forthcoming). The ambivalent affordances of humor in capitalist organizations. *The European Journal of Humor Research*.

6 Measuring the Potential Impacts of Humor and Satire on Environmental Behavior

In this chapter, we seek to move toward introducing viable methods for testing MIM and measuring the impacts of humor and satire on environmental behavior. There is no point in providing a review of literature for each and every variable in the model; rather, we start by discussing empirical studies on the relationship between humor and pro-environmental attitudes, intentions, and behavior, while concentrating on their research methodologies. Afterward, we will turn to discussing some methodological subtleties and a collection of possible operationalizations for several of the key variables in MIM. The focus will primarily be on quantitative rather than qualitative approaches; accordingly, we provide tools for testing hypotheses rather than venturing into novel explorations.

Empirical Research about the Impacts of Humor on the Determinants of Pro-environmental Behavior

There are very few studies on the relationship between humor and pro-environmental attitudes and behavioral intentions, and none that we are aware of about the impact of humor on pro-environmental behavior. Some of these studies were discussed in previous chapters. Here, we will focus on the empirical research methods these studies employ. While research focusing on the effects of manipulations and/or inducement of emotions is conducted as *experiments*, studies focusing on rather stable individual dispositions often rely on *surveys*. These two approaches can of course be simultaneously employed.

Experiments Using Humor Manipulations

Message Creation

Controlled conditions for experimental manipulation are often used to investigate the effects of a message. Several such experiments contrast humorous and non-humorous approaches. Velde et al. (2018) assessed how humor can be used to foster pro-environmental behavior among 167 dairy farmers. They used four versions, that is, one- or two-sided, and humorous

or non-humorous messages, of a commercial advertisement promoting an anthelmintic, that is, a deworming medication. Humor used in the two-sided message, which discussed both positive and negative aspects of the medication, increased behavioral intentions to a higher extent as compared to the one-sided humorous message that only reflected the negative aspects. Becker and Anderson (2019) found climate change message elaboration and counterarguing were encouraged only through one-sided satire, that is, only making fun of the deniers of anthropogenic climate change. This is while two-sided satire could even cause message discounting. The latter category included jokes about believers as well as deniers of the role of human beings in causing and aggravating climate change. Thus, while the information provided is probably perceived to be more balanced when including both negative and positive aspects as in the study conducted by Velde et al. (2018), being personally targeted by satire might provoke reactance by offense as in the study conducted by Becker and Anderson (2019).

Moyer-Gusé et al. (2019) tested the persuasiveness of a pro-environmental public service announcement (PSA) in combination with an entertainment narrative that featured humor related to environmental behavioral intentions. The combination decreased intentions to engage in pro-environmental behaviors and even reactance as compared to an exclusive exposure to the environmental narrative. As an example of a rather broad, multimodal approach with little control over the surrounding conditions, the performance-related experimental case study by Boykoff and Osnes (2019) discussed in previous chapters tested the efficacy of humor in climate change communication via a combination of sketch comedy, stand-up comedy, and improvisation. They found effects for several attitudes related to pro-environmental behavior, for example, awareness, efficacy, and knowledge.

Risk Perception

Shifting the focus from the experimental conditions (that is, humor manipulations) to the criteria these manipulations are intended to affect, several experiments focus on increasing the perception of risk related to climate change. These studies assume that pro-environmental behavior might be galvanized by making the risk salient. A series of video experiments by Skurka and colleagues (see below, also introduced in chapter 3) manipulated emotions arising in messages about climate change. In Skurka et al. (2018), four videos were used to create the experimental conditions, namely, fear, humor, information provision, and control conditions. Only fear directly increased risk perceptions; however, the replication of this study by Skurka, Romero-Canyas et al. (2022) failed to reproduce similar results. Skurka, Eng et al. (2022) compared awe-inspiring messages and parody and found they both increased risk perception about climate change. By means of exposing participants to one out of eight different satirical political cartoons, Frank (2021) found that the use of humor in environmental communication

increased individuals' self-assessed perceived risk of climate change. Thus, while Skurka, Eng et al. (2022) as well as Frank (2021) showed a significant relationship between humor and risk perception, Skurka et al. (2018) found no such support. Risk perception was assessed by scales in a survey, which can also be used to self-assess humor (see below for more details on this).

Surveys on Individual Humor Dispositions

Surveys are used when studying variables that rely on self-perception, for example, stable personality traits. These dispositions or personality traits are assumed to work as important boundary conditions for the effects humor might have on pro-environmental attitudes and behavior. The humor-related dispositions may work as a moderator (for example, need for humor) and thus alter relationships between, for instance, experimental conditions and criteria like pro-environmental behavior. Also, dispositions (for example, sense of humor) can be directly related to pro-environmental behavior.

Disposition as Moderator

Need for humor was found to influence the effectiveness of humorous interventions (for example, messages). Need for humor is defined as “a trait that refers to a person’s tendency to generate and seek out humor” (Cline et al., 2003, p. 31); that is, humorous approaches could be effective provided that a person has a high need for humor. Frank (2021) reported a moderation of the relationship between the perceived mirth level of a cartoon and pro-environmental attitudes by the *internal* need for humor, that is, the “need to make others experience humor” (Frank, 2021, p. 17).

Disposition Directly Related to Pro-environmental Attitudes

Dispositions are also assessed in regard to intraindividual relationships, that is, personality traits in relation to pro-environmental attitudes. Cross-sectional self-assessment survey studies show that both the *sense of humor*—especially humor appreciation, production, and coping humor—and *contact with nature* relate to emotional well-being (Herzog & Strevey, 2008); unfortunately, a relation between humor and contact with nature is not reported. Viewing humor as a sub-element of a character strength called “transcendence,” Corral-Verdugo et al. (2015) found a significantly positive correlation between transcendence-humor and self-reported sustainable behaviors, that is, altruistic, pro-ecological, frugal, and equitable behaviors.

Inconsistent Findings and Research Gaps

According to a review of the use of humor in communicating climate change, humor seems to be very effective in raising environmental awareness and

potent for increasing the perception of and gaining knowledge about environmental issues (Kaltenbacher & Drews, 2020). Nevertheless, research findings about its impact on behavior and behavioral intentions are mixed. Reasons that might account for inconsistencies or even contradictions in findings include heterogeneous approaches with regard to the types of humor (unspecific vs. irony or satire), different types of communication used in these studies (for example, cartoons or workshops were more effective than motion pictures and verbal texts in communicating climate change), and sample characteristics (mostly unspecific regarding education, profession, etc.; Kaltenbacher & Drews, 2020). Thus, it is not just the absence or presence of humorous content in the message that might boost pro-environmental intentions, but rather other specifications of the study design, the target audience, and the wider context of communication.

Besides inconsistent findings, there is no empirical research we are aware of that tries to understand the environmental impacts of humor within the framework of environmental psychology, for example, the Theory of Planned Behavior (TPB). Also, empirical evidence is scarce for the effectiveness of humor in the case of pro-environmental behavior. Thus, the potential roles of humor in changing pro-environmental attitudes and especially behavior, including the limiting conditions for the beneficial effects of humor, require far more in-depth research.

This succinct discussion of the intricacies involved in researching the potential impacts of humor on the determinants of pro-environmental behavior alongside the significance of this timely topic as discussed in previous chapters should have hinted at some exciting topics that invite researchers for scholarly engagement. In the next section, we will try to pave the way for future research by discussing the general aspects of study design and possible operationalizations of variables.

Methods for Investigating the Role of Humor in Fostering Pro-environmental Behavior

Designing Studies

Investigating the whole model or even a complete module falls beyond the scope of the design of a single, delimited academic study. Rather, the pertinent behavioral determinant(s) or variable(s) will emerge only after the identification of the relevant pro-environmental behavior. Steg and Vlek (2009) proposed a general framework for researching pro-environmental behavior in environmental psychology. Roughly summarized, the first step is to identify the pro-environmental behavior to be explained or changed (for example, the ecological problem). Then, the key factors underlying this behavior should be examined. Third, an intervention to change behavior (or an assessment of the key mechanisms to reduce the behavior posing negative environmental impacts) should be designed and implemented. Eventually,

the effects of the interventions and the underlying key mechanisms need to be analyzed for their positive impact on pro-environmental behavior. While these recommendations are very general, we proposed in previous chapters that prior to the examination of key factors, the target group needs to be identified (for example, background factors including socio-demographics, age, and ethnicity). The intervention or message then needs to be tailored to the target audience, which requires considering the context, medium, outlets, and the communicators involved.

The target pro-environmental behavior is determined by multiple factors; therefore, it is challenging to attribute and prove causality in a single intervention, especially in the case of large-scale pro-environmental goals, for example, reducing carbon dioxide emissions in a region. As a result, most studies focus on a limited number of behavioral determinants that can directly lead to a certain behavior (for example, norms). Also, interventions are using a limited number of specific stimuli, for instance, placing funny signs featuring an easily graspable message, and relate this to the amount of sold plastic bottles or the ones returned for recycling in a certain shop or area. This would of course include an assessment of the behavior prior to the intervention.

Methods

The design of a study determines the explanatory power of its results. *Cross-sectional* studies that are conducted at one point in time allow for testing the relationships between variables. For instance, Larson et al. (2019) conveyed that the longer time people report to spend outdoors is positively related to the perceived connection to nature. Martin et al. (2020) reported a positive relationship between contact to nature with pro-environmental behavior; and Pfattheicher et al. (2016) demonstrated a positive association between compassion and pro-environmental behavioral tendencies.

Longitudinal designs include time lags between at least two measurement occasions. For instance, de Leeuw et al. (2015) assessed the pro-environmental behavior of high school students twice with a lag of one year. Students were also asked to rate TPB constructs. These were then analyzed to determine whether the TPB constructs at the first measurement point were related to the change in pro-environmental behavior one year later. If they had adopted a longitudinal design, Larson et al. (2019) could have asked for how much time people spend outdoors at a first point in time (T_0), and for their connection to nature at a second point in time (T_1). This would imply a certain causality; though for more valid results, the reverse causality should also be tested in a longitudinal design. This would require assessing both connection to nature and outdoor time simultaneously at two points in time, and to analyze which relationship is stronger, that is, the relationship between outdoor time at T_0 with connection to nature at T_1 , or the relationship between connection to nature at T_0 with outdoor time at T_1 . In fact,

many mechanisms are probably circular; that is, the factors reinforce each other. For instance, spending time outdoors may enhance the perceived connection to nature, which again leads to more time being spent outdoors, and so on. In a similar vein, Whitburn et al. (2019) found that past pro-environmental behavior, namely participation in tree planting, was directly related to future pro-environmental behavior.

As a specific type of longitudinal designs, *diary studies* are appropriate for an in-depth testing of psychological mechanisms. Diary studies combine multiple assessments over several days (for example, two weeks) and focus on intrapersonal processes. While personality variables are less appropriate for diary studies as they are rather stable over time (for example, conscientiousness and extraversion; Brick & Lewis, 2016), state variables like mood or perceptions can be modeled in a diary design. For instance, Larson et al. (2019) could have asked for the time spend outdoors every evening over ten days, and for the participants' perceived connection to nature every morning. This approach could have provided insights into causality, circular reinforcement, or simply whether the relationship varies across different days. De Leeuw et al. (2015) could have asked for the perceived behavior of role models (for example, teachers) in the evening and the students' pro-environmental behavior in the following day repeatedly over weekdays for two weeks. Analyzing diary data would allow for testing the direction, as well as cumulative (that is, reinforcement) effects of the relationship between time outdoors and connection to nature or between the perception of role models and pro-environmental behavior. Lange and Dewitte (2019) briefly introduce three examples of diary studies in the field of pro-environmental behavior, including a study with a focus on switching off office lights conducted by Maleetipwan-Mattsson et al. (2013).

Moreover, conducting the measurement at a single point in time (that is, a cross-sectional design) means that the study suffers from common-method bias and cannot establish any causal relationships between variables. Common-method bias denotes that variables show a false-positive relationship just because they are jointly measured and conflated with other, usually not measured, variables at a single point in time. For instance, if Skurka, Eng et al. (2022), and Frank (2021) had conducted a cross-sectional study instead of an experiment and asked how mirthful participants felt and how they rated their risk perception of climate change, these constructs could have been significantly related just because a person who is in a bad mood feels less mirthful and more anxious. This would have led to an overestimation of the relationship between mirth and risk perception. The common-method bias gets especially problematic if *mediation* analysis is conducted. Mediation presupposes some kind of a serial, quasi-causal relationship. For instance, Ojala and Bengtsson (2019) assumed that communication patterns would relate to coping, and this, in turn, would predict pro-environmental behavior. However, they tested these assumptions with a cross-sectional design, which allows for relationships to be tested but overestimates mediation

effects. Strictly speaking, an order of three variables cannot be tested. This drawback can be solved with more measurement points in time or with a mixed-method approach including, for instance, observations or assessments conducted by other people rather than self-reports. Thus, if self-reports are sought, several points in time, as in using a diary or longitudinal format, are required to make causal claims and gain valid insights.

Though *self-reports* are not upwardly biased by default (Chan, 2009), and reports by significant others (for example, teachers) rely on observable behavior, self-reports feature several methodological shortcomings like common-method bias (see above). Kormos and Gifford (2014) conducted a meta-analysis of the association between self-reported and objective measurements of pro-environmental behavior. Though they found a positive and large effect size, they concluded that nearly 80% of the association between self-report and objective behavior is not explained, concluding that self-reports are limited in predicting objective behavior. Social desirability may be one of the reasons behind exaggerating one's own pro-environmental behavior. Moreover, people strive to behave in a manner consistent with their values and beliefs, and items or scale anchors like frequencies and even personal behavior are interpreted with a high variance. Thus, questions should be concrete rather than abstract. For example, it is more accurate to ask for the duration that a shower lasts than asking for the degree to which one agrees with overall water consumption and conservation behaviors (Kormos & Gifford, 2014). Finally, memory and/or knowledge might be limited, or even biased, as in retrospective memory biases, for example, hindsight bias, primacy and recency effects (see also chapter 3). Kormos and Gifford (2014) conclude that self-assessment questionnaires are more appropriate for attitudes or beliefs, but less helpful in the case of objective behavior. At the same time, the downside of other reports (for example, of relatives, supervisors, or colleagues) is that they only provide limited access to observing relevant behaviors. Thus, a mixed-methods approach can address some of these limitations.

Vignette studies locate phenomena like humorous messages or pro-environmental behavior in a context but can only assess potential behaviors. That is to say, usually participants read descriptions of people and/or situations and rate their perceptions and/or behavioral intentions. For instance, de Leeuw et al. (2015) could have provided vignettes describing relevant school situations and the behavior of teachers as role models and asked for how likely it were for students to behave pro-environmentally in such situations.

Observations can be conducted in the laboratory or in field; they provide observable data, which are more or less objective. Disposing garbage in a trash bin or turning off the water tap can be assessed rather objectively; frequency of laughter can also be observed, but the accompanying emotions are not observable and have to be presumed. The persuasiveness or cooperativeness of a person is a rather subjective evaluation of their

observed behavior. While *field observations* can produce more objective data about behavior with a high ecological validity, they are usually time- and resource-intensive. Moreover, perceiving that one is being observed can alter the behavior of target groups, and observations are more complex to conduct. For instance, situational influences are rather hard to control, or the random assignment of participants might be impossible. If ethically approved, cameras can help observe the *actual behavior* (for example, returning empty bottles, choosing glass rather than plastic bottles, seeing someone recycle) rather than merely *behavioral products* (for example, the number of plastic bottles in a bin). Also, the independence and objectivity of observers must be ensured in order to prevent expectations or prejudices to bias the observations and/or their interpretations.

Rather, *objective data* on the material consequences of behavior, for example, water consumption, could be collected from a full range of technical and digital devices. However, linking them to individual behavior in order to evaluate the impact of humorous campaigns might be difficult. Actual *behavior controls* should also be considered. For example, the distance one walks, rides their bicycle, or rides on a bus as compared to driving their car might depend on the availability of safe and reliable infrastructure, public transport, or distance of commuting. This is while using personal data, for example, GPS tracking, might pose ethical challenges including potential violations of data protection regulations.

Experiments focus on a selection of relevant variables and try to keep all other circumstances and variables as constant as possible. Circumstances are easier to control in laboratories as compared to field experiments. Experiments can also be conducted online (for example, Skurka et al., 2018; Skurka, Romero-Canya, et al., 2022; Skurka, Eng et al., 2022), entailing a degree of uncertainty about the circumstances under which participants are completing the experiments. Experiments—either in the laboratory or in the field—use a certain degree of manipulation. The video experiments by Skurka et al. (2018) and Skurka, Eng et al. (2022) used different videos for inducing the distinct emotions of fear and mirth, which were then related to self-assessments of risk perception. Frank (2021) used satirical political cartoons for the same purpose. The development of materials for humor manipulations might be rather complex (for example, Frank, 2021; Skurka et al., 2018). Skurka et al. (2018; Skurka, Romero-Canya et al., 2022; Skurka, Eng et al., 2022) developed videos with fear, humor, and informational appeals in collaboration with professional comedians and media producers. Frank (2021) reports on the development of political and satirical cartoons. Rather than manipulating relevant variables, the so-called *quasi-experiments* are based on a natural occurrence of variance in a key variable. For instance, Whitburn et al. (2019) based their assessment of past pro-environmental behavior on the variance in prior participation in planting trees. While Skurka and colleagues had a *control condition* (a control video and a purely informational video) for the purpose of comparing the effects, Frank (2021)

features no control condition. In other words, the variance in perceived mirth levels after viewing eight satirical cartoons was not controlled against a non-satirical cartoon. Experiments also differ in the transparency of the procedure; that is, participants may be kept uninformed about the purpose of an experiment or learn more about it.

Intervention studies are usually conducted as field experiments. Case studies can also be conducted as intervention studies (for example, Boykoff & Osnes, 2019), but they suffer from limited generalizability. As an example of field intervention, Schultz et al. (2016) provided participants with personalized feedback on their water consumption. They communicated different social norms via the internet or surface mail (with the latter being more effective) and studied the impact of their interventions on water consumption. The control group and moderators are two distinct features of this study. Alongside the treatment group, interventions usually need a *control group* (that would not receive feedback in the case of this study) against which the effects of the intervention can be tested. As the samples of treatment and control groups must be comparable in key features from the outset, Schultz et al. (2016) used a randomized control group. Second, a *moderator* is a variable that alters the relationship between two (or more) variables. Schultz et al. (2016) tested the extent of personal norms as a moderator for the relationship between feedback and water consumption. Residents with strong personal norms were less affected by normative messages than residents with low personal norms; that is, the relationship was stronger in the case of low personal norms as compared to high personal norms (which indicates a compensatory effect between normative messages and personal norms). Likewise, Skurka et al. (2018) found a moderation by age; that is, humorous appeal persuaded young adults (around the age of 20) about the risk of climate change, but did not have a similar impact on older people (replicated by Skurka, Romero-Canyas et al., 2022). While moderators are chosen because of being important boundary conditions, *control variables* are included in research designs for excluding variance that is not of interest. For instance, age is related to certain types of pro-environmental behavior (for example, Skurka et al., 2018; Skurka, Romero-Canyas et al., 2022); thus, if age is included as a control variable, the respective explanatory variance in pro-environmental behavior is “bound” and results are not blurred by uncontrolled biases. Control variables should be selected with respect to the dependent variable (for example, pro-environmental behavior), but all variables do not need to be controlled. Adding wrong control variables or too many control variables can prevent the statistical relationship to emerge (see Spector et al., 2000, for a discussion).

Sample Size and Study Samples

Sample sizes may vary to a large degree; the required sample size is determined by the number of variables in a model in quantitative research. There are ways to calculate optimal sample sizes depending on the study design

and type of analysis (with tools like G*Power; Faul et al., 2009). The generalizability of study results depends not only on the sample size, but also on the *sample characteristics*, for instance, nationality or age. The majority of studies is conducted in US-American (for example, Skurka et al., 2022) and European contexts, some in Asia (for example, Fang et al., 2017), and almost none in Africa, though this perception might be biased by the choice of language in publishing academic articles. Age also determines the extent to which study results may be generalizable. For instance, for late adolescents (Ojala & Bengtsson, 2019) or high school students (de Leeuw et al., 2015), parents and teachers may be the most relevant significant others and role models; however, in later life, partners or colleagues might be more significant in determining pro-environmental behavior.

Study Preregistration for Transparency

An aspect of increasing relevance for current and future research is the pre-registration of studies. That is, the open science movement recommends the preregistration of the details of research, the characteristics of the sample, and the sample size in order to improve transparency, data sharing, replicability, and to prevent data dredging in reporting only significant findings. Skurka, Romero-Canya et al. (2022) provide a useful example of a preregistered study, and the only direct replication in studying the impact of humor on pro-environmental behavior.

Overall, lack of information about behavioral controls, background data, or the effectiveness of manipulations sometimes prevents sound conclusions about the impact of an intervention on an individual level. While laboratory experiments can counteract some of these issues, they lack ecological validity in turn. Experiments might include concealed target behavior, embedded in mock tasks, or explicit tasks (for example, allocating money for other purposes like donations; Pfattheicher et al., 2016). Lab experiments, or even online experiments, usually lack any consequences for the respective environmental behavior and often require role play; that is, participants take over a certain role and perform the assumed appropriate behavior without being personally involved in the actual situation (for example, Greater Good Game and FISH in Lange & Dewitte, 2019). Following the discussion of methodological concerns, ways to operationalize relevant variables will be introduced in the next section.

Operationalizations of Key Variables for Investigating the Role of Humor in Fostering Pro-environmental Behavior

Operationalization of Key Variables

From a methodological point of view, the joint assessment of humor and pro-environmental behavior in one question (for example, “To which extent

did the funniness of the sign made you refrain from taking a plastic bag?") is not recommendable. Besides the fact that people might have difficulties in reliably attributing accurate reasons to their own behaviors, social desirability can also severely bias the responses. Observation as an alternative to self-reporting requires the observability of variables; we may be able to witness amusement and subsequent behavior, but the reasons are not observable. Therefore, it is recommended to measure the variables independently in order to test a relationship between them. This means that the use or perception of humor and the relation to subsequent pro-environmental behavior should be measured independently. To make the discussion easier to follow, common operationalizations are explained under different subheadings.

Assessment of Pro-environmental Behavior and Behavioral Intentions

According to Mackay and Schmitt (2019), pro-environmental behavior is measured as self-reports of behavior, behavioral intentions, or observed behaviors.

Self-reports

Pro-environmental behavior is often measured through either web-based or paper-pencil assessment quantitative self-report questionnaires asking for past or current behavior. Established multi-item scales are recommendable and vary from general to specific pro-environmental behaviors (for example, Lange & Dewitte, 2019). The review of 33 scales for pro-environmental behavior by Lange and Dewitte (2019) includes an extensive list of impact-oriented rather than intent-oriented instruments. This list reflects the research field in that it provides many more scales for private-sphere behaviors as compared to public-sphere behaviors.

As an example of *domain-general* scales, the *general ecological behavior scale* (Kaiser, 1998), encompassing 50 conservation behaviors (GEB-50; Kaiser, 2020), is an established measure for general but domain-specific behaviors (Lange & Dewitte, 2019). The behavioral domains include saving energy ("I use a clothes dryer," reverse-coded), mobility ("I drive my car in or into the city," reverse-coded), waste reduction ("I reuse my shopping bags"), consumerism ("I buy seasonal products"), recycling ("I collect and recycle used paper"), and societal engagement ("I am a member of an environmental organization").

Specific self-report scales encompass specific contexts like the workplace. For instance, the Organizational Citizenship Behavior for the Environment (OCBE) designed by Robertson and Barling (2017) features subscales for self-enacted, co-worker, and organizational OCBE (for a more recent discussion of "green" workplace behaviors, see Francoeur et al., 2021). Domain-specific self-reports may concern consumption or energy

conservation, like the scale for Pro-environmental Purchase Behavior designed by Tilikidou et al. (2002; for example, “I try to find products with the ecological badge (eco-label)”) and the scale by Lacroix and Gifford (2018; for example, “I wear a sweater rather than turn up the heat”). Activism is yet another specific domain reflected in the Environmental Action Scale designed by Alisat and Riemer (2015), which involves rating the frequency of engagement in participatory actions (“I participated in a community event which focused on environmental awareness”) and in leadership actions (“I organized an environmental test/rally”).

Besides its generality or specificity, self-report scales also vary in the scope of the behavior. Scales simultaneously targeting individual and collective behaviors include items about directly addressing or persuading someone (for example, “When I see someone littering, directing him/her politely to use the litter bin,” Littering Prevention Behavior Scale, Ojedokun, 2016), and include items on organizing events for raising awareness, or getting involved in environmental groups or political parties (for example, Environmental Action Scale designed by Alisat & Riemer, 2015). Some scales are developed for very specific samples (for example, tourists as in Tourists’ Environmentally Responsible Behavior, Lee et al., 2013) or age groups (pupils as in Children’s Responsible Environmental Behavior Scale, Erdogan et al., 2012). Others are designed rather broadly for everyone (for example, Stanford Climate Change Behavior Survey, Armel et al., 2011).

Though not directly measuring environmental behavior, several scales have strong pro-environmental implications. *Frugality*, for instance, was measured by Corral-Verdugo et al. (2015) through adapting an instrument designed by Corral-Verdugo and Pinheiro (2004), which is only available in Spanish, and includes ten actions like reusing outfits and buying only what is necessary.

Behavioral Intentions

In many studies, behavioral intentions rather than behavior are assessed. In their meta-analysis, Mackay and Schmitt (2019) report on 21 studies on behavioral intentions. This approach seems well justified in case of experimental study design. Many experiments involving some kind of humor manipulation relied on behavioral intention assessments. Skurka et al. (2018) assessed the intention to participate in climate change activism (based on a scale designed by Feldman & Hart, 2016) and the intention to perform individual behaviors that can mitigate climate change (based on a scale designed by Hart, 2010). Frank (2021) measured the response efficacy of satirical cartoons based on scales designed by Hart (2010) and Arbuckle et al. (2013), asking about the extent to which participants agreed that lower carbon footprints for each individual can make a difference in global warming.¹ The scale reported by Hart (2010) asks the respondents how likely they are to change their behavior in order to reduce their greenhouse gas emissions

through saving energy (for example, by using air conditioners less frequently in summer, or by supporting renewable energy resources).

Asking for behavioral intentions, Moyer-Gusé et al. (2019) similarly report four self-made items given to the participants immediately after they were exposed to experimental stimuli aiming to reduce carbon footprints and initiate changes in order to ameliorate environmental problems. By contrast, Velde et al. (2018) assess the specific behavioral intentions their experiment was designed for, that is, the intention to use a deworming medication.

Finally, the studies that investigate pro-environmental behaviors and intentions as introduced above use self-report questionnaires for measuring intentions. Pfattheicher et al. (2016) used an adapted version of an eight-item scale by Schultz et al. (2000) for assessing past behaviors to reflect future intentions, with one item being “In future, I will look for ways to reuse things” (Pfattheicher et al., 2016, p. 933). Two other studies developed their own measures. Chen et al. (2018) asked five questions about future purchase intentions, including “I plan to buy green products in the future” (p. 854), and de Leeuw et al. (2015) asked two questions regarding general pro-environmental behavioral intentions, as “I am determined to perform pro-environmental behaviors on a regular basis in the next year” (p. 132).

Observed Behavior

Most questionnaires can principally be adapted to observed behavior instead of asking for self-assessments, like the actual amount of waste produced, water consumption, or travel habits. Kormos and Gifford (2014) already provide a list of 19 studies reporting observed pro-environmental behavior. Most studies observed energy consumption or waste reuse. Kormos and Gifford (2014) classify observations in three categories, including other-reports like in Chao and Lam (2011, five types of pro-environmental behavior ranging from saving energy to recycling), trained observers as in Corral-Verdugo and Figueredo (1999, reuse of glass, outfits, and metal in households), and device measurements as in Vadez et al. (2003) on deforestation in Bolivia.

Assessing Pro-environmental Attitudes

Ecological Worldview

The New Ecological Paradigm Scale (NEP; Dunlap et al., 1978, 2000) is the most prominent scale for assessing pro-environmental attitudes. This scale reflects the awareness of ecological problems but downplays actual behavioral intentions or tendencies. The ecological worldview is assessed in terms of the extent of agreement with 15 statements like “When humans interfere with nature, it often produces disastrous consequences” and “The Earth is like a spaceship with very limited room and resources.” NEP has

been criticized for its shortcomings in the limited aspects of the ecological worldview it covers, as well as the questionable validity of its unidimensional factor structure (Anderson, 2012). Providing an alternative scale, Chen et al. (2018) address *environmental awareness* in four items, including “I think environmental problems will affect human life.”

Environmental Attitudes

De Leeuw et al. (2015) provide a general measure for pro-environmental attitudes. Following the statement “For me, performing pro-environmental behaviors on a regular basis during the next year would be ...” (pp. 131–132), eight bipolar adjective scales were provided, which range over six points from, for example, *annoying* to *pleasant* or *cool* to *uncool*. In 2004, Corbett and Durfee published a measure for environmental attitudes, including reversely coded statements like “Economic growth should be given priority even if the environment suffers to some extent.”

Environmental Knowledge

The General Environmental Knowledge Scale (GEK) designed by Geiger et al. (2018) differentiates three dimensions in different behavioral domains, with 12 items in each domain. Participants can select one option from among the five choices for each question in a multiple-choice format. *System* knowledge is assessed with questions like, “Which of the following energy forms is not renewable?” [correct answer: nuclear energy]; *action* knowledge with questions like, “Which of the following waste products is not compostable?” [correct answer: bones]; and *efficiency* knowledge with items like, “Which transport medium uses the least energy (per person/km)?” [correct answer: overland bus]. Lacroix and Gifford (2018) also used a multiple-choice format for eleven questions that include “Which of the following are greenhouse gases?” with a final score for the number of correct answers. While these approaches resemble testing *objective* knowledge, Chen et al. (2018) asked for a self-assessment of general objective knowledge by five items, for instance, “I understand the concept of green energy.” *Subjective* knowledge was assessed with three items, for instance, “I know that using green appliances is one way to protect the environment” (Chen et al., 2018).

Connection to Nature

Several concepts relate to the feeling, perception, or subjective sense of bonding to nature. According to Mackay and Schmitt (2019), five scales are commonly used for assessing the connection to nature. Emotional connectedness to nature can be assessed with the Connectedness to Nature Scale (CNS) designed by Mayer and Frantz (2004). Nisbet et al. (2009) introduced the Nature Relatedness scale (NR); Schultz (2001) provided the Inclusion of

the Other in the Self scale; Clayton (2003) proposed the Environmental Identity scale (EID); and Schultz et al. (2004) developed an Implicit Association Test (IAT) for measuring the extent to which people associate themselves with the natural environment. Additionally, being emotionally connected to nature can be assessed with the Emotional Affinity Toward Nature scale (Kals et al., 1999), which includes 16 items on the disposition of being connected to the natural environment. Also, the Love and Care for Nature scale (Perkins, 2010) encompasses 15 items on the emotional relationship with nature. The Disposition to Connect with Nature Scale by Brügger et al. (2011) is designed with 40 items, including behavioral self-reports with a frequency format, as well as evaluative statements.

Most of these scales see nature connectedness as a dispositional, that is, rather stable, variable. Some focus on the natural environment as being a part of the identity of a person and their self-image (for example, EID, Clayton, 2003; Schultz, 2001), including the single-item Inclusion of Nature in Self (INS, Schultz, 2002) and four-item Extended Inclusion of Nature in Self scale (EINS, Martin & Czellar, 2016). Other scales focus on emotional attachment to nature (for example, CNS, Mayer & Frantz, 2004; also, Kals et al., 1999; Perkins, 2010).

As an example of an expanded scale, Nisbet et al. (2009) designed the NR by combining affective and experiential dimensions with 21 items about the relationship between human beings and nature, including a person's sense of oneness with the natural environment. A 6-item short version (NR-6) was introduced by Nisbet and Zelenski (2013), with four items covering self-identification with nature (NR-self, for example, "My relationship to nature is an important part of who I am") and two items "capture individual differences in the need for nature and comfort with wilderness, as well as awareness of local wildlife or nearby nature" (p. 7, Zelenski & Nisbet, 2014), an example of which is "I take notice of wildlife wherever I am."

Finally, the use of nature for psychological restoration presented by Whitburn et al. (2019) reflects a rather instrumental connectedness to nature. The ten-item measure "contains evaluative statements that describe aspects of people's interaction with nature that may support psychological restoration" (Whitburn et al., 2019, p. 796), for instance, "When I'm feeling stressed I find being out in nature helps reduce my stress levels."

Measurement of Further Key Components of MIM

Risk Perception

Leiserowitz (2006) reports on a Risk Perception Index encompassing nine questions about global warming. Three rather general questions (for example, "How serious are the current impacts of global warming around the world?" p. 66) are complemented by asking the respondents about the likelihood that decreased standards of living, water shortage, and disease

will occur in the next 50 years. The latter three questions are asked for two different perspectives: first, being personally affected (for example, “My standard of living will decrease”), and second, general occurrence (for example, “Worldwide, many people’s standard of living will decrease,” Leiserowitz, 2006, p. 66). This measure was also used by Lacroix and Gifford (2018). Skurka et al. (2018; Skurka, Eng et al., 2022) used a one-item measure designed by Kahan et al. (2015) that asked for beliefs about the risks that climate change poses for human beings, that is, “Assuming climate change is happening, how much risk do you think climate change poses to human health, safety, or prosperity?” (Skurka et al., 2018, p. 178).

Climate Change Beliefs

Skurka, Eng et al. (2022) assessed the general belief in climate change with a single item asking participants to indicate their belief by answering the question “What is your personal opinion about whether or not climate change has been happening?” with a Likert response scale ranging from 1 = *definitely has not been happening* to 7 = *definitely has been happening*. Arbuckle et al. (2013) took a rather different approach in asking content-specific questions directly related to farming. Farmers were asked a “five-category question measuring belief about the existence of climate change and attribution of causes” (p. 945) including human or natural causes regarding drought, increased heat stress on crops, extreme rainfalls, and saturated soil. Similarly, Fang et al. (2017) assessed *normative beliefs* with two items, including “I believe that the use of disposable tableware will affect the environment forever,” specifically targeting the tourism industry.

Behavioral Beliefs

De Leeuw et al. (2015) assessed behavioral beliefs about the potential consequences of pro-environmental behaviors through 12 statements, like “I would help protect our natural environment” (p. 131). In contrast to the frequently employed Likert scale formats that ask for (dis)agreement to statements, this instrument rates the potential outcomes according to their likelihood and importance. The ratings followed the expectancy-value model, which proposes that behavior can be predicted by (a) the expectation that it leads to a desired outcome (for example, nature will be protected), and (b) the personal value of the outcome (for example, protection of nature being very important). Thus, every statement was rated twice, for the likelihood and significance of the outcome, and the scores were then multiplied for each item.

Values

Pfattheicher et al. (2016) use the basic human values as proposed by Schwartz et al. (2012) to assess pro-environmental values. They have selected

the *universalism-nature* value, as this seems to be most relevant for pro-environmental behavior. Rather than asking for direct agreement on statements, the perceived similarity to a person (“portrait”) has to be rated. That is, participants evaluate how similar they are to the description of a person (“portrait statement”). The universalism-nature value is assessed with three items, an example of which reads, “She strongly believes that she should care for nature” (Schwartz et al., 2012, p. 26). Focusing merely on universalism-nature values comes at the cost of ignoring the circular motivational continuum of 19 compatible and conflicting values. Several of these values are worth considering in future research. For instance, hedonism (that is, pleasure and sensuous gratification) or power (that is, social status, prestige, control, or dominance over people and resources) might conflict with universalism (Schwartz et al., 2012). Similarly, egoistic concerns, that is, focus on the self, might conflict with biospheric concerns, that is, focus on all living things (see Schultz et al., 2000). Self-protection versus growth, and personal versus social sets of values seem to be of particular interest for future research.

On a cultural level, the Cultural Cognition Worldviews Scale (Kahan et al., 2011) was used by Lacroix and Gifford (2018). The first dimension, that is, *hierarchy-egalitarianism*, includes a set of items, which “indicate attitude toward social orderings that connect authority to stratified social roles based on highly conspicuous and largely fixed characteristics such as gender, race, and class (for example, ‘Society as a whole has become too soft and feminine’)” (Kahan et al., 2011, p. 5). The second dimension, *individualism-communitarianism*,

indicate[s] attitudes toward social orderings that expect individuals to secure their own well-being without assistance or interference from society versus those that assign society the obligation to secure collective welfare and the power to override competing individual interests (e.g., ‘The government interferes far too much in our everyday lives’).

(Kahan et al., 2011, p. 5)

The short version consists of six items for each of the two dimensions; Lacroix and Gifford (2018, Appendix A) adapt one item. Similarly focusing on cultural rather than individual values, Leiserowitz (2006) describes two subscales covering *egalitarianism* with seven items and *fatalism* with six items. An example item for the former is, “If people were treated more equally, we would have fewer problems” and for the latter is “It does not make much difference if people elect one or another political candidate, for nothing will change.”

Norms

According to de Leeuw et al. (2015, p. 131), *injunctive normative beliefs* can be assessed by asking people to evaluate “to what extent they thought that nine specific significant others (for example, parents, friends, teachers,

classmates) expected them to adopt PEB” or pro-environmental behavior, and if they are motivated to live up to these expectations. De Leeuw et al. (2014, 2015) measured *injunctive norms* with two questions, for instance, “In general, people who are close to me expect me to adopt pro-environmental behaviors on a regular basis during the next year.” De Leeuw et al. (2015) measured *descriptive normative beliefs* by asking participants “whether they believed that these nine significant others would themselves adopt PEB during the next year” (p. 131), and whether the person sees these others as behavioral role models. De Leeuw et al. (2014, 2015) measured *descriptive norms* with two questions, for instance, “People who are important to me will perform pro-environmental behaviors on a regular basis during the next year.”

Kaiser et al. (2008) assessed *subjective norms* by rating each of the four behavior statements twice. The first rating included the likelihood that significant others would expect a certain behavior (that is, injunctive norm), and in the second rating, the participant was asked for the extent of agreement that significant others would themselves behave pro-environmentally (that is, descriptive norm). In the context of tourism, Fang et al. (2017) assessed *social norms* with five items, including “I would carry reusable tableware because those who travel with me already carry it” (that is, descriptive norm), and “I would decide to use reusable tableware because of the influence of other people’s criticism” (that is, injunctive norm, p. 15, Fang et al., 2017). Besides injunctive and descriptive norms, De Leeuw et al. (2014, 2015) also asked participants about their personal *moral norms* regarding the consequences of performing pro-environmental behaviors, that is, showing respect for the planet, behaving responsibly, doing something morally right, and having a good conscience. They were also asked for their perceived moral obligation to behave pro-environmentally, and whether their personal values would make them do so.

Emotion/Affect

Many emotions are discussed in relation to pro-environmental behavioral intentions as well as behavior. Within the framework of TPB, de Leeuw et al. (2014, 2015) assessed *empathic concern* (“I often experience warm, caring feelings for people who are less well off than I” (de Leeuw et al., 2015, p. 132) as a background variable related to the connection to nature. Skurka, Eng et al. (2022) manipulated the feeling of *awe* by videos and assessed it with self-reports about the extent to which viewers felt awe, wonder, and astonishment while watching a video. With regard to positive and negative affect, Leiserowitz (2006) measured *holistic affective evaluations* of global warming. The unipolar measure consisted of two questions for each affect, first asking whether a person has “any negative [or positive] feelings about global warming?” and if they agreed, they were then asked to rate the strength of their feelings.

Regarding negative emotions or affect, Kaiser et al. (2008) asked about *anticipated feelings of guilt* and of *embarrassment* for four behaviors. That is, each of the four behaviors was rated for the extent one might feel guilty if failing to perform them, and for the extent one might feel embarrassed if others find out one has failed to do so. Skurka et al. (2018) provide assessments of *fear* and *anger*. After experimentally inducing *fear* by means of videos, three items were administered asking whether the video made the viewer fearful, afraid, and scared. Also, *anger about climate change* was assessed with a single item after watching each of the videos (that is, fear, humor, informational, and control condition): “How much did the video make you feel angry about climate change in general?” (p. 17, Skurka et al., 2018).

Behavioral Control

De Leeuw et al. (2015) measured *control beliefs* with 12 factors, including the presence of recycling bins at home or school, which had to be rated for the likelihood of occurrence, as well as their facilitating value. Perceived *behavioral control* was assessed with two items asking participants how difficult or easy it would be to regularly perform pro-environmental behaviors in the next year, and whether they felt able to perform these behaviors regularly over the next year (de Leeuw et al., 2014, 2015). Likewise, Kaiser et al. (2008) assessed perceived behavioral control by asking for each of the four conservation behaviors to be rated on a scale ranging from easy to difficult and on another scale ranging from simple to complicated.

In a similar vein to perceived behavioral controls, *psychological barriers* can prevent pro-environmental behavior. Lacroix and Gifford (2018) introduced the Psychological Barrier scale, measuring eleven general barriers regarding behavior with two to four items. These eleven barriers can be categorized into six components, which are *mission impossible* (“Unfortunately, I don’t think one person changing will make much difference”); *interpersonal influences* (“I’m worried that my friends will criticize me for making this change”); *conflicting goals and aspirations* (“I’ve put a lot of time and effort into my current lifestyle, and so I don’t want to change”); *technosalvation* (“Large-scale technological changes are only part of the solution—It’s also necessary that individuals make changes such as this in their personal lives,” reversely coded); *ignorance* (“I don’t know many of the details about how to make this change”); and *denial* (“I don’t believe that the news media have honest intentions when they encourage this change”). While risk perception was positively related to energy consumption behavior, especially component six, that is, conflicting goals and aspirations was negatively related to saving energy (Lacroix & Gifford, 2018).

Actual behavioral control is way harder to reliably assess but could actually be an important moderator for the relationship between behavioral intention and actual behavior. For instance, Gupta and Agrawal (2018) ask for the intention to separate household waste, but this intention may lead to actually separating waste only if the possibility to separate waste is provided

by the government. Likewise, the intention to use public transport might not translate into actually using public transport if public transport is not available. The circumstances, therefore, need to be fully considered, especially when using self-report scales.

Moderators

Like behavioral control, many potential moderators can play a role in the relationships proposed in MIM. For instance, Ojala and Bengtsson (2019) introduced coping strategies as moderators for the relationship between communication and pro-environmental behavior. They differentiated between problem-focused coping as a cognitive approach, emotion-focused coping to deemphasize the threat, and meaning-focused coping.

Political attitudes may also be important moderators. Leiserowitz (2006) asked participants to indicate the extent of their support or opposition to ten different national and international climate change policy and tax proposals (*Climate Policy Preferences*), including the Kyoto Protocol. Frank (2021) assessed *political ideology* with items in which participants had to indicate how “liberal” or “conservative” they are, ranging from 1 = *very liberal* to 7 = *very conservative* for both social and economic issues. The participants that fell into the lowest tritile of the scores were labeled as “liberal,” those in the middle tritile were labeled “moderate,” and those in the highest tritile were labeled “conservative.”

In a rare attempt to directly integrate *motivation* into environmental psychology research, Wullenkord (2020) introduced basic psychological needs—that is, need for autonomy, competence, and relatedness—as specified within Self-Determination Theory (Ryan & Deci, 2000), and related these to human responses to climate change. This can be a starting point for considering the motivational continuum, ranging from amotivation to autonomous motivation for environmental studies.

Assessment of Humor

The measurements of pro-environmental behavior usually do not include humor. As explained above, assessing humor separately from the target behavioral intention or behavior is necessary for the purpose of reliably analyzing the relationship between humor and pro-environmental behavior, as well as other key variables in the model. Several lists for the various measurements of humor already exist; for instance, Ruch (1998) provides a comprehensive appendix with tools created in the twentieth century used to assess humor both as a state (that is, variable extent) and a trait (that is, disposition). Categories encompass—among others—18 joke and cartoon tests, 14 self-report scales and questionnaires, six peer-reports, one state measure, six humor scales in general instruments, and five humor tests for children. Scheel and Gockel (2017) provide a more recent overview of scales for assessing humor at work, most of which are not specific to the work

context, and with overlaps with Ruch's (1998) list. While generally referring to these lists, we will discuss a selection of largely self-report assessments for humor as a state and as a trait.

Humor as a State: Assessment of Humorous Materials

When humor is manipulated in experiments, it needs to be assessed after the exposure to the humorous material, either to make sure that the manipulation has worked or as an independent variable. The semantic differential scale designed by Nabi et al. (2007) is commonly used. Skurka et al. (2018; Skurka, Romero-Canyas et al., 2022) and Skurka, Eng et al. (2022) induced humorous affect (exhilaration) through a video clip and asked for a subsequent rating of the perceived humorfulness of the video. Skurka et al. (2018) used the four items of humor appraisal from Nabi et al. (2007), which were originally designed "with four 7-point items (not funny/funny, not amusing/amusing, not entertaining/entertaining, not humorous/humorous)" (p. 35, Nabi et al., 2007). Skurka et al. (2018) combined these four items with two additional questions. They asked for an agreement rating for two statements saying that the video was funny, hence humorous. In a similar vein, Skurka, Eng et al. (2022) used five items, that is, a combination of two items of humor appraisal from Nabi et al. (2007; that is, funny, humorous) and three items from Fredrickson et al. (2003) assessing the emotional experience of *amusement* (that is, how amused, silly, and humored participants felt). Relying on the same measure, Frank (2021) assessed the level of mirth in political cartoons by adapting the scale designed by Nabi et al. (2007). They also added a fifth modifier (that is, not clever/clever) and two dullness indicators (that is, not lame/lame, not annoying/annoying).

Without explicitly referring to Nabi et al. (2007), Moyer-Gusé et al. (2019) measured the reactions to their pro-environmental public service announcement (for example, with or without an entertaining narrative) by three 7-point semantic differential items for affirmation (not humorous/humorous, not funny/funny, and not amusing/amusing) and four for enjoyment (not enjoyable/enjoyable, not entertaining/entertaining, not interesting/interesting, and not likeable/likeable). In their study of the impact of humor in deworming advertisements, Velde et al. (2018) assessed perceived humor with semantic differential items (that is, not funny/funny, not amusing/amusing, not humorous/humorous) without citing Nabi et al. (2007). Predating Cline et al. (2003) used semantic differential items for humor manipulated in magazines (that is, humorfulness, funniness, amusement).

Types of Humor as a State

The way people use humor in their lives is conceptualized differently in approaches to self-reported humor that take humor to be a state-like, non-stable factor relatively independent of one's personality. In contrast to

the “trait-like” approach, which proposes a relative stability of humor use over time, the humor states depend on situational circumstances rather than the person.² For instance, the Humorous Behavior Deck-Revised (HBD-R; Kirsh & Kuiper, 2003; a revised version of the Humorous Behavior Q-Sort Deck, HBQD, Craik et al., 1996) consists of 32 self-report items assessing the degree to which participants engage in one positive and two negative components of the sense of humor. The factor “skilled and adept use of humor” is positive and focuses on others (for example, “I use good-natured jests to put others at ease”), the factor “rude humor” is negative and similarly focuses on others (for example, “I am sarcastic”), and “belabored humor” is negative and focuses on the self (for example, “I react in an exaggerated way to mildly humorous comments”).

One of the most common scales used in psychological research is the Humor Styles Questionnaire (HSQ) designed by Martin et al. (2003). Two positive and two negative humor styles are assessed with 32 items by using a 7-point Likert scale asking for the extent to which the respondent agrees with these statements. Some items include “I enjoy making people laugh” (affiliative), “If I am feeling depressed, I can usually cheer myself up with humor” (self-enhancing), “If someone makes a mistake, I will often tease them about it” (aggressive), and “I will often get carried away in putting myself down if it makes my family or friends laugh” (self-defeating). A short work-related version (swHSQ) with 12 items was provided by Scheel et al. (2016).

Exhilaration as the actual state (the extent to which one is exhilarated, that is, the positive affectivity related to exhilaration) is measured with the 30-item state version of the State-Trait-Cheerfulness-Inventory (STCI-state) designed by Ruch et al. (1997). The three subscales of cheerfulness (for example, “I am ready to have some fun”), seriousness (for example, “I’m prepared to do a task in earnest”), and bad mood (for example, “I am sad”) are assessed with ten items each and are rated as the extent of agreement to the statements. Items measuring seriousness and bad mood are reverse-coded.

Humor Traits

Humor as a trait refers to personality dispositions, which are habitual and stable over time. *Exhilaratability* as a dispositional trait, that is, how exhilarated one is in general, can be assessed with the trait version of the STCI-trait (Ruch et al., 1996), which consists of 60 items within the three subscales of cheerfulness, seriousness, and bad mood. The scope of the *cheerfulness* factor “includes the components of the prevalence of cheerful mood and its maintenance under adverse life circumstances, a low threshold for and higher frequency of smiling and laughter” (p. 321, Ruch et al., 1996), and a tendency to cheerful interactions. *Sense of humor* is one of the most common concepts of humor as a trait, followed by more specific concepts like coping humor. The *Sense of Humor Scale* (SHS) by McGhee (1999) includes 40 items about playful attitude, mood, and sense of humor, which is

composed of six dimensions including enjoyment of humor, verbal humor, humor in everyday life, laughing at yourself, and humor under stress, with four items dedicated to each. The *sense-of-humor* scale by Herzog and Anderson (2000) includes 18 positively and negatively worded items (for example, “Some things are too depressing to be joked about”).

The Coping Humor Scale (CHS) designed by Martin and Lefcourt (1983) consists of seven items (“I usually look for something comical to say when I am in tense situations”). As a broader measure including sense of humor, as well as coping humor, the Multidimensional Sense of Humor Scale (MSHS; Thorson & Powell, 1993) consists of four subscales with a total number of 24 items (that is, (1) humor production/elements of humor creativity and social uses of humor; (2) coping and uses of coping humor; (3) attitude toward humorous people; and (4) attitudes toward humor itself). As an even more comprehensive measure of the sense of humor, Herzog and Strevey (2008) combined 45 items from four scales, that is, the *sense-of-humor* scale (18 items), CHS (6 items), MSHS (16 items), and the HSQ (five items). These items cover four factors: (1) humor production and its social uses (14 items; for example, “I initiate or start humor more than others”); (2) coping humor (13 items; for example, “Humor helps me cope”); (3) humor appreciation (ten items; for example, “I love to hear jokes”); and (4) humor tolerance (eight items; for example, “There is no topic that is ‘off-limits’ for humor”; p. 770, Herzog & Strevey, 2008).

Conceptualized as one of the five facets of (strength and) the *virtue of transcendence*, humor can also be assessed by using the Values In Action Inventory of Strengths (VIA-IS) designed by Peterson and Seligman (2004). Ten items about humor that serve a moral good are to be rated on a 5-point Likert scale (0 = *very much unlike me* to 4 = *very much like me*), an example item being “Whenever my friends are in a gloomy mood I try to tease them out of it” (p. 370, Müller & Ruch, 2011).

As another dispositional factor, the *need for humor* is assessed as a moderator for the effects of humor (Cline et al., 2003; Frank, 2021). Cline et al. (2003) report about ten items from the “Need for Levity” scale (for example, Cline et al., 2011) representing the internal and external humor subscales of the Need for Humor scale (that is, need to experience humor internally and need to generate humor; need to experience humor from external sources). Need for Levity, “conceptualized as a personality trait that encompasses, but transcends, an individual’s sense of humor” (p. 17, Cline et al., 2011), also includes two whimsy subscales, that is, internal whimsy (need to experience whimsiness internally or to act whimsically) and external whimsy (need to experience the whimsiness and playfulness of others). While Cline et al. (2003) used the internal and external need for humor as a combined, global measure, Frank (2021) only asked for internal need for humor through six items from Need for Humor scale (NFH; Picard & Blanc, 2013). Responses were indicated as the extent to which the respondent agreed to statements

like “I often come up with witty comments” or “I often feel the need to make other people laugh” on a 7-point Likert-type scale. Interestingly, the latter two items demonstrate a considerable overlap between humor conceptualizations and measurements; that is to say, the items cited respectively resemble affiliative and self-defeating humor styles.

Measurement of Background Factors

There are numerous background factors, which can impact pro-environmental behavior directly or indirectly. These factors should be considered for tailoring the message or required behavioral change to specific audiences. However, the background factors can also be viewed as control variables, contextual factors, antecedents, mediators or moderators, pure sample descriptions, and the like. If included in a research model for a specific study, these factors need to be operationalized. Some of the numerous possibilities to measure these variables were mentioned above (for example, age; belief; knowledge, culture; political persuasion; personality, mood). For other determinants of behavior, especially those that go beyond the individual module of MIM, it is not difficult to imagine situations where each can be a variable. *Personality*, *mood*, *emotions*, and *intelligence*, for instance, may be important background factors. People high in masculinity traits might be less likely to engage in pro-environmental behavior (*personality*). For example, there is a large black American truck, usually parked in front of a shisha bar, in Flensburg, a small town in Germany, with “Fuck Greta” written on its back (Massih Zekavat, personal observation). When one is down, one might lose initiative and motivation to engage in pro-environmental behavior that usually requires some level of mental or physical effort or abstinence (*mood* or *self-regulation*). If I envy the material possessions of others, I might buy stuff I do not need (*emotion*). If angry with the current policies, I might be impelled to take some sort of action (*emotion*). A slow or obstinate person might be more difficult to persuade, because they do not appreciate the urgency of ecological problems. They might even lack the capability to understand the situation (*intelligence*).

While we discussed measurement tools for some psychological constructs in MIM, many more pertinent behavioral determinants remain to be considered. Most of these determinants are already assessed in empirical studies; others, especially sociodemographic ones, can be directly inquired. For instance, obtaining data on immigration background can range from simple *yes/no* questions to asking whether one or one’s family members have previously experienced discrimination. Sexual orientation, gender identity, or religious beliefs may be assessed by providing relevant categories; socio-economic status may be indicated via income categories; and traditions and customs may be measured by providing aspects relevant to the target environmental behavior.

Conclusions and Future Research

We extensively discussed different humor mechanisms for fostering pro-environmental behavior in chapter 4. Chapter 6 added a discussion on conducting empirical research for testing these propositions. Depending on the objectives of empirical studies, Lange and Dewitte (2019) distinguish between individual differences in pro-environmental behavior, understanding the underlying mechanisms of pro-environmental behavior, and the evaluation of the effectiveness of interventions for promoting pro-environmental behavior. Although these objectives are not mutually exclusive, they might prove to be helpful in selecting the scales that measure individual differences rather than general aggregate measures. This is while mechanisms might require laboratory conditions (causation requires experiments) and controlled interventions. Future studies, therefore, should rely on established scales, if available, or design relevant scales or tools with sound psychometric configurations. The wider context should also be considered; that is, *actual behavioral control* might reduce or jeopardize the relationships that are to be empirically investigated. This is among the reasons why it is necessary to *replicate* nearly every empirical finding (for example, Skurka, Romero-Canyas et al., 2022). Also, humor might play a role in two distinct, but closely related, ways, that is, as an antecedent to or a consequence of pro-environmental behavior. However, humor, like positive emotions in general, is almost exclusively operationalized as an antecedent (Schneider et al., 2021). Thus, in future studies, humor might be conceptualized as a worthwhile outcome, as well.

Multimethod approaches like combining other ratings with self-assessments, repeating observations, or using multiple situations might also prove to be promising. So far, there are no vignette or diary studies, and physiological data, as found in humor research, are scarce in environmental studies. Furthermore, *intervention* studies already conducted in humor research can be adapted to environmental topics. Previous interventions have already demonstrated the potentials of humor for emotional processes, which could also explain pro-environmental behavior. For instance, clown interventions in hospitals showed positive impacts on mental health (for example, lower anxiety), as well as complementary physiological processes (for example, levels of oxytocin; Scheel et al., 2017). Humorous interventions might be able to explain what it takes to actually reinforce pro-environmental behavior, and physiological data could lend stronger support to these mechanisms. Stress, for instance, can be measured via cortisol levels, to demonstrate how humor can reduce stress, which subsequently may facilitate bridging the intention-action gap. Blood pressure as an indicator for arousal could be used for showing activation by humor. Activation, in turn, might also be relevant in translating intention into action. As another physiological measure, the heart rate variance indicates psychological well-being and flexibility. These could be employed to demonstrate how communicating the very

serious issue of climate change via humor can lead to an open processing of the message content and more creative approaches in measures designed to mitigate climate change. Eye trackers used in experiments on purchase preferences might be employed to show if humor manipulations in advertisements or product promotions might determine disparities in the attention paid to specific products—hopefully, in favor of sustainable ones.

Alongside individual behavioral changes, wise political measures must be taken to enhance pro-environmental behavior, for instance, by introducing effective behavioral controls (for example, extrinsic motivation of governmental regulations; Chen et al., 2018). That being said, it is extremely challenging to assess the impact of political measures on actual behavior control and pro-environmental behavior, but moving toward this can pave the way for evidence-based environmental politics. Though the focus of this chapter was on the assessment of individual pro-environmental behavior, we should not forget that “*society is more than the sum of its individuals.*” Personal behavior is altered by social processes on group, organizational, societal, and regional levels, and unique variances in behavior might have extra-personal origins.

Notes

- 1 Most scientists prefer the term climate change.
- 2 State and trait humor are nonetheless not entirely independent.

References

- Alisat, S., & Riemer, M. (2015). The environmental action scale: Development and psychometric evaluation. *Journal of Environmental Psychology*, 43, 13–23.
- Anderson, M. (2012). New ecological paradigm (NEP) scale. In R. Anderson (ed.), *The Berkshire encyclopedia of sustainability: Measurements, indicators, and research methods for sustainability* (pp. 260–261). Berkshire Publishing Group.
- Arbuckle, J. G., Prokopy, L. S., Haigh, T., Hobbs, J., Knoot, T., Knutson, C., Loy, A., Mase, A. S., McGuire, J., Morton, L. W., Tyndall, J., & Widhalm, M. (2013). Climate change beliefs, concerns, and attitudes toward adaptation and mitigation among farmers in the Midwestern United States. *Climatic Change*, 117, 943–950. <https://doi.org/10.1007/s10584-013-0707-6>
- Armel, K. C., Yan, K., & Todd, A. (2011). The Stanford climate change behavior survey (SCCBS): Assessing greenhouse gas emissions-related behaviors in individuals and populations. *Climatic Change*, 109, 671–694. <https://doi.org/10.1007/s10584-011-0031-y>
- Becker, A. B., & Anderson, A. A. (2019). Using humor to engage the public on climate change: The effect of exposure to one-sided vs. two-sided satire on message discounting, elaboration and counterarguing. *Journal of Science Communication*, 18, A07. <https://doi.org/10.22323/2.18040207>
- Boykoff, M., & Osnes, B. (2019). A laughing matter? Confronting climate change with humor. *Political Geography*, 68, 154–163. <https://doi.org/10.1016/j.polgeo.2018.09.006>

- Brick, C., & Lewis, G. L. (2016). Unearthing the “green” personality: Core traits predict environmentally friendly behavior. *Environment and Behavior*, 48(5), 635–658. <https://doi.org/10.1177/0013916514554695>
- Brügger, A., Kaiser, F. G., & Roczen, N. (2011). One for all? Connectedness for nature, inclusion of nature, environmental identity, and implicit association with nature. *European Psychologist*, 16, 324–333. <https://doi.org/10.1027/1016-9040/a000032>
- Chan, D. (2009). So why ask me? Are self-report data really that bad? In C. E. Lance & R. J. Vandenberg (Eds.), *Statistical and methodological myths and urban legends: Doctrine, verity and fable in the organizational and social sciences* (pp. 309–336). Routledge/Taylor & Francis Group.
- Chao, Y. L., & Lam, S. P. (2011). Measuring responsible environmental behavior: Self-reported and other-reported measures and their differences in testing a behavioral model. *Environment and Behavior*, 43, 53–71. <https://doi.org/10.1177/0013916509350849>
- Chen, C.-C., Chen, C.-W., & Tung, T. (2018). Exploring the consumer behavior of intention to purchase green products in belt and road countries: An empirical analysis. *Sustainability*, 10(3), 854. <https://doi.org/10.3390/su10030854>
- Clayton, S. (2003). Environmental identity: A conceptual and an operational definition. In S. Clayton & S. Opatow (Eds.), *Identity and the natural environment* (pp. 45–65). MIT Press.
- Cline, T. W., Altsech, M. B., & Kellaris, J. J. (2003). When does humor enhance or inhibit ad responses? The moderating role of the need for humor. *Journal of Advertising*, 32(3), 31–45. <https://doi.org/10.1080/00913367.2003.10639134>
- Cline, T. W., Kellaris, J. J., & Machleit, K. A. (2011). Consumers’ need for levity in advertising communications. *Journal of Marketing Communications*, 17(1), 17–35. <https://doi.org/10.1080/13527260903090790>
- Corbett, J. B., & Durfee, J. L. (2004). Testing public (un)certainty of science: Media representations of global warming. *Science Communication*, 26, 129–151. <https://doi.org/10.1177/1075547004270234>
- Corral-Verdugo, V., & Figueredo, A. J. (1999). Convergent and divergent validity of three measures of conservation behavior: The multitrait-multimethod approach. *Environment and Behavior*, 31, 805–820. <https://doi.org/10.1177/00139169921972353>
- Corral-Verdugo, V., & Pinheiro, V. (2004). Aproximaciones al estudio de la conducta sustentable [Approaches to the study of sustainable behavior]. *Medio Ambiente y Comportamiento Humano*, 5, 1–26.
- Corral-Verdugo, V., Tapia-Fonllem, C., & Ortiz-Valdez, A. (2015). On the relationship between character strengths and sustainable behavior. *Environment and Behavior*, 47(8), 877–901. <https://doi.org/10.1177/0013916514530718>
- Craik, K. H., Lampert, M. D., & Nelson, A. J. (1996). Sense of humor and styles of everyday humorous conduct. *Humor*, 9, 273–302.
- de Leeuw, A., Valois, P., Ajzen, I., & Schmidt, P. (2015). Using the theory of planned behavior to identify key beliefs underlying pro-environmental behavior in high-school students: Implications for educational interventions. *Journal of Environmental Psychology*, 42, 128–138. <https://doi.org/10.1016/j.jenvp.2015.03.005>
- de Leeuw, A., Valois, P., Morin, A., & Schmidt, P. (2014). Gender differences in psychosocial determinants of university students’ intentions to buy fair trade products. *Journal of Consumer Policy*, 37, 485e505. <https://doi.org/10.1007/s10603-014-9262-4>

- Dunlap, R. E., & Van Liere, K. D. (1978). The “new environmental paradigm”: A proposed measuring instrument and preliminary results. *Journal of Environmental Education*, 9, 10–19.
- Dunlap, R. E., Van Liere, K. D., Mertig, A. G., & Jones, R. E. (2000). Measuring endorsement of the new ecological paradigm: A revised NEP scale. *Journal of Social Issues*, 56, 425–442.
- Erdogan, M., Ahmet O., & Marcinkowski, T. J. (2012). Development and validation of children’s responsible environmental behavior scale. *Environmental Education Research*, 18, 507–540. <https://doi.org/10.1080/13504622.2011.627421>
- Fang, W.-T., Ng, E., Wang, C.-M., & Hsu, M.-L. (2017). Normative beliefs, attitudes, and social norms: People reduce waste as an index of social relationships when spending leisure time. *Sustainability*, 9(10), 1696. <https://doi.org/10.3390/su9101696>
- Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavioral Research Methods*, 41, 1149–1160. <https://doi.org/10.3758/BRM.41.4.1149>
- Feldman, L., & Hart, P. S. (2016). Using political efficacy messages to increase climate activism: The mediating role of emotions. *Science Communication*, 38, 99–127. <https://doi.org/10.1177/1075547015617941>
- Francoeur, V., Paillé, P., Yuriev, A., & Boiral, O. (2021). The measurement of green workplace behaviors: A systematic review. *Organization & Environment*, 34(1), 18–42. <https://doi.org/10.1177/1086026619837125>
- Frank, A. (2021). *Examining the intersection of need for humor, ideology, and satire on climate change-related risk perceptions, attitudes, and intentions*. Unpublished master’s thesis, The University of Georgia.
- Fredrickson, B. L., Tugade, M. M., Waugh, C. E., & Larkin, G. R. (2003). What good are positive emotions in crises? A prospective study of resilience and emotions following the terrorist attacks on the United States on September 11th, 2001. *Journal of Personality and Social Psychology*, 84(2), 365–376. <https://doi.org/10.1037/0022-3514.84.2.365>
- Gupta, S., & Agrawal, R. (2018). Environmentally responsible consumption: Construct definition, scale development, and validation. *Corporate Social Responsibility and Environmental Management*, 25, 523–536.
- Geiger, S., Dombois, C., & Funke, J. (2018). The role of environmental knowledge and attitude: Predictors for ecological behavior across cultures? An analysis of Argentinian and German students. *Umweltpsychologie*, 22(1), 69–87.
- Hart, P. S. (2010). One or many? The influence of episodic and thematic climate change frames on policy preferences and individual behavior change. *Science Communication*, 33(1), 28–51. <https://doi.org/10.1177/1075547010366400>
- Herzog, T. R., & Anderson, M. R. (2000). Joke cruelty, emotional responsiveness, and joke appreciation. *Humor*, 13(3), 333–351. <https://doi.org/10.1515/humr.2000.13.3.333>
- Herzog, T. R., & Strevey, S. J. (2008). Contact with nature, sense of humor, and psychological well-being. *Environment and Behavior*, 40(6), 747–776. <https://doi.org/10.1177/0013916507308524>
- Kahan, D. M., Jenkins-Smith, H., & Braman, D. (2011). Cultural cognition of scientific consensus. *Journal of Risk Research*, 14(2), 147–174. <https://doi.org/10.1080/13669877.2010.511246>
- Kahan, D. M., Jenkins-Smith, H., Tarantola, T., Silva, C. L., & Braman, D. (2015). Geoeengineering and climate change polarization: Testing a two-channel model

- of science communication. *The Annals of the American Academy of Political and Social Science*, 658, 192–222. <https://doi.org/10.1177/0002716214559002>
- Kaiser, F. G. (1998). A general measure of ecological behavior. *Journal of Applied Social Psychology*, 28, 395–422.
- Kaiser, F. G. (2020). *GEB-50. General Ecological Behavior Scale [Verfahrens-dokumentation, Fragebogen deutsch und englisch]*. In Leibniz-Institut für Psychologie (ZPID) (Eds.), Open Test Archive. ZPID. <https://doi.org/10.23668/psycharchives.4489>
- Kaiser, F. G., Schultz, P. W., Berenguer, J., Corral-Verdugo, V., & Tankha, G. (2008). Extending planned environmentalism: Anticipated guilt and embarrassment across cultures. *European Psychologist*, 13(4), 288–297.
- Kals, E., Schumacher, D., & Montada, L. (1999). Emotional affinity toward nature as motivational basis to protect nature. *Environment and Behavior*, 31, 178–202.
- Kaltenbacher, M., & Drews, S. (2020). An inconvenient joke? A review of humor in climate change communication. *Environmental Communication*, 14, 717–729. <https://doi.org/10.1080/17524032.2020.1756888>
- Kirsh, G. A., & Kuiper, N. A. (2003). Positive and negative aspects of sense of humor associations with the construct of individualism and relatedness. *Humor*, 16(1), 33–62. <https://doi.org/10.1515/humr.2003.004>
- Kormos, C., & Gifford, R. (2014). The validity of self-report measures of pro environmental behavior: A meta-analytic review. *Journal of Environmental Psychology*, 40, 359–371. <https://doi.org/10.1016/j.jenvp.2014.09.003>
- Lacroix, K., & Gifford, R. (2018). Psychological barriers to energy conservation behavior: The role of worldviews and climate change risk perception. *Environment and Behavior*, 50(7), 749–780. <https://doi.org/10.1177/0013916517715296>
- Lange, F., & Dewitte, S. (2019). Measuring pro-environmental behavior: Review and recommendations. *Journal of Environmental Psychology*, 63, 92–100. <https://doi.org/10.1016/j.jenvp.2019.04.009>
- Larson, L. R., Szczytko, R., Bowers, E. P., Stephens, L. E., Stevenson, K. T., & Floyd, M. F. (2019). Outdoor time, screen time, and connection to nature: Troubling trends among rural youth? *Environment and Behavior*, 51(8), 966–991. <https://doi.org/10.1177/0013916518806686>
- Lee, T. H., Jan, F. H., & Yang, C. C. (2013). Conceptualizing and measuring environmentally responsible behaviors from the perspective of community-based tourists. *Tourism Management*, 36, 454–468. <https://doi.org/10.1016/j.tourman.2012.09.012>
- Leiserowitz, A. (2006). Climate change risk perception and policy preferences: The role of affect, imagery, and values. *Climatic Change*, 77, 45–72. <https://doi.org/10.1007/s10584-006-9059-9>
- Mackay, C. M. L., & Schmitt, M. T. (2019). Do people who feel connected to nature do more to protect it? A meta-analysis. *Journal of Environmental Psychology*, 65, 101323. <https://doi.org/10.1016/j.jenvp.2019.101323>
- Maleetipwan-Mattsson, P., Laike, T., & Johansson, M. (2013). Self-report diary: A method to measure use of office lighting. *LEUKOS*, 9(4), 291–306. <https://doi.org/10.1582/leukos.2013.09.04.004>
- Martin, C., & Czellar, S. (2016). The extended Inclusion of nature in self scale. *Journal of Environmental Psychology*, 47, 181–194. <https://doi.org/10.1016/J.JENVP.2016.05.006>
- Martin, R. A., & Lefcourt, H. M. (1983). Sense of humor as a moderator of the relation between stressors and moods. *Journal of Personality and Social Psychology*, 47(1), 145–155.

- Martin, R. A., Puhlik-Doris, P., Larsen, G., & Weir, K. (2003). Individual differences in uses of humor and their relation to psychological well-being: Development of the humor styles questionnaire. *Journal of Research in Personality*, 37(1), 48–75. [https://doi.org/10.1016/S0092-6566\(02\)00534-2](https://doi.org/10.1016/S0092-6566(02)00534-2)
- Martin, L., White, M. P., Hunt, A., Richardson, M., Pahl, S., & Burt, J. (2020). Nature contact, nature connectedness and associations with health, wellbeing and pro-environmental behaviors. *Journal of Environmental Psychology*, 68, 101389. <https://doi.org/10.1016/j.jenvp.2020.101389>
- Mayer, F. S., & Frantz, C. M. (2004). The connectedness to nature scale: A measure of individuals' feeling in community with nature. *Journal of Environmental Psychology*, 24, 503–515. <https://doi.org/10.1016/j.jenvp.2004.10.001>
- McGhee, P. E. (1999). *Health, healing and the amuse system: Humor as survival training* (3rd ed.). Kendall/Hunt.
- Moyer-Gusé, E., Tchernev, J. M., & Walther-Martin, W. (2019). The persuasiveness of a humorous environmental narrative combined with an explicit persuasive appeal. *Science Communication*, 41(4), 422–441. <https://doi.org/10.1177/1075547019862553>
- Müller, L., & Ruch, W. (2011). Humor and strengths of character. *The Journal of Positive Psychology*, 6(5), 368–376. <https://doi.org/10.1080/17439760.2011.592508>
- Nabi, R. L., Moyer-Gusé, E., & Byrne, S. (2007). All joking aside: A serious investigation into the persuasive effect of funny social issue messages. *Communication Monographs*, 74, 29–54. <https://doi.org/10.1080/03637750701196896>
- Nisbet, E. K., & Zelenski, J. M. (2013). The NR-6: A new brief measure of nature relatedness. *Frontiers in Psychology*, 4, 813. <https://doi.org/10.3389/fpsyg.2013.00813>
- Nisbet, E. K., Zelenski, J. M., & Murphy, S. A. (2009). The nature relatedness scale: Linking individuals' connection with nature to environmental concern and behavior. *Environment and Behavior*, 41, 715–740.
- Ojala, M., & Bengtsson, H. (2019). Young people's coping strategies concerning climate change: Relations to perceived communication with parents and friends and proenvironmental behavior. *Environment and Behavior*, 51(8), 907–935. <https://doi.org/10.1177/0013916518763894>
- Ojedokun, O. (2016). Development and psychometric evaluation of the littering prevention behavior scale. *Ecopsychology*, 8(2), 138–152. <https://doi.org/10.1089/eco.2015.0081>
- Perkins, H. E. (2010). Measuring love and care for nature. *Journal of Environmental Psychology*, 30, 455–463.
- Peterson, C., & Seligman, M. E. P. (2004). *Character strengths and virtues: A handbook and classification*. Oxford University Press.
- Pfattheicher, S., Sassenrath, C., & Schindler, S. (2016). Feelings for the suffering of others and the environment: Compassion fosters proenvironmental tendencies. *Environment and Behavior*, 48, 929–945. <https://doi.org/10.1177/0013916515574549>
- Picard, D., & Blanc, N. (2013). Need for humor scale: Validation with French children. *Psychological Reports*, 112(2), 502–518. <https://doi.org/10.2466/08.07.PR0.112.2.502-518>
- Robertson, J. L., & Barling, J. (2017). Toward a new measure of organizational environmental citizenship behavior. *Journal of Business Research*, 75, 57–66. <https://doi.org/10.1016/j.jbusres.2017.02.007>
- Ruch, W. (1998). *The sense of humor*. Mouton de Gruyter.

- Ruch, W., Köhler, G., & Van Thriel, C. (1996). Assessing the “humorous temperament”: Construction of the facet and standard trait forms of the state-trait-cheerfulness-inventory—STCI. *Humor*, 9, 303–339. <https://doi.org/10.1515/humr.1996.9.3-4.303>
- Ruch, W., Köhler, G., & Van Thriel, C. (1997). To be in good or in bad humor: Construction of the state form of the state-trait-cheerfulness-inventory—STCI. *Personality and Individual Differences*, 22, 477–491. [https://doi.org/10.1016/S0191-8869\(96\)00231-0](https://doi.org/10.1016/S0191-8869(96)00231-0)
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68–78. <https://doi.org/10.1037/0003-066X.55.1.68>
- Scheel, T. E., Gerdenitsch, C., & Korunka, C. (2016). Humor at work: Validation of the short and work-related humor styles questionnaire (swHSQ). *Humor*, 29(3), 439–465. <https://doi.org/10.1515/humor-2015-0118>
- Scheel, T., & Gockel, C. (2017). *Humor at work in teams, leadership, negotiations, learning and health*. Springer International Publishing. <https://doi.org/10.1007/978-3-319-65691-5>
- Scheel, T. E., Hoepfner, D., Grotevandt, A., & Barthlen, W. (2017). Clowns in paediatric surgery: Less anxiety and more oxytocin? A pilot study. *Klinische Pädiatrie*, 229(05), 274–280. <https://doi.org/10.1055/s-0043-106854>
- Schneider, C. R., Zaval, L., & Markowitz, E. M. (2021). Positive emotions and climate change. *Current Opinion in Behavioral Sciences*, 42, 114–120. <https://doi.org/10.1016/j.cobeha.2021.04.009>
- Schultz, P. W. (2001). The structure of environmental concern: Concern for self, other people, and the biosphere. *Journal of Environmental Psychology*, 21, 327–339.
- Schultz, P. W. (2002). Inclusion with nature: The psychology of human-nature relations. In P. Schmuck & W. P. Schultz (Eds.), *Psychology of sustainable development* (pp. 62–78). Kluwer.
- Schultz, P. W., Shriver, C., Tabanico, J., & Khazian, A. (2004). Implicit connections with nature. *Journal of Environmental Psychology*, 24, 31–42. [https://doi.org/10.1016/S0272-4944\(03\)00022-7](https://doi.org/10.1016/S0272-4944(03)00022-7)
- Schultz P. W., Zelezny L., Dalrymple N. J. (2000). A multinational perspective on the relation between Judeo-Christian religious beliefs and attitudes of environmental concern. *Environment and Behavior*, 32, 576–591.
- Schultz, W. P., Messina, A., Tronu, G., Limas, E. F., Gupta, R., & Estrada, M. (2016). Personalized normative feedback and the moderating role of personal norms: A field experiment to reduce residential water consumption. *Environment and Behavior*, 48, 686–710. <https://doi.org/10.1177/0013916514553835>
- Schwartz, S. H., Cieciuch, J., Vecchione, M., Davidov, E., Fischer, R., Beierlein, C., Ramos, A., Verkasalo, M., Lönnqvist, J. E., Demirutku, K., Dirilen-Gumus, O., & Konty, M. (2012). Refining the theory of basic individual values. *Journal of Personality and Social Psychology*, 103(4), 663–688. <https://doi.org/10.1037/a0029393>
- Skurka, C., Eng, N., & Oliver, M. B. (2022). On the effects and boundaries of awe and humor appeals for pro-environmental engagement. *International Journal of Communication*, 16, 2709–2729.
- Skurka, C., Niederdeppe, J., Romero-Canyas, R., & Acup, D. (2018). Pathways of influence in emotional appeals: Benefits and tradeoffs of using fear or humor to promote climate change-related intentions and risk perceptions. *Journal of Communication*, 68(1), 169–193. <https://doi.org/10.1093/joc/jqx008>

- Skurka, C., Romero-Canyas, R., Joo, H. H., Acup, D., & Niederdeppe, J. (2022). Emotional appeals, climate change, and young adults: A direct replication of Skurka et al. (2018). *Human Communication Research*, 48(1), 147–156. <https://doi.org/10.1093/hcr/hqab013>
- Spector, P., Zapf, D., Chen, P. Y., & Frese, M. (2000). Why negative affectivity should not be controlled in job stress research: Don't throw out the baby with the bath water. *Journal of Organizational Behavior*, 21, 79–95. [https://doi.org/10.1002/\(SICI\)1099-1379\(200002\)21:1<79::AID-JOB964>3.0.CO;2-G](https://doi.org/10.1002/(SICI)1099-1379(200002)21:1<79::AID-JOB964>3.0.CO;2-G)
- Steg, L., & Vlek, C. (2009). Encouraging pro-environmental behavior: An integrative review and research agenda. *Journal of Environmental Psychology*, 29, 309–317. <http://dx.doi.org/10.1016/j.jenvp.2008.10.004>
- Thorson, J. A., & Powell, F. C. (1993). Development and validation of a multidimensional sense of humor scale. *Journal of Clinical Psychology*, 49(1), 13–23. [https://doi.org/10.1002/1097-4679\(199301\)49:13.0.CO;2-S](https://doi.org/10.1002/1097-4679(199301)49:13.0.CO;2-S)
- Tilikidou, I., Adamson, I., & Sarmaniotis, C. (2002). The measurement instrument of ecologically conscious consumer behavior. *MEDIT*, 1(4), 46–53.
- Vadez, V., Reyes-Garcia, V., Godoy, R., Williams, L., Apaza, L., Byron, E., Huanca, T., Leonard, W. R., Pérez, E., & Wilkie, D. (2003). Validity of self-reports to measure deforestation: Evidence from the Bolivian Lowlands. *Field Methods*, 15, 289–304. <https://doi.org/10.1177/1525822X03254847>
- Velde, F. V., Hudders, L., Cauberghe, V., & Clarebout, E. (2018). Changing farmers' behavior intention with a hint of wit: The moderating influence of humor on message sidedness. *Journal of Environmental Psychology*, 56, 97–103. <https://doi.org/10.1016/j.jenvp.2017.12.001>
- Whitburn, J., Linklater, W. L., & Milfont, T. L. (2019). Exposure to urban nature and tree planting are related to pro-environmental behavior via connection to nature, the use of nature for psychological restoration, and environmental attitudes. *Environment and Behavior*, 51, 787–819. <https://doi.org/10.1177/0013916517751009>
- Wullenkord, M. C. (2020). Climate change through the lens of self-determination theory: How considering basic psychological needs may bring environmental psychology forward. *Zeitschrift Umweltpsychologie*, 24(2), 110–129.
- Zelenski, J. M., & Nisbet, E. K. (2014). Happiness and feeling connected: The distinct role of nature relatedness. *Environment and Behavior*, 46, 3–23. <https://doi.org/10.1177/0013916512451901>

7 Conclusion and Implications

A Climate Scientist and a Climate Change Denier Walk into a Bar...

Trevor Noah, the former South African host of *The Daily Show* (2020), captures the intersectionality we explicated in the Modular Interdependency Model (MIM) during the COVID-19 pandemic lockdown in New York. He starts by discussing how denialism ignores overwhelming scientific evidence:

You know what's crazy to me is that, even though we're seeing the effects of climate change almost every day, there are still tons of people in this country [that is, US] who are like, 'I don't know if it's real and even if it is, I'm not really afraid of it.'

But Noah does not stop here. Not only does he comment on the ineffectiveness of environmental communication on climate change deniers, but he also touches on place and belonging, cultural, religious, gender, racial and ethnic identities, political persuasion, socio-economic status, and lifestyle as determinants of environmental behavior in this segment.

But what's funny is those are the same people who are like, 'A Muslim family moved into my neighborhood? What is their secret plan!?' So maybe we just need to use that irrational fear to get people to take climate change seriously. Yeah. Instead of naming them 'Hurricane Sally' or 'Hurricane Diane,' they should call it 'Hurricane Abdul-Bashir Jalaluddin Bahri.' In twelve hours, America would be all vegan and everyone in NASCAR will drive a Prius: 'We gotta save this goddam planet, y'all!'

The parallel he draws between xenophobia, Islamophobia, and apocalyptic environmental messaging is very much telling. Fearmongering can do real harm. He, therefore, utilizes an alternative communicative strategy in using satire and humor for the purpose of exposing the inefficacious messaging methods and chastises fearmongering, discrimination, and domination in all their forms.

Implications

Although the overwhelming scientific evidence leaves no doubt about the urgency of ecological crises, we still witness ignorance, denial, or a sense of alarm that either pushes people to despair or overwhelms them into inaction. This is while many communities feel left out of sustainable transformations because, for instance, their needs and conditions are ignored or since they cannot afford to support environmental efforts through making financial sacrifices as in buying more expensive sustainable products. At the same time, citizens are frequently blamed for ecological problems despite their relatively limited potentials to bring about a large-scale transformation, while more influential and powerful players like corporations and politicians do not always live up to their responsibilities, which only intensifies ignorance, denial, or despair in the larger society.

To tackle some of these challenges, we have proposed a more comprehensive model for pro-environmental behavior in this book. MIM goes beyond the theories of environmental psychology in that it locates the individual and their environmental behavior within the ecosphere and society. It acknowledges that besides individual determinants, environmental behavior is also influenced by a multiplicity of ecospheric, economic, political, and cultural factors. Instead of solely holding individuals responsible for ecological problems, MIM makes it possible to highlight the significance of economic, political, cultural, legislative, educational, and structural changes. Acknowledging intersectionality can be one way to avoid overwhelming citizens and causing eco-anxiety, lethargy, or indifference in them. It further underscores the significance of an equitable, diverse, and inclusive sustainable transformation. Locating the individual and society within the ecosphere can help circumvent the pitfalls of anthropocentrism by dispersing agency across the symbiotic interrelationships of all critters.

A more comprehensive understanding of the range of the determinants of environmental behavior can be employed to develop novel and more effective communication strategies. Integrating humor and satire in environmental messaging, furthermore, can strongly impact the outcomes. Having scrutinized the functions and potential effects of humor and satire, we attempted to suggest how they can be employed to optimize the impact of environmental communication. We also acknowledged their potential negative impacts and suggested ways to mitigate them by considering the context, creator, medium, distribution, and recipient of humor and satire.

The complexity and extent of ecological crises demand a holistic interdisciplinary approach to make sure that the call for change that starts with scientific etiological analyses effectively reaches out to all stakeholders including the public and policymakers, changes their attitudes, and subsequently compels them to make pro-environmental choices in their individual and collective behaviors (Abrahamse, 2019; Boykoff, 2019; Nature Climate Change, 2017). This book, therefore, strove to pioneer new outlooks and start new

dialogues in environmental communication. It developed new interdisciplinary and transdisciplinary methodologies and suggested solutions for measuring the impact of humorous and satiric environmental communication and providing empirical evidence. It integrated insights from literary and cultural studies; environmental, social, and work and organizational psychology; communication science and media studies to propose an alternative for approaching ecological crises. We believe conversations across the intersections of different but closely related disciplines can materialize novel methodologies and instruments. These, in their turn, will open up new outlooks in developing fresh communication strategies and measuring their impacts.

So far, there has been no comprehensive toolkit for researchers and environmental communicators to optimize their messages and subsequently measure the impacts of humorous and satiric interventions. Previous attempts have been largely focused either on technological innovations or on individual pleas that frequently rely on inducing guilt and fear in citizens. Yet, solutions restricted to instilling negative emotions are barely sufficient to address the complexity of ecological crises. Although our individual choices and lifestyles matter, the scale of crises and their pace of aggravation demand more drastic measures at policymaker, corporate, and public levels. As Sørensen (2016, p. 23) observes, “if progressives want to reach the hearts and minds of people, truth and reason are not enough: they need to speak to the imagination as well.” This is especially significant during a renewed surge of political populism often coupled with right-wing extremism at the age of post-truth and in a post-pandemic world. It would not be easy to convince the world in the wake of a grim pandemic to be persuaded or motivated to strive for sustainability and ecological justice by intimidating them. An alternative approach that cheers people into action and rewards them with enjoyment in return could be a more likely solution.

This is while most environmental messages still rely on somber arguments, dystopian depictions, and gloomy premonitions, trying to induce guilt and fear to persuade their audience to take action, mostly at an individual level (Bore & Reid, 2014; Boykoff, 2019; Branagan, 2007; Feinberg & Willer, 2010; Heise, 2006; Hoewe & Ahren, 2017; Hoffman, 2018; Mann et al., 2017; Moser, 2017; Norgaard, 2006; O’Neill et al., 2013; O’Neill & Nicholson-Cole, 2009; Pike, 2012; Ryzik, 2017; Skurka et al., 2018, 2019; Topalstis et al., 2018). Although fear can imbue some people with motivation and urge them to act, fearmongering and depicting a hopeless situation is not enough to mobilize everyone. By contrast, it can lead to feelings of powerlessness and decrease perceived efficacy to combat the not entirely positive situation (for example, Linde et al., 2006; Van’t Riet et al., 2010). Humor and satire, by contrast, can serve as effective alternatives to stoking fear which have been prevalent in most information campaigns. Due to their experiential, affective, visceral, emotional, tangible, and aesthetic appeal, humorous messages can better transfer scientific findings in a way that leads to genuine engagement with

and commitment to sustainable transformations among the general population. As Boykoff (2019, p. 223; see also Moser, 2007) contends, “these approaches can enable resistance and reimagining of collective futures in the face of climate change in the twenty-first century.” Given the contemporary outreach of social media, diversity of new communication outlets, and the prevalence of humor therein, this enterprise is even more significant to pursue at our particular moment in history. *The Meatrix* (n.d.), *Honest Government Ads* (n.d.), Green Humor (n.d.), and “Operation Sustainability—a story on the world’s most important customer” (2017) are some examples of successful alternative takes on environmental campaigns and messaging, and the first two have succeeded in gaining considerable traction.

Therefore, the implications of MIM and humorous and satiric environmental communication can go well beyond the academic sphere. They can be employed to raise awareness, and facilitate systematic change by engaging citizens, maximizing participation, and inclusion. For one, they proffer new strategies for scientists and public policymakers to reach out to and engage citizens. They also offer new avenues for community building, mobilization, and environmental activism. Moreover, they have strong implications for coping and fostering resilience in adapting to actual or expected ecological and societal consequences of climate change at individual and collective levels.

These potential contributions support the European Green Deal, Horizon Europe and its missions, European Climate Pact (European Commission, 2020a, 2020b, 2020c), UN Sustainable Development Goals, Paris Agreement (UN 2016, 2021), and the Carbon Border Adjustment Mechanism (fit for 55; ICIS, 2020). It also responds to sustainable growth strategies envisioned by the European Semester, the objectives of the European Climate Law and Climate Target Plan, as well as the European Climate Pact that aim to engage not only citizens and communities but also governments, organizations, and all socio-economic sectors in environmental and climate action. In line with these policies, MIM facilitates the triggering of sustainable transformations simultaneously at individual and collective levels, including among the policymakers and corporate sector. It fosters dialogue about climate change, triggering action, and working together, the very activities that the Pact upholds.

Primary breakthroughs include exploring the relationship between satire and humor with environmental messaging and advocacy through developing a theoretical model; providing functional and reliable instruments to measure the environmental efficacy of humor; and devising an alternative approach to critical environmental activism. Since they include sectorial, geographic, and demographic variables, MIM and humorous and satiric environmental communication promise to reach out to target groups well beyond the usual ones and facilitate a just, inclusive, and sustainable transformation. Besides engaging different communities in meaningful environmental action, they proffer socio-political strategies to demand action at

organizational, institutional, legislative, political, economic, and cultural fronts.

These can help realize the objectives of the European Green Deal (EGD) that calls for a just and inclusive sustainable transition to preserve and enhance natural resources and protect citizens against environmental risks, leaving no one behind. MIM gives voice to the marginalized communities and makes it possible for activists and researchers to engage vulnerable and peripheral communities by providing a more comprehensive outlook. The parrhesiastic potentials of humor and satire, among others, offer political strategies for frank speech and speaking truth to power. Besides a wider diversity of denominations, this new communicative strategy, therefore, can engage and facilitate conversation among a wide range of partners and stakeholders including citizens, organizations, institutions, corporations, and politicians.

Another implication of MIM is that it provides a basis for designing communicative strategies tailored to different audiences and contexts. These strategies and alternative approaches partly pave the way for better managing ecological problems through maximizing the buy-in, involvement, and participation of citizens, especially the younger generations to whom humor greatly appeals. Calling citizens and policymakers to turn into and support sustainable consumption and production patterns, advocating climate action, and revitalizing international collaboration for sustainable development, this project seeks to support the Sustainable Development Goals (SDGs) of responsible consumption and production, life below water, life on land, and partnership for the goals. Subsequently, the resulting sustainable transformation at the collective level indirectly supports several SDGs including no poverty, no hunger, good health, gender equality, clean water and sanitation, affordable and clean energy, decent work and economic growth, industry innovation and infrastructure, reduced inequalities, sustainable cities and communities, peace justice, and strong institutions.

Impact

MIM includes several behavioral determinants that were frequently ignored in previous models. This is made possible by locating human behavior not only in individual psychology but also in the society and ecosphere. MIM facilitates the investigation of both the enabling and inhibiting factors of pro-environmental behavior and exploring how humor and satire can influence the determinants of behavior and impact the intention-action and attitude-behavior gaps. The theoretical model acknowledges, includes, and foregrounds diversity and inclusion. These qualities pave the ground for using bottom-up approaches in both research and advocacy. Humor and satire are particularly relevant here because they are pervasive cultural phenomena that can, among others, empower citizens in taking a more active role in environmental activism.

MIM offers promises for future research and practice. It proffers effective communicative strategies to persuade citizens to adapt to and observe sustainable policies and to invest in and use modern green technologies. Its insights can be integrated in education including curriculum development, children and young adult literature to better educate future generations not only to adapt a more sustainable lifestyle, but also to shift to a more resilient one. It can also help trigger a change in value systems, norms, and symbolic motives as determinants of behavior not only right away but also for the time to come. At a socio-political level, it can help push policymakers, organizations, and corporations to assume responsibility and change their behavior. This is particularly significant because the environmental impact of policymakers and corporations and their capacity to cause large-scale transformations are much greater than those of individuals. MIM also proffers new methodological tools to environmental humanities for revealing the environmental implications and impacts of (popular) culture. Environmental and health campaigns can incorporate its insights in order to reach out to and engage more citizens from diverse backgrounds. And comedians, humorists, and cartoonists can use them to boost the impact of their creative works.

This book strove to provide a dialogic conversation not only between humor and environmentalism but also between cultural studies and psychology, between society and individuals. Locating human behavior in individual psychology and in its larger societal and ecospheric context, it considered enabling and inhibiting factors in both individuals at the psychological level and in communities at the social level. Moreover, we examined how gaps between the presence of behavioral determinants and lack of behavior (quasi intention-action or attitude-behavior gaps) can be addressed. Providing a more nuanced picture of human behavior in different contexts and across different communities, the more comprehensive MIM can facilitate more effective and inclusive research and action on social and individual fronts. It also facilitates analyzing cultural productions and how they can initiate sustainable transformations, cause long-term commitment, trust, social acceptance, and buy-in from people, communities, and organizations. Besides, considering a larger number of behavioral determinants that go well beyond mere individual psychology to include different contingencies, it will open new vistas for inclusion and participation in diverse communities and locales featuring different perceptions and needs.

Interdisciplinary and transdisciplinary discussions can further lead to developing novel and richer methodologies that go beyond the limitations of strict and arbitrary disciplinary boundaries. We followed a bottom-up design in that the problem was prioritized, and we undertook to explore its actual dynamics rather than imposing a predetermined methodological framework to prove a hypothesis. In other words, instead of imposing a method-driven framework, this study cleared a space for the appropriate methodology to emerge through synthesizing different approaches across

psychology, humor, communication, and cultural studies. This opens a new vista for a holistic approach to humor and satire by acknowledging their spread well beyond any single and arbitrarily confided sphere in our lives, and, subsequently, helps us think more clearly about the impact of a highly prevalent cultural phenomenon that has not been taken seriously in academic circles. As citizen participation and engagement is of primary significance in sustainable transformations, a bottom-up approach can better engage the wide range of citizens in order to tailor the experiments to communal needs and maximize citizen participation, instead of prescribing and imposing interventions to change behavior from a detached standpoint.

We also proposed an alternative approach to managing environmental crises and climate change, using a novel communicative strategy to reach out to, engage, and encourage citizens to participate in mitigating measures in all their diversity. Departing from dominant somber approaches in inciting guilt, fear, and warning about a dire future that might unwittingly drive people to despair, eco-anxiety, and inaction, this alternative approach focuses on using humor and satire to influence the determinants of behavior at individual and collective levels and also to bridge the gap between the presence of these determinants and lack of action. In this, it provides a more palatable approach to promoting pro-environmental behavior, a behavior that frequently denotes abstinence.

Unfortunately, however, this is not enough. Scientists have already shown that some of the damage caused by human interventions in the Anthropocene is irreparable and cannot be reversed. A very simple example is that we cannot do much about the species that are already extinct. So besides striving for transformation, we should accept that *Homo sapiens* have drastically altered the ecosphere, and now they have to adapt to the new situation. In other words, they have to develop resilience to confront the uncertainties of climate change. Humor and satire can help people foster resilience in encountering the grim evidence of impending ecological catastrophes as high-stake, politicized, and immediate threats due to their function as a coping mechanism and an adaptive strategy. They can make these threats more humane and approachable so that the public can grasp them, and—after understanding and acknowledging their role in addressing these challenges, and appreciating the feasibility and effectiveness of their responses—take respective action. Therefore, besides its contributions to mitigating the ecological crises through just and inclusive sustainable transitions, this communicative strategy can foster societal resilience against and adaptation to climate change and environmental crises through addressing socio-economic transformations. In this way, it will also help manage the uncertainties of climate change.

Employing humor and satire for environmental advocacy can have several social impacts. It can raise awareness among different sectors in the society. We have already discussed that humor and satire can be sources of information provision (Carroll, 2014; Chattoo, 2019; Friedman & Friedman,

2020; Kaltenbacher & Drews, 2020; Rossing, 2016a, 2016b; Young, 2016). They can, therefore, be actively employed to help scientists and scientific notions to reach out to the public. The public communication of science can also lead to civic engagement and strengthen science diplomacy. They can be used to intervene in the dynamics of the world by raising consciousness about environmental crises as one of the most imminent contemporary challenges we face. Environmental humor and satire can also help build communities and galvanize them. They can challenge destructive conventions, revise prejudices, and raise individual and public consciousness. These in their turn can mobilize citizens and policymakers into activism and action over time. As Phiddian (2019, p. 14) observes, “Satirical texts call a public into being, a public mobilized by an attitude towards certain objects of criticism.” They have the power to challenge the status quo, push for reform, alter our attitudes and beliefs, and change our behavior (Carroll, 2014; Chattoo, 2019; Friedman & Friedman, 2020; Krefting, 2014; Quirk, 2015). They

can effectively facilitate radical reimagining and (re)engagement of attitudes, beliefs, perspectives and behaviors as they relate to climate change. Power mobilized through comedy is potentially power to question carbon-based industry interests and their mouthpieces, and power to destabilize status quo cultural perceptions of consumption and environmental impact.

(Boykoff, 2019, p. 199).

What the Future Holds in Store

This book was a pioneering attempt to propose a more comprehensive model for pro-environmental behavior, integrate humor and satire therein, and explore how their environmental impacts could be measured. Different dimensions of the model should be tested in diverse contexts to determine how effective it is in describing and predicting the impact of different environmental messages. The cases we have studied in chapter 5 are in no way representative. They all originate in Western Anglophone cultures. Although we have provided a rationale for selecting each case, our selection was also partly determined by our linguistic and cultural proficiency and partly by the dynamics and requirements of academic publication. Our selection makes it possible for this book to reach out to a larger audience as more people are likely to be familiar with these cultural products given their global outreach. Our critique of their potential negative impacts, partly rooted in their commercial interests, however, strives to provide a more balanced picture about potential impacts. The predictive potentials of MIM also require empirical evidence. Both the model and the humorous communicative strategy should be fine-tuned according to the findings of further studies and after seeking feedback from academics and practitioners.

We are living in the Anthropocene that seems to determine the future of *Homo sapiens* and other species on the planet. Apt attitudes, beliefs, decisions, behaviors, and actions can salvage the Earth, while misguided pathways will do irreparable harm in aggravating an already grave situation. Every single moment we lose in addressing the ecological crises, adopting sensible policies, and taking the right action expedites what has been frequently pictured as an impending doom, a mass extinction. This is while most attempts have not lived up to the urgency of the situation by providing timely, comprehensive, and proportionate measures. This is partly due to the challenges involved in communicating scientific facts to the public and policymakers, as well as differences in cultural contexts, individual perspectives, and numerous other contingencies that render universal solutions impractical. The precipitous urgency of ecological crises and the sheer insufficiency of current public and political measures make this endeavor a timely one. Although humor and satire will not save the world, they may as well be an essential component of doing so.

References

- Abrahamse, W. (2019). *Encouraging pro-environmental behavior: What works, what doesn't, and why*. Academic Press.
- Bore, I.-L., & Reid, G. (2014). Laughing in the face of climate change? Satire as a device for engaging audiences in public debate. *Science Communication*, 36(4), 454–478. <https://doi.org/10.1177/1075547014534076>
- Boykoff, M. (2019). *Creative (climate) communications: Productive pathways for science, policy and society*. Cambridge University Press. <https://doi.org/10.1017/9781108164047>
- Branagan, M. (2007). The last laugh: Humor in community activism. *Community Development Journal*, 42(4), 470–481. <https://doi.org/10.1093/cdj/bsm037>
- Carroll, N. (2014). *Humor: A very short introduction*. Oxford University Press. <https://doi.org/10.1093/actrade/9780199552221.001.0001>
- Chattoo, C. B. (2019). A funny matter: Toward a framework for understanding the function of comedy in social change. *Humor*, 32(3), 499–523. <https://doi.org/10.1515/humor-2018-0004>
- European Commission. (2020a). *European climate pact*. https://ec.europa.eu/clima/policies/eu-climate-action/pact_en
- European Commission. (2020b). *A European green deal*. https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en
- European Commission. (2020c). *Horizon Europe*. https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe_en
- Feinberg, M., & Willer, R. (2010). Apocalypse soon? Dire messages reduce belief in global warming by contradicting just-world beliefs. *Psychological Science*, 22(1), 34–38. <https://doi.org/10.1177/0956797610391911>
- Friedman, H. H., & Friedman, L. W. (2020). The pen is mightier than the sword: Humor as a social justice tool. *Review of Contemporary Philosophy*, 19, 26–42.
- Chakravarty, R. (n.d.). *Green Humor*. <https://www.greenhumour.com/>

- Heise, U. K. (2006). The hitchhiker's guide to ecocriticism. *PMLA*, 121(2), 503–526.
- Hoewe, J., & Ahern, L. (2017). First-person effects of emotional and informational messages in strategic environmental communications campaigns. *Environmental Communication*, 11(6), 810–820. <https://doi.org/10.1080/17524032.2017.1371050>
- Hoffman, A. J. (2018, October 23). Rising insurance costs may convince Americans that climate change risks are real. *The Conversation*. <https://theconversation.com/rising-insurance-costs-may-convince-americans-that-climate-change-risks-are-real-105192>
- Honest Government Ads. (n.d.). *The Juice Media*. <https://www.thejuicemedia.com/honest-government-ads/>
- ICIS. (2020). *ICIS EU carbon: Carbon border adjustment mechanism - possible implementations and EUA market implications*. <https://www.icis.com/explore/resources/news/2020/12/15/10585694/icis-eu-carbon-carbon-border-adjustment-mechanism-possible-implementations-and-eua-market-implications>
- Kaltenbacher, M., & Drews, S. (2020). An inconvenient joke? A review of humor in climate change communication. *Environmental Communication*, 14(6), 717–729. <https://doi.org/10.1080/17524032.2020.1756888>
- Krefting, R. (2014). *All joking aside: American humor and its discontents*. Johns Hopkins University Press.
- Linde, J. A., Rothman, A. J., Baldwin, A. S., & Jeffery, R. W. (2006). The impact of self-efficacy on behavior change and weight change among overweight participants in a weight loss trial. *Health Psychology*, 25(3), 282–291. <https://doi.org/10.1037/0278-6133.25.3.282>
- Mann, M., Hassol, S. J., & Toles, T. (2017, July 12). Doomsday scenarios are as harmful as climate change denial. *Washington Post*. https://www.washingtonpost.com/opinions/doomsday-scenarios-are-as-harmful-as-climate-change-denial/2017/07/12/880ed002-6714-11e7-a1d7-9a32c91c6f40_story.html
- Meatrix (n.d.). *Meatrix*. <https://www.themeatrix.com/>
- Moser, S. C. (2007). *More bad news: The risk of neglecting emotional responses to climate change information*. Cambridge University Press.
- Moser, S. C. (2017). Reflections on climate change communication research and practice in the second decade of the 21st century: What more is there to say? *Wiley Interdisciplinary Reviews: Climate Change*, 7(3), 345–369. <https://doi.org/10.1002/wcc.403>
- Nature Climate Change. (2017). Connecting with climate science. *Nature Climate Change*, 7(159). <https://doi.org/10.1038/nclimate3246>
- Norgaard, K. M. (2006). “People want to protect themselves a little bit”: Emotions, denial, and social movement nonparticipation. *Sociological Inquiry*, 76(3), 372–396. <https://doi.org/10.1111/j.1475-682X.2006.00160.x>
- O'Neill, S., & Nicholson-Cole, S. (2009). “Fear won't do it”: Promoting positive engagement with climate change through visual and iconic representations. *Science Communication*, 30(3), 355–379. <https://doi.org/10.1177/1075547008329201>
- O'Neill, S. J., Boykoff, M., Niemeyer, S., & Day, S. A. (2013). On the use of imagery for climate change engagement. *Global Environmental Change*, 23(2), 413–421. <https://doi.org/10.1016/j.gloenvcha.2012.11.006>
- “Operation Sustainability - a story on the world's most important customer.” (2017). *YouTube*. <https://www.youtube.com/watch?v=RMx3bcTlxqY>
- Phiddian, R. (2019). *Satire and the public emotions*. Cambridge University Press. <https://doi.org/10.1017/9781108869263>

- Pike, D. M. (2012). *Enviro-toons: Green themes in animated cinema and television*. McFarland & Company.
- Quirk, S. (2015). *Why stand-up matters: How comedians manipulate and influence*. Bloomsbury Publishing.
- Rossing, J. P. (2016a). A sense of humor for civic life: Toward a strong defense of humor. *Studies in American humor*, 4(1), 1–21. <https://doi.org/10.5325/studamerhumor.2.1.0001>
- Rossing, J. P. (2016b). Emancipatory racial humor as critical public pedagogy: Subverting hegemonic racism. *Communication, Culture and Critique*, 9(4), 614–632. <https://doi.org/10.1111/cccr.12126>
- Ryzik, M. (2017, August 2). Climate-change film? Is Emma Stone in it? *New York Times*, C1.
- Simpson, P. (2003). *On the discourse of satire*. John Benjamins Publishing Company. <https://doi.org/10.1075/lal.2>
- Skurka, C., Niederdeppe, J., & Nabi, R. (2019). Kimmel on climate: Disentangling the emotional ingredients of satirical monologue. *Science Communication*, 41(4), 394–421. <https://doi.org/10.1177/1075547019853837>
- Skurka, C., Niederdeppe, J., Romero-Canyas, R., & Acup, D. (2018). Pathways of influence in emotional appeals: Benefits and tradeoffs of using fear or humor to promote climate change-related intentions and risk perceptions. *Journal of Communication*, 68(1), 169–193. <https://doi.org/10.1093/joc/jqx008>
- Sørensen, M. (2016). *Humor in political activism creative nonviolent resistance*. Palgrave Macmillan.
- The Daily Social Distancing Show with Trevor Noah. (2020, September 16). *Trump's cali climate denial & Venus's signs of life* [Video]. YouTube. <https://youtu.be/7uBnBag11IE>
- Topaltsis, L., Plaka, V., & Skanavis, C. (2018, July). *Raising awareness on climate change through humor* [Conference paper]. Protection and restoration of the environment XIV, Thessaloniki.
- UN (2016). *The Paris agreement*. United Nations. <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>
- UN (2021). *The UN sustainable development goals*. United Nations. <https://sdgs.un.org/goals>
- Van't Riet, J., Ruiter, R. A., Werrij, M. Q., & De Vries, H. (2010). Self-efficacy moderates message-framing effects: The case of skin-cancer detection. *Psychology and Health*, 25(3), 339–349.
- Young, J. R. (2016, December 7). A comedian and an academic walk into a podcast. *Chronicle of Higher Education*. www.chronicle.com/article/A-Comedianan-Academic/237715

Index

- ability or self-efficacy 43, 62
- absent-mindedness 54
- action knowledge 199
- activation 42, 210
- active procurement goals 44
- activism 41, 44, 47, 51, 63, 64, 65, 104, 130–131, 140, 157, 173–174, 197, 221–222, 225
- Actor–Network Theory 85, 95
- actual behavior 164, 193, 204
- actual behavioral control 53, 92, 159, 204, 210
- adaptation 10, 57, 69, 70, 107, 128, 156, 224
- advertisement 5, 65, 102, 136, 143–144, 156, 160–161, 175, 187, 206, 211
- affect and symbolic aspects 42
- affective aspect 17, 59, 103, 200
- affiliative humor style 22, 25, 207, 209
- affirmative thoughts 54, 56
- age 4, 5, 7, 9, 16, 43, 49, 51, 88, 89, 90, 95, 106, 117, 127, 133, 171, 176, 190, 194, 195, 197, 209, 220
- agency 3, 11, 48, 49, 68, 101, 106, 107, 166, 219
- agenda setting 66, 179
- aggressive humor style 22, 24–25, 115, 207
- altruistic 44, 63, 89, 141, 158, 160, 162, 188
- amotivation 205
- amusement 15, 20, 68, 117, 130, 196, 206
- anger 15, 51, 115, 204
- animation 128, 129, 143, 145
- antecedents 209, 210
- anthropocentrism 3, 49, 92, 95, 101, 106, 219
- anthropogenic climate change 187
- anticipated feelings of guilt 204
- Appraisal Theory 114
- Aristophanes 136, 177
- arousal 19, 42, 210
- ascription of responsibility 43–44, 62, 89, 160, 161, 163, 165
- assessment of humor 195, 205, 206
- astonishment 203
- attentional bias 54, 105
- attitude toward humorous people 208
- attitude–behavior gap 11, 56, 58, 103, 105, 134, 143, 161, 164, 168, 170, 222, 223
- attitudes 2, 5, 9, 15, 16, 22, 23, 24, 42, 43, 44, 45, 46, 50, 52, 53, 54, 55, 56, 57, 60, 62, 67, 68, 69, 84, 86, 90, 91, 92, 101, 102, 106, 109, 110, 111, 112, 113, 115, 118, 119, 129, 130, 131, 133, 134, 135, 136, 137, 138, 142, 143, 145, 148, 149, 156, 159, 164, 166, 170, 171, 176, 177, 187, 192, 199, 202, 207, 219, 225, 226
- attitudes toward humor 208
- Atwood, Margaret 48, 49, 50
- autonomous motivation 205
- autonomy 92, 205
- awe-inspiring messages 187
- background factors 43, 92, 190, 209
- bad mood 191, 207
- basic human values 89, 201
- basic psychological needs 205
- behavioral attitudes 44
- behavioral beliefs 43, 44, 90, 201
- behavioral change 4, 5, 7, 9, 10, 11, 45, 46, 53, 56, 57, 58, 59, 61, 68, 70, 71, 73, 92, 102, 103, 104, 105, 107, 108, 109, 111, 118, 119, 126, 128, 145, 152, 155, 158, 164, 174, 179, 209, 211

- behavioral control 10, 42, 45, 53, 60, 62, 86, 92, 140, 151, 159, 160, 195, 204, 205, 211
- behavioral determinants 10, 11, 52, 53, 57, 58, 86, 101, 103, 139, 162, 169, 189, 190, 209, 222, 223
- behavioral domains 196, 199
- behavioral intentions 186–187, 189, 192, 196–198, 204–205
- behavioral products 193
- belabored humor 207
- belief in solutions outside of human control 57, 138
- beliefs 42, 44, 45, 51, 54, 60, 62, 67, 68, 72, 85, 88, 89, 90, 91, 92, 93, 101, 102, 105, 109, 113, 118, 131, 132, 134, 135, 137, 138, 139, 146, 163, 164, 166, 168, 169, 170, 171, 174, 177, 192, 201, 209, 225, 226
- beneficial effects 189
- benevolence 43, 61, 62, 141, 158
- benign violation hypothesis 10, 19
- better-than-average effect 54
- bias 25, 53, 54, 55, 60, 64, 95, 109, 158, 159, 192, 193, 194, 195, 196
- biocentrism 49, 69
- biospheric concerns 202
- bipolar adjective scales 199
- blocking 54
- blood pressure 20, 210
- bonding to nature 199
- boundary conditions 188, 194
- Bourdieu, Pierre 84, 85, 87
- Brecht, Bertolt 25, 144
- buffering 110
- building trust 103

- Calvino, Italo 48
- carbon dioxide emissions 190
- carbon footprints 53, 73, 143, 174, 197, 198
- cartoons 5, 11, 15, 41, 60, 118, 162–180, 187, 188, 189, 193, 194, 197, 205, 206
- case studies 9, 57, 118, 194
- Catch-22* 50
- causal relationships 191
- character strength 188
- Charlie Hebdo* 42
- cheerfulness 207
- Children's Responsible Environmental Behavior Scale 197
- circular motivational continuum 202
- circular reinforcement 191
- clarification 23, 50, 112, 113
- Climate Action Network 65
- climate change 1, 7, 10, 22, 48, 51, 54, 56, 57, 64, 65, 66, 68, 70, 71, 72, 84, 88, 90, 91, 103, 105, 110, 112, 114, 115, 116, 137, 146, 147, 148, 149, 150, 151, 156, 163, 165, 166, 167, 170, 171, 174, 177, 180, 187, 188, 189, 191, 194, 197, 201, 204, 205, 211, 218, 221, 224; activism 197; beliefs 201; communication 187
- Climate Policy Preferences* 205
- Climate Target Plan 221
- clown interventions 210
- cognitive approach 205
- cognitive bias 10, 53, 54, 105
- cognitive dissonance 53, 54
- collective behaviors 8, 9, 71, 219
- comedy, definition of 14, 15, 16, 27, 28, 48, 49, 50
- common good 176
- common-method bias 191, 192
- community building 10, 24, 95, 103, 104, 221
- commuting 193
- compassion 117, 190
- compensatory effect 194
- competence 85, 135, 205
- confirmation bias 54, 56, 161
- conflicting goals and aspirations 57, 204
- Connectedness to Nature Scale (CNS) 199
- connection to nature 190, 191, 199
- conscience 3, 60, 174, 177, 203
- conscientiousness 88, 191
- conservation behaviors 192, 196, 204
- conservative 52, 108, 150, 166, 167, 205
- consumerism 2, 9, 102, 143, 144, 161, 175, 196
- contact with nature 188
- content-specific questions 201
- contextual factors 209
- control beliefs 43, 89, 90, 92, 204
- control condition 187, 193, 194, 204
- control group 194
- control variables 194
- controlled conditions 186
- coping 10, 21, 42, 69, 70, 95, 105, 107, 110, 191, 208, 221, 224
- coping humor 188, 207, 208
- Coping Humor Scale (CHS) 208
- coping strategies 21, 25, 102, 152, 165, 205

- COVID-19 pandemic 1, 218
 cross-sectional self-assessment 188
 cross-sectional studies 190, 191
 Cultural Cognition Worldviews
 Scale 202
- Dante (Alighieri) 50
 dark styles of humor 23, 24, 162
 data protection regulations 193
 data sharing 195
 deforestation 129, 130, 138, 198
 degree of manipulation 193
 delay of gratification 54, 56, 105, 137, 170
 DeLillo, Don 48
 denial 56, 104, 164, 204, 219
 descriptive normative beliefs 203
 descriptive norms 45, 46, 91, 203
 determinants of pro-environmental
 behavior 41, 87, 126, 164, 176, 186, 189
 device measurements 198
 deworming advertisements 206
 deworming medication 187, 198
 diary studies 210
 Dick, Philip K. 48
 differentiation 23, 50, 112, 113
 diffusion (or attribution) of
 responsibility 55, 105
 digital devices 193
 diminishment 116
 discourse 7, 26, 46, 48, 53, 69, 72, 87, 100, 101, 126, 127, 148, 150, 173, 175
 discrimination 6, 115, 131, 153, 158, 160, 209, 218
 disease 1, 200
 disengagement 47, 48, 117
 disposing garbage 192
 Disposition to Connect with Nature
 Scale 200
 distance 14, 25, 45, 48, 104, 105, 116, 137, 148, 174, 193
Divine Comedy 50
 domain-general scales 196
 domain-specific behaviors 196
 domain-specific self-reports 196
*Dr. Strangelove Or: How I Learned to
 Stop Worrying and Love the Bomb* 50
 drought 1, 70, 92, 116, 201
 dullness indicators 206
- ecocentrism 49, 69
 ecological validity 193, 195
 ecological worldview 44, 198
 economic growth 1, 175, 199, 222
 ecosocialism 95, 175
 effect size 192
 effectiveness of humor 51, 189
 effectiveness of interventions 210
 effectiveness of manipulations 195
 effects of a message 186
 effects of manipulations 186
 efficacy of humor 107, 187, 221
 efficiency knowledge 199
 egalitarianism 202
 egoistic concerns 202
 egoistic values 44, 63, 158, 162
 Elaboration Likelihood Model 111
 embarrassment 59, 104
 Emotional Affinity Toward Nature
 scale 200
 emotional attachment 200
 emotional connectedness to nature 199
 emotional well-being 188
 emotion-focused coping 70, 165, 205
 empathic concern 203
 empirical finding 20, 51, 210
 empirical research 11, 21, 64, 186, 189, 210
 empirical research methods 186
 end of history 141
 enforcement 22, 23, 50, 112, 113
 engagement in participatory actions 197
 enjoyment of humor 208
 Environmental Action Scale 197
 environmental awareness 188, 197, 199
 environmental behavior 3, 6, 7, 9, 10, 28, 42, 44, 58, 59, 63, 69, 71, 72, 84, 85, 87, 89, 92, 93, 95, 96, 100, 102, 105, 106, 107, 126, 130, 133, 135, 137, 138, 140, 142, 148, 155, 156, 158, 160, 161, 162, 163, 164, 168, 169, 171, 172, 173, 175, 176, 178, 179, 186, 195, 197, 209, 218, 219
 environmental behavioral intentions
 187, 198
 environmental communication 3, 10, 46, 47, 50, 65, 88, 107, 174, 187, 218, 219, 220, 221
 environmental groups 197
 Environmental Identity scale (EID) 200
 environmental justice 4, 68, 129, 139, 142, 156, 158, 168, 176
 environmental knowledge 199
 environmental narrative 187
 environmental psychology 7, 8, 9, 41, 42, 44, 45, 56, 63, 89, 189, 219

- episteme 53, 69, 100–101
- equity 5, 188, 219
- European Climate Law 9
- European Climate Pact 4, 9, 221
- European Green Deal 94, 221, 222
- European Semester 9, 221
- evidence-based environmental
 - politics 211
- evolution 10, 18, 19, 20, 21, 22, 85, 93, 95, 136
- evolutionary theories of humor 22
- exhilaration 206–207
- expectancy-value model 201
- experimental conditions 187, 188
- experimental study design 197
- explanatory variance 194
- Extended Inclusion of Nature in Self
 - scale 200
- external whimsy 208
- extraversion 191
- eye tracking 211

- false-positive relationship 191
- farmers 89, 153, 154, 156, 159, 201
- farming 5, 71, 91, 102, 133, 153, 201
- fatalism 202
- field intervention 194
- field observations 193
- finite pool of worry 115
- Focus Theory of Normative Conduct
 - 45, 89, 90
- Fossil of the Day 65
- Foucault, Michel 53, 64, 100
- framing 20, 65, 66, 86, 104, 105, 110, 116, 145, 146, 150, 151, 179
- Frankl, Victor 42
- frequency of laughter 192
- Freud, Sigmund 16, 17, 41
- FTNC 89, 90, 91
- Fukuyama, Francis Yoshihiro 141
- Full Frontal* 110
- functions of humor 2, 10, 14, 23, 24, 48, 50, 64, 68, 101, 110, 112, 113, 117, 152
- funny signs 190
- future intentions 198

- G*Power 195
- gain goals 44, 62, 91
- GEB-50 196
- gender roles 5, 42, 87, 93, 100, 135, 137, 156
- General Ecological Behavior scale 196
- General Environmental Knowledge
 - Scale (GEK) 199
- General Theory of Verbal Humor
 - (GTVH) 16
- generalizability 195
- GFT 87, 89, 90, 91
- Ghosh, Amitav 109
- global warming 47, 51, 129, 131, 163, 165, 197, 200, 203
- Goal Framing Theory 44, 62, 87, 89–90
- goals 19, 44, 45, 46, 47, 48, 55, 57, 85, 86, 88–91, 101, 103, 105, 111–113, 119, 140, 141, 147–150, 158, 170, 222
- GPS tracking 193
- Greater Good Game 195
- greed 46, 93, 94, 132, 138, 142, 152, 164, 170, 175
- greenhouse gas emissions 159, 197
- greenhouse gases 144, 160, 199
- greenwashing 8, 103, 128, 176
- growth 102, 126, 133, 151, 175, 202, 221
- guilty 60, 204

- habit 7, 53, 56, 57, 59, 86, 89, 93, 104, 108, 138, 159
- heart rate variance 210
- heat stress 201
- hedonic goals 44, 62, 91
- hedonism 202
- Heller, Joseph 50
- hereditary and environmental factors 85
- hierarchy-egalitarianism 202
- high school students 190, 195
- hindsight bias 192
- Hobbes, Thomas 16, 55
- holistic affective evaluations 203
- Horizon Europe 9, 221
- human or natural causes 201
- humor appraisal 206
- humor appreciation 188, 208
- humor as a state 205, 206, 207
- humor as an adaptive response 19
- humor conceptualizations 10, 22, 50, 209
- humor creativity 208
- humor in everyday life 5, 208
- humor manipulations 186, 187, 193, 197, 211
- humor mechanisms 210
- humor production 208
- humor research 10, 210
- humor styles 22, 62, 207, 209
- Humor Styles Questionnaire (HSQ) 207
- humor tolerance 208
- humor traits 207
- humor under stress 208
- humor, definition 14–22

- humorous affect 206
 humorous and non-humorous approaches 186
 humorous appeal 194
 Humorous Behavior Deck-Revised 207
 Humorous Behavior Q-Sort Deck 207
 humorous content 47, 189
 humorous interventions 103, 188, 210
- identification 23, 50, 112–113, 189
 ignorance 46, 47, 56–57, 103, 137, 163, 164, 181, 204, 219
 Implicit Association Test (IAT) 200
 Inclusion of Nature in Self 200
 Inclusion of the Other in the Self scale 199f
 Incongruity(-resolution) theories of humor 17
 individual behavior 52, 63, 101, 107, 133, 152, 193, 197
 individual differences 210, 226
 individual humor dispositions 188
 individualism-communitarianism 202
 inducement of emotions 186
 inhibiting factors 3, 5, 9, 110, 117, 222–223
 Inhofe, James 54
 injunctive normative beliefs 202
 instrumental connectedness 200
 instrumental function 42
 intelligence 43, 88, 136, 209
 intention–action gap 10, 52–57, 92, 103, 138, 174, 210
 Intergovernmental Panel on Climate Change (IPCC) 1, 147f
 intermediality 66, 179
 internal need for humor 188, 208
 internal whimsy 208
 interpellation 100–101
 interpersonal influences 204
 intervention 3, 8, 25, 43, 46, 53, 57, 61, 70, 71, 72, 94, 105, 107, 118, 119, 126, 127, 133, 135, 139, 142, 163, 168, 179, 189, 190, 194, 195, 210, 220, 224; intervention studies 194, 210
 intra- and interorganizational communications 10
 intraindividual relationships 188
 intrapersonal processes 191
Invisible Cities 48
 involvement 7, 116, 222
 IPCC 1, 147–148
 irony 23, 49, 134, 138, 150, 160, 163, 164, 173, 175, 189
- Jeffers, Oliver 48
 joint assessment 195
 judgmental discounting 56, 103–104, 137, 146, 170
- Kant, Immanuel 17, 21
 key variables 186, 193, 195, 205
 Kubrick, Stanley 50
- laboratory 192, 193, 195, 210
Last Week Tonight with John Oliver 145–160
 laughter 14, 16, 17, 19, 20, 21, 26, 48, 59, 61, 67, 69, 70, 207
 leadership actions 197
 liberal 24, 59, 141, 142, 167, 175, 177, 205
 light styles of humor 23
 Likert response scale 201
 Littering Prevention Behavior scale 197
 longitudinal designs 190, 191
 Love and Care for Nature scale 200
Lysistrata 136, 177
- MaddAddam* 49, 50
 masculinity traits 209
 material consequences of behavior 193
 McEwan, Ian 48, 50
 meaning-focused coping 205
 means-and-ends 19
 mediation 191
 memory 27, 54, 88, 96, 100, 117, 137, 192
 message creation 186
 message scrutiny 114
 meta-analysis 25, 192, 197
 mirth 14, 17, 59, 68, 191, 193, 194, 206; the mirth level of a cartoon 188; mirthful 51, 191
 misattribution 54
 mission impossible 204
 mistrust 103, 104; mistrust and reactance 56
 mixed-method approach 192
 mobility 9, 129, 196
 mock tasks 195
 moderator 116, 188, 194, 204, 205, 208, 209
 Modular Interdependency Model 10, 84, 106, 117, 126, 218
 mood 43, 62, 84, 88, 92, 105, 114, 115, 191, 207, 208, 209
 moral norms 203
 motion pictures 27, 48, 189

- motivation 18, 43, 44, 46, 47, 51, 61, 62, 84, 93, 101, 109, 114, 130, 141, 148, 158, 159, 205, 209, 211, 220; motivational types of values 62
- Mr. Smith Goes to Washington* 141, 142
- Multidimensional Sense of Humor scale 208
- multi-item scales 196
- multimethod approaches 210
- multiple-choice format 199

- NAM 42, 43, 44, 57, 62, 87, 89, 90, 91
- narrative 46, 47, 66, 67, 105, 109, 116, 156, 164, 187, 206
- natural occurrence of variance 193
- nature connectedness 200
- Nature Relatedness scale (NR) 199
- nature writing 50
- need 84
- need for humor 188, 208
- Need for Humor scale 208
- Need for Levity scale 208
- negative environmental impact 43, 110, 144, 175, 178, 181
- New Ecological Paradigm 44
- New Ecological Paradigm Scale 198
- New Yorker, The* 11, 163, 164, 165, 166, 167, 169, 170, 171, 173, 174, 175, 176, 177, 178
- niche 93, 94, 110
- Noah, Trevor 218
- non-satirical cartoon 194
- Norm-Activation Model 42, 87, 89, 90
- normative beliefs 43, 44, 90, 201, 202, 203
- normative goals 44, 62, 91
- norms 4, 23, 24, 42, 44, 45, 46, 53, 54, 55, 60, 61, 62, 63, 86, 89, 90, 91, 92, 100, 101, 102, 103, 105, 109, 119, 133, 134, 135, 137, 163, 164, 169, 171, 174, 177, 190, 202, 203, 223
- norms, conformity 57, 60, 103
- nudging 66

- objective behavior 192
- objective data 193
- objective knowledge 199
- objective measurements 192
- observable behavior 192
- observations 192, 193, 196, 198, 209, 210
- one- or two-sided humor and satire 186–187
- online experiments 195

- open science 195
- Organizational Citizenship Behavior for the Environment (OCBE) 196
- organizations, humor in 10, 24–26, 220–223
- other-reports 192, 198
- outcome efficacy 43, 62, 158, 160
- outdoor time 190
- overall water consumption 192
- oxytocin 210

- paper-pencil 196
- parents 168, 195, 202
- Paris Agreement 144, 147–148, 221
- parody 187
- parrhesia 27, 48, 61, 64, 95, 104, 179, 222
- pastoral poetry 50
- peer norms 57
- perceived behavioral control 10, 42, 43, 45, 53, 57, 60, 62, 86, 90, 92, 103, 131, 151, 158, 159, 204
- perceived connection to nature 190, 191
- perceived humorousness 206
- perceived moral obligation 203
- perceived risk of climate change 188
- perceived risks of behavioral change 103, 104
- perceived risks of behavioral change 57, 103–104
- perception of role models 191
- performance-related experimental case study 187
- personal behavior 54, 161, 192, 211
- personal norms 42, 44, 62, 90, 91, 194
- personal values 55, 201, 203
- personal versus social sets of values 202
- personality 18, 43, 62, 88, 89, 90, 191, 206, 209; personality dispositions 207; personality traits 85, 102, 111, 188, 208
- personalized feedback 194
- persuasion 9, 10, 51, 58, 71, 110, 111, 115, 146, 156, 168; persuasiveness 48, 187, 192
- physiological data 210
- picaresque fiction 50
- place attachment 56, 104
- plastic bottles 190, 193
- plastics 160–162
- Plato 16, 64, 67
- political attitudes 205
- political ideology 205
- political measures 211

- political parties 197
- pollution 54, 129, 131, 156, 157, 160, 162, 169
- portrait statement 202
- positive affect 51, 105, 114
- positive and negative affect 203
- positive effect on pro-environmental behavior 190
- posthumanism 69
- potential behaviors 192
- potential outcomes 201
- power-knowledge 69, 105
- preregistration 195
- primacy and recency effects 192
- priming 65, 66, 104
- prior participation 193
- private-sphere behaviors 196
- pro-arguments 51, 109, 111
- problem awareness 43, 62, 158
- problem-focused coping 70, 205
- product promotions 211
- pro-ecological 188
- pro-environmental attitudes 11, 169, 186, 188, 189, 198
- pro-environmental behavior 3, 5, 7, 10, 24, 41, 43, 44, 47, 51, 53, 54, 55, 56, 57, 59, 60, 61, 62, 63, 66, 71, 72, 88, 90, 91, 92, 102, 105, 106, 108, 126, 143, 144, 155, 159, 164, 166, 167, 168, 170, 171, 174, 179, 186, 187, 188, 189, 190, 191, 192, 194, 195, 196, 198, 201, 203, 204, 205, 209, 210, 211, 219, 222, 224, 225
- pro-environmental goals 190
- pro-environmental intentions 53
- pro-environmental personal norms 43, 44
- pro-environmental public service announcement (PSA) 187, 206
- pro-environmental purchase behavior 197
- pro-environmental values 201
- professional comedians 193
- Psychological Barrier scale 204
- psychological barriers 56, 103, 204
- psychological constructs 209
- psychological mechanisms 89, 161, 191
- psychological restoration 200
- public service announcement (PSA) 187, 206
- public transport 53, 90, 205
- public-sphere behaviors 196
- purchase preferences 211
- quantitative approaches 186
- quantitative research 6, 11, 194
- quantitative self-report questionnaires 196
- quasi-causal relationship 192
- quasi-experiments 193
- race 4, 5, 7, 9, 27, 41, 43, 50, 60, 65, 87, 95, 104, 157, 177, 202
- rational behavior 42
- reactance by offense 187
- rebound effect 10, 57, 103, 105
- recycling 92, 139, 140, 148, 160, 161, 162, 173, 190, 196, 198, 204
- Referent Informational Influence Model 52
- reflexive humor 208
- regime of truth 69, 100
- release theories of humor 16
- relief theories of humor 16
- religious beliefs 168, 169, 209
- replicability 195
- research methodologies 186
- resilience 10, 22, 42, 69, 70, 105, 107, 110, 126, 165, 221, 224
- response efficacy 197
- retrospective memory biases 192
- Reversal Theory 10, 18–19
- reverse causality 190
- reversely coded statements 199
- rhetorical studies 48
- ridicule 15, 23, 45, 59, 60, 65, 67, 72, 148, 151, 173, 179
- risk perception 51, 187, 188, 191, 193, 200, 204
- Risk Perception Index 200
- role models 191, 192, 203
- role play 195
- sample 129, 163, 194, 195, 197; sample characteristics 189, 195; sample descriptions 209; sample sizes 194, 195
- satire 1, 2, 3, 5, 6, 7, 9, 10, 11, 14, 15, 16, 21, 24, 26, 27, 28, 41, 45, 46, 47, 48, 49, 50, 51, 52, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 72, 84, 89, 95, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 112, 114, 115, 117, 118, 119, 126, 127, 129, 130, 132, 133, 134, 135, 136, 138, 139, 140, 141, 142, 143, 144, 145, 146, 148, 154, 156, 158, 159, 162, 163, 164, 168, 170, 171, 173, 174, 175, 178, 179, 186, 187, 189, 218, 219, 220, 221, 222, 224, 225, 226;

- definition of 26–28; satirical political cartoons 187, 193
- saturated soil 201
- saving energy 204
- SDGs 4, 5, 6, 9, 222
- self-assessment questionnaires 192
- self-assessments 193, 198, 199, 210
- self-defeating humor style 22, 25, 209
- Self-Determination Theory 205
- self-enhancing humor 22, 25, 62, 207
- self-identification with nature 200
- self-image 200
- self-perception 188
- self-protection 202
- self-regulation 46, 55, 91, 209; self-regulatory resources 45, 86, 91
- self-reports 118, 192, 196, 198, 200, 203, 206, 207; self-report scales 196, 197, 205
- semantic differential scale 206
- sense of humor 84, 188, 207–208
- Sense of Humor Scale (SHS) 207, 208
- sense of oneness with the natural environment 200
- sexual orientation 4, 5, 9, 27, 41, 60, 87, 209
- shame 59, 62, 67, 86, 88, 104, 105, 115, 168, 173, 176
- single action bias 55, 180
- situational influences 193
- social comparison 57, 103
- social desirability 192, 196
- social norms 45, 55, 62, 63, 67, 91, 110, 131, 194
- social processes 211
- Solar* 50
- South Park* 59, 129
- Spaulding, Trevor 60
- specific stimuli 190
- Spivak, Gayatri 101
- standards of living 200
- Stanford Climate Change Behavior Survey 197
- state 18, 19, 20, 45, 62, 70, 86, 102, 132, 133, 149, 176, 211; state variables 191
- State-Trait-Cheerfulness-Inventory (STCI-state) 207
- statistical relationship 194
- strategic essentialism 101
- Stratford, Aoise 48
- structural interventions 61
- study design 189, 194; study results 195; study samples 194
- styles of humor 22, 23, 62
- subjective evaluation 192
- subjective knowledge 199
- subjective norm 42, 44, 60, 62, 90, 91, 203
- subversion–containment dialect 151
- suggestibility 54
- superiority theory of humor 20
- surveys 186, 188
- sustainable behaviors 59, 188
- Sustainable Development Goals (SDG) 4, 221–222
- Swift, Jonathan 136
- symbolic functions 42
- system knowledge 199
- target audience 106, 133, 176, 190
- target behavior 195
- target group 52, 118, 190, 193, 221
- teachers 191, 192, 195, 202
- technosavation 204
- testing hypotheses 186
- The Fate of Fausto* 48
- The Simpsons* 11, 128–145, 178, 181
- Theory of Planned Behavior (TPB) 42, 87–90, 189
- Theory of Reasoned Goal Pursuit 44
- Theory of the Meaning of Material Possessions 42, 89–90
- TMMP 89–91
- tokenism 57, 103, 105, 130, 169, 170, 173, 174, 180
- tourism 201, 203
- Tourists' Environmentally Responsible Behavior 197
- TPB 42–44, 57, 62, 67, 87, 89, 90, 91, 92, 189, 190, 203
- tradition 43, 61, 88, 134, 158, 159; traditions and customs 210
- trained observers 198
- trait 59, 188, 205, 206, 207, 211; trait version of the STCI-trait 207
- transcendence 62, 188
- transience 54
- transparency 194–195
- travel habits 59, 198
- treatment group 194
- tree planting 191
- Trump, President Donald J. 147, 148, 149, 154, 155, 166, 167, 168
- trust 6, 26, 103, 104, 155, 223
- Turtle Beach* 48
- two-sided message 186–187
- types of communication 189
- types of humor 22, 189, 206

- UN (United Nations) 4, 5, 9, 65
- uncanny 48
- uncertainty 49, 56, 85, 103, 104, 111, 115, 146, 147, 193
- unheimlich* 48
- unipolar 204
- United Nations Framework Convention on Climate Change 65
- universalism 43, 61, 62, 141, 158, 202; universalism–nature value 202
- Value-Belief-Norm Theory (VBN) 42, 87, 89, 90
- values 15, 20, 22, 23, 25, 42, 43, 44, 45, 56, 58, 61, 62, 63, 67, 70, 84, 85, 86, 89, 90, 91, 93, 101, 102, 103, 110, 131, 134, 135, 137, 138, 140, 141, 142, 158, 159, 160, 162, 173, 177, 192, 201, 202, 204, 223
- Values In Action Inventory of Strengths (VIA-IS) 208
- VBN 42, 43, 44, 62, 87, 89, 90, 92
- veganism 129
- Verfremdungseffekt 25
- video experiments 187, 193
- vignette studies 192, 210
- virtue of transcendence 208
- Volkswagen 6
- Vonnegut, Kurt 48
- waste reduction 196
- water consumption 193, 194, 198
- water shortage 201
- workplace 25, 26, 196



Taylor & Francis Group
an informa business



Taylor & Francis eBooks

www.taylorfrancis.com

A single destination for eBooks from Taylor & Francis with increased functionality and an improved user experience to meet the needs of our customers.

90,000+ eBooks of award-winning academic content in Humanities, Social Science, Science, Technology, Engineering, and Medical written by a global network of editors and authors.

TAYLOR & FRANCIS EBOOKS OFFERS:

A streamlined experience for our library customers

A single point of discovery for all of our eBook content

Improved search and discovery of content at both book and chapter level

REQUEST A FREE TRIAL
support@taylorfrancis.com

 **Routledge**
Taylor & Francis Group

 **CRC Press**
Taylor & Francis Group