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Harnessing Behavioral Tailwinds for Climate Action

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Harnessing Behavioral Tailwinds for Climate Action

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Abstract. Current mitigation and adaptation efforts are inadequate to address climate change, threatening the wellbeing of people and planet. Behavioral scientists often point to regularities of human decision-making as barriers to climate action. Addressing climate change requires long term planning, yet individuals are myopic and tend to discount the future; climate change and its solutions are uncertain, yet people avoid risks and are averse to change; mitigation requires large scale coordination and cooperation, yet people prioritize their own self-interest. These *headwinds*—the behavioral and psychological tendencies standing in the way of climate action—are often invoked to explain why humans are ill-equipped to deal with the complex, interdependent and dynamic problem of climate change. Here, we challenge the utility of the view that human psychology is fundamentally at odds with climate action. First, this view of human behavior overlooks the embedded and context-dependent nature of preferences, beliefs, choices, and even technologies—these are not fixed or homogeneous but rather are shaped by broader sociocultural, institutional, and environmental factors. Second, the focus on behavioral deficits and barriers to climate action overlooks the *tailwinds*—that is, behavioral tendencies and contextual factors that might be harnessed in service of climate action. Indeed, some commonly invoked headwinds might be adaptive responses to dynamic environments and may be leveraged to accelerate rather than impede change. We discuss some examples, develop the seeds of what such a research agenda might look like, and argue that a focus on tailwinds could expand the solution space for climate action by increasing our sense of collective agency.

Introduction

The Sixth Assessment Report of the UN Intergovernmental Panel on Climate Change (IPCC) states that to avoid a 1.5°C overshoot, global greenhouse gas emissions need to peak before 2025 and be cut by 43% by 2030 relative to 2019 levels (Riahi et al. 2022). We are in a critical decade for climate action to safeguard and strengthen the wellbeing of the planet and its people. Despite this urgency, there is insufficient climate action by governments, the private sector and civil society. Behavioral scientists often point to pervasive and persistent behavioral biases and tendencies as fundamental barriers to climate action (Gifford, 2011; Weber, 2017; Andre et al., 2021). However, the focus on these behavioral *headwinds* overlooks the dynamic, embedded, and heterogeneous nature of preferences, beliefs, choices, and even technologies and institutions. It also obscures the *tailwinds*—that is, the many ways in which human behavior and institutions might be harnessed in service of climate action.

The literature on behavioral biases has identified human "traits"— features of decision-making that are often assumed to be fundamental, fixed and pervasive — such as discounting, risk aversion, status quo bias and self-interest that render humans ill-equipped to navigate many mundane problems and are also putatively at the center of persistent societal challenges. In recent years, these psychological biases have been identified as an impediment to progress on climate change—a problem that requires long-term perspectives, and the need for immediate, coordinated, and costly action to solve an uncertain, deferred, and abstract problem (Gardiner, 2006; Wilson et al., 1998; Gilbert, 2006).

The view that humans are, by their nature, fundamentally unable to deal with a problem like climate change—a view that has been bolstered by the continued increase in greenhouse gas emissions—has been criticized for essentializing humanity's lack of progress on climate change, oversimplifying research on human psychology, and for individuating responsibility (Atkinson and Jacquet, 2021). We build on this by highlighting the adaptable, situated and context-dependent nature of human psychology and behavior, and by arguing that the focus on behavioral *headwinds* may itself pose a barrier to progress on climate change by overlooking the ways in which aspects of human psychology might be harnessed and strengthened in service of climate adaptation and mitigation. Some scholars have observed that many "biases" may in fact be decision strategies or responses that are highly tuned to the dynamic contexts in which those decisions are made (Todd & Gigerenzer, 2012; Hertwig et al., 2021).

The understanding of human behavior as co-constituted with the environment may be particularly important against the backdrop of a rapidly changing planet—with implications for the design of interventions aimed at stimulating climate action. Further, some of the behavioral barriers that scholars have been identified could just as well be considered opportunities. The focus on barriers may limit the perception of what is possible, and inadvertently limit human agency. Below, we illustrate six examples where a behavioral barrier might instead be framed as an opportunity. This is not a comprehensive list, but rather a starting point towards a reconsideration of assumptions about behavioral biases in the context of climate change and sustainability more broadly.

A Situated and Context-Dependent View of Human Behavior

As summarized in Weber and Constantino (2023), it took the IPCC until its Fifth Assessment Report, published in 2014, to first acknowledge psychologically-informed choice processes (Kunreuther et al. 2014), i.e. to go beyond the rational actor model. Ten years later, more and more policy makers are turning to the behavioral sciences for insights (Nielsen et al. 2021). Behavioral scientists have critically interrogated the use of the rational actor model to describe human behavior by systematically documenting empirical departures from model predictions (Kahneman and Tversky 1979). Rather than changing the contours of what constitutes rational choice, this work has produced a suite of "cognitive biases" that describe the myriad ways in which humans regularly depart from rational choice.

These biases are regularly invoked to explain a host of social problems, including under investment in retirement or health and inaction on climate change. In the case of environmental policy and practice, Velez & Moros (2021) offer a review of the past 20 years of evidence regarding the mechanisms underpinning pro-environmental behaviors. Climate change, which requires urgent, large-scale, coordinated and, at times, costly behavior change to prevent (even bigger) losses in the near and distant future, can be seen as a 'perfect' trigger for several cognitive biases and to conflict with fundamental human tendencies or preferences such as risk aversion and discounting.

This approach treats these features of human behavior as pervasive, fundamental, and fixed. More recently, there is a growing acknowledgment that human behavior is, in fact, context- and culturally-dependent, situated, and malleable, coevolving to match the specifics of the environments in which it is embedded (Schill et al., 2019; Weber et al., 2023; Constantino et al., 2021; Todd & Gigerenzer, 2012; Hertwig et al., 2021). While this work does not suggest that behavior cannot fall out of lockstep with the environment, or perpetuate unsustainable systems, it does highlight that preferences, beliefs, and behaviors are adaptable and influenced by features of the environment rather than fundamental human traits. This research suggests that interventions aimed at promoting climate action should consider the fit between behaviors and environments or institutions in tandem (Todd & Gigerenzer, 2012).

This is not to say that there are no discernible patterns or regularities in human decision-making, just that the environments with which they coevolve cannot be ignored. Indeed, there are a growing number of cross-cultural studies that have identified differences and similarities in preferences and behaviors across contexts (Falk et al., 2021). While some of these tendencies are framed as barriers to climate action, from a different perspective they can be seen as opportunities.

Trading Headwinds for Tailwinds

In this section, we review some commonly invoked behavioral headwinds or barriers to climate action and discuss how they might instead be considered tailwinds for steering social change.

Self-interest and prosociality are both inputs to human behavior. However, while many scholars assume that people tend to prioritize self-interest over the wellbeing of others, especially in social dilemmas that pit the two against each other, there is substantial empirical evidence that people tend to show prosocial preferences (Bowles and Gintis, 2011) and limited evidence that people act on pure self-interest. Moral principles and norms, such as fairness, and concern for others—in one's social sphere, but also in other countries and in the future, and even for other species (Thompson and Barton, 1994)—are thus likely to be important drivers of climate actions that confer limited personal material benefits (Evans et al., 2012).

Status-quo bias is the preference for a current situation or state of affairs, even when change would be pareto improving (Samuelson and Zeckhauser 1988; Weber 2017). As a consequence, individuals, businesses, and governments might be resistant to, or even actively oppose, the often-substantial changes required to fight climate change. Yet, rather than framing the energy transition and behavioral changes needed to address climate change as threatening the status quo, they could also be framed as the only way to save or maintain current lifestyles and consumption patterns. Therefore, appealing to the same behavioral tendency could increase approval for measures to address climate change. Additionally, people are adaptable, and the status quo or current context is constantly changing, so while they might resist changes initially, they also become quickly used to and committed to new status-quos as they emerge. For example, when the Canadian province of British Columbia announced a revenue neutral carbon tax on the purchase and consumption of fossil fuels in 2007, there was widespread public resistance. However, after eight months, the new status quo was widely accepted and the government was reelected (Weber 2015).

Loss aversion is a dislike of losses that looms larger than the perceived benefits of equivalent gains (Kahneman and Tversky 1979). Climate mitigation and adaptation will require drastic changes in behaviors, physical realities (e.g. infrastructure projects), and livelihoods. People may resist changes that incur immediate losses to current ways of life or economic activities if they weigh more heavily in their decision-making than far less tangible gains - or avoidance of bigger losses - in the near and distant future. Yet, it is also the case that inaction is (and will continue to) alter and threaten aspects

of life that people value, and thus incur substantial losses. Loss aversion might thus drive people to act if the losses associated with climate change are foregrounded or presented alongside the losses and co-benefits associated with climate change solutions (e.g. health benefits associated with reduced pollution, or costs savings and health benefits from dietary changes). Further, attention to loss aversion can inform how policy is designed to compensate losses and distribute benefits, and ultimately packaged for individuals and communities.

Risk Aversion is a preference for certain (or low-risk options) over uncertain (or high-risk options), even when expected payoffs are higher for uncertain options (Holt & Laury, 2002). Experimental evidence suggests that people tend to be averse towards short-term risk but relatively tolerant of future risks (Epper and Fehr-Duda 2023). Such 'delay-dependent risk aversion' has been described as a barrier to climate mitigation because the costs and benefits from climate action are typically separated by decades, and while the costs are clear, the benefits are less uncertain (Fehr-Duda and Fehr 2016). However, risk aversion can also motivate climate action. The inclusion of behavioral factors in a large climate model finds that aversion to the risks associated with climate hazards can motivate greenhouse gas emissions reducing behaviors (Beckage et al. 2018). Moreover, unmitigated emissions increase the risk of crossing critical thresholds or tipping points in the climate and ecosystems, with the potential for large and widespread losses (Armstrong McKay et al. 2022). There is evidence from experimental games that groups cooperate in the face of such thresholds to avoid large losses (Milinski et al. 2008; Lindahl et al. 2016; Schill and Rocha 2023), though this cooperation can breakdown when the threshold is uncertain (Barrett and Dannenberg 2014).

Conformity to social norms refers to the tendency of individuals to conform with those in their social milieus (Cialdini et al., 2007; Bicchieri, 2005). Conformity is often described in pejorative terms (e.g. groupthink, herd behavior), and can reinforce the unsustainable norms that are common today. However, the tendency of individuals to adhere to social norms can also sustain cooperation in social dilemmas, even in the absence of external oversight (Ostrom, 2000), and facilitate coordination in largescale collective action problems. Conformity can also drive rapid social change. For example, coordination failures can arise when there is a benefit to synchronizing one's actions with those of others (e.g. adopting technologies with returns to scale such as electric vehicles or public transit) yet actors fail to do so due to uncertainty about what others will do. The tendency for individuals to conform or coordinate with those around them means that circumscribed changes (e.g. adoption of rooftop solar) may, in theory, have rapid and outsized influence on a system once it reaches a critical mass (Centola, 2010, Granovetter, 1978). In practice, there are many mundane features that may interrupt such processes, which will need to be considered in the design of interventions (Efferson et al., 2018).

Bounded rationality & heuristics refers to decision-making processes that depart from rational actor models due to cognitive constraints or other limitations (Simon, 1955). A related literature has expanded on this view by documenting a litany of heuristics and biases that describe how human decisions depart from rational actor models. While these biases are often treated as fundamental human frailties, the use of heuristics and cognitive shortcuts may result in more accurate or better decisions, especially in uncertain and dynamic environments (Gigerenzer 2008; Todd & Gigerenzer, 2012). According to this view, heuristics are seen to be "ecologically rational" adaptations to specific environments that may appear as biases in one-off assessments or stylized experiments that depart from the context to which they are adapted. This work highlights the importance of accounting for context when attempting to understand and intervene on individual decision-making, and pushes back against the view that biases are fundamental human traits or barriers to efficient decision-making. Further, this view highlights the adaptive, dynamic and interdependent nature of human processing and decision-making.

Affective processing and motivational factors have been established as key inputs to decision-making. The 'risk as feelings' hypothesis highlights the role of affective states at the moment of choice in shaping behavior, even when the affective response contradicts cognitive assessments of risk and uncertainty (Loewenstein et al. 2001). In the context of climate change, emotions are often discussed as a barrier to action, either because climate change is too abstract and lacking a visceral response, or because it is too overwhelming, resulting in complacency (Spence et al. 2012). However, recent work has also shown the important role that emotions can play in stimulating climate action, whether through anger or hope (Gregersen et al. 2023, Ojala 2023). Such work is likely to become ever more important with more and more people personally experiencing climate change impacts. Additionally, emotions can reinforce social norms by discouraging inappropriate actions through shame or guilt and encouraging socially appropriate actions through the positive emotions they elicit (Packard and Schultz 2023). As climate change impacts become increasingly salient, and the moral nature of inaction more pronounced, emotions could play an important role in promoting more sustainable norms.

As mentioned above, the behavioral tendencies described here—tendencies that are readily invoked as barriers to climate action in the literature—come from individuals who are embedded in multiple, complex, and ever-changing contexts and systems, and are not necessarily fundamental characteristics of human nature. Considering behavioral tendencies as interdependent or coevolving with the broader context shifts the focus of interventions from individuals to individuals *and* the environments, structures, and institutions in which they are embedded (Schill et al. 2019, Constantino et al. 2021, Nielsen et al. 2021, Chater and Loewenstein 2022). Below, we illustrate how considering behavioral tendencies and context (such as framing) in tandem can bring about collective action using a simple cooperation game.

Trading Headwinds for Tailwinds: A Stylized Climate Game Example

Eighty individuals each hold an asset that can be invested in two ways: P or G. P yields $10,000 to the investor, while G yields $250. However, for every token invested in G, all remaining players receive an extra $250 as proceeds from fund G. This is a classic social dilemma. An economically rational actor would invest in P. If every player did that, each would earn $10,000, resulting in $800,000 in social welfare. Alternatively, if every player invested in G, each player would earn $20,000 and the social welfare would increase to $1,600,000.

The exact same game can be presented to participants in two ways:

Version A	Version B
If you invest in G, you get $250 and you also get $250 for everyone else who invested in G. Each person who invests in G generates $250 in earnings for you. If you invest in P, you get $10,000 in returns on your investment, but you no longer generate $250 for everyone else.	*If you invest in P, you get $10,000 in returns on your investment, and you also receive $250 for everyone who invested in fund G. If you invest your token in G, you obtain $250 in returns on your investment, and you receive $250 for everyone who has invested in fund G.*

Version A highlights the prosocial nature and common good aspect of the social dilemma: individual action can generate well-being for 79 fellow players. In doing so, version A emphasizes the required climate action: many small actions, each negligible on its own, that accumulate to collective action at scale. Version A also emphasizes that each player, by investing in G, gives to others (altruism) and receives from those who invest in G (reciprocity). In contrast, version B makes salient the profitability

of free-riding. Further, it illustrates how the same problem can be framed in terms of gains (A) or losses (B). An economic perspective on this game would claim that the opportunity cost of investing in G is too high (by giving up $9,750), but this is a myopic interpretation. As long as 39 other players invest in G, a player who invests in G recovers that opportunity cost. Additional G investors increase the social pie.

This simple game shows how an often-invoked headwind—the social dilemma of climate action coupled with self-interest and a preference for free-riding—might, through a simple change of frame, become a potent tailwind by appealing to prosocial preferences and making salient people's social embeddedness.

Conclusion

The recent IPCC report (2022) is a "dire warning about the consequences of inaction" (Hoesung Lee, Chair of the IPCC at press release). To initiate and accelerate the necessary ambitious and urgent actions needed to adapt to and mitigate climate change, scholars in the behavioral sciences must consider a broader range of heterogeneous behaviors, values and beliefs, their coevolution with cultural, physical, and institutional circumstances, and their dynamic rather than fixed or fundamental nature. Additionally, they should revisit the utility of continually emphasizing the inadequacy of human psychology for addressing climate change. Davidai and Gilovich (2016) have suggested yet another bias—that there is an asymmetry in the salience of headwinds and tailwinds that favors tailwinds due to an availability bias. A focus on biases or inadequacies is reflected in the behavioral science literature on climate action and inaction. In fact, we argue that depending on how they are framed or considered, many identified barriers become opportunities or tailwinds to be harnessed by interventions that consider individuals and surrounding environments and institutions in tandem. Such a focus is likely to expand perceptions of what is possible, thereby expanding the solution space and our sense of human agency, but also to provide critical sources of inspiration and hope for both scholars and their audiences.

Author contributions

JCC conceived the original idea. All authors further developed the idea. SC and CS wrote the initial draft of the manuscript with contributions from JCC. All authors reviewed and edited the final draft of the manuscript. All authors read and approved the final manuscript.

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All authors declare no financial or non-financial competing interests.

Data availability statement

Data sharing is not applicable to this article as no datasets were generated or analyzed during the current study.

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