

“The Future Will Be Green, or Not at All”: How Positive (Utopian) and Negative (Dystopian) Thoughts About the Future Shape Collective Climate Action

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Abstract

The global movement to combat climate change is focused on pressuring governments, industry and other key decision-makers to take urgent action to mitigate the causes and impacts of climate change. The movement has played an important role in global transformation and change. What motivates people to engage in collective climate action? The current study examines the role of prospecting, that is, thoughts and emotions about the future, in shaping collective climate action. Two studies (Study 1: N = 413; Study 2: N = 440) test experimentally the effects of positive (utopian) and negative (dystopian) future-oriented thinking on collective climate action via future-oriented emotions (hope and fear). Participants were assigned to engage in one of two imagination tasks focussing either on a utopian society that has adapted to climate change, or a dystopian society, or a control condition (passive or active). Across both studies, utopian thinking was found to indirectly affect collective climate action by evoking feelings of hope. Additionally, an indirect effect of dystopian thinking on collective climate action through fear was found in Study 2. These results suggest that both forms of future-oriented thinking may have the potential to increase collective climate action intentions by evoking an emotional response.



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Keywords

utopian thinking, dystopian thinking, climate change, collective action

Non-Technical Summary

Background

On the 15th of March, 2019, hundreds of thousands of people worldwide participated in Fridays for Future, where they protested the international lack of action to combat climate change. This movement was one of many which aimed to combat climate change by focusing on pressuring governments, industry and other key decision-makers to take urgent action to mitigate the causes and impacts of climate change.

Why was this study done?

We aimed to investigate what motivates people to engage in movements such as Friday for Future, and more generally to engage in actions to combat the causes and impacts of climate change. Specifically, we aimed to contribute to understanding the effects of positive (utopian) and negative (dystopian) future-oriented thoughts on engagements in climate action, as well as the effects of positive and negative future-oriented emotions (hope and fear).

What did the researchers do and find?

We conducted two studies that experimentally compared the comparative effects of positive (utopian) and negative (dystopian) future-oriented thinking, relative to a neutral control condition focussed on the present. We asked participants in the positive future-thinking condition and negative future-thinking conditions to visualise, imagine and describe either a positive desirable future where climate change had been addressed, or a negative undesirable future where climate change had not been addressed. We found that, relative to the neutral control condition, positive future-oriented thinking had a positive impact on intentions to act, due to evoking feelings of hope. Mixed evidence was found for the effect of negative future-oriented thinking on intentions to act. Study 2 demonstrated that imagining a negative future is associated with greater fear and, therefore, climate action—a pattern that was marginal in Study 1.

What do these findings mean?

These results suggest that both forms of positive and negative future-oriented thinking may have the potential to increase collective climate action intentions by evoking an emotional response. Specifically, this suggests that hope and fear can sit alongside each other but that visions of both positive or negative futures may be influential in evoking those emotions of hope and fear, motivating action to combat climate change, and promoting transformational change for a better world.

Highlights

- Utopian thinking was found to consistently have an indirect effect on collective climate action, via evoking feelings of hope.
- An indirect effect of dystopian thinking on collective climate action through fear was found in Study 2.
- The findings suggest that both forms of future-oriented thinking (utopian and dystopian) have the potential to increase collective climate action intentions by evoking an emotional response.

“I don’t want you to be hopeful. I want you to panic. I want you to feel the fear I feel every day. And then I want you to act” (Thunberg, 2019).

The global movement to combat climate change is focussed on pressuring governments, industry, and other key decision-makers to take urgent action to mitigate the causes and impacts of climate change. The climate movement has played a prominent role in global transformation and change, with the last decade witnessing an increase in people engaging in collective climate action (Fisher & Nasrin, 2021). Inspired by people like youth climate activist Greta Thunberg, people have rallied together to bring attention to the adverse effects of climate change (especially young people; Neas et al., 2022). Given the important role such actions play in promoting the necessary structural and organisational changes to mitigate climate change (e.g., Hiatt et al., 2015; see also Swim et al., 2011), we ask: what motivates people to engage in collective climate action?

In this paper, we propose that collective climate action is prospectively driven by positive and negative future-oriented thoughts (cognitions) and emotions. Although representations of the climate crisis often revolve around the future (Kashima & Fernando, 2020; Milfont et al., 2014), little empirical research has examined how future-oriented thoughts impact one’s motivation to commit to collective climate action. Our starting point was the observation that dystopian themes are prevalent in discussions concerning the future impacts of climate change (Hjerpe & Linnér, 2009). Indeed, a recent survey showed that 60% of young respondents felt ‘very worried’ or ‘extremely worried’ about climate change, with many also feeling afraid, angry, and powerless (Hickman et al., 2021). It may be that, consistent with Thunberg’s (2019, above) plea to the World Economic Forum, imagining a negative future (i.e., a dystopian society; see Hjerpe & Linnér, 2009) may play an important role in promoting collective climate action indirectly via stimulating fear (Armbruster et al., 2022; Reser & Bradley, 2017).

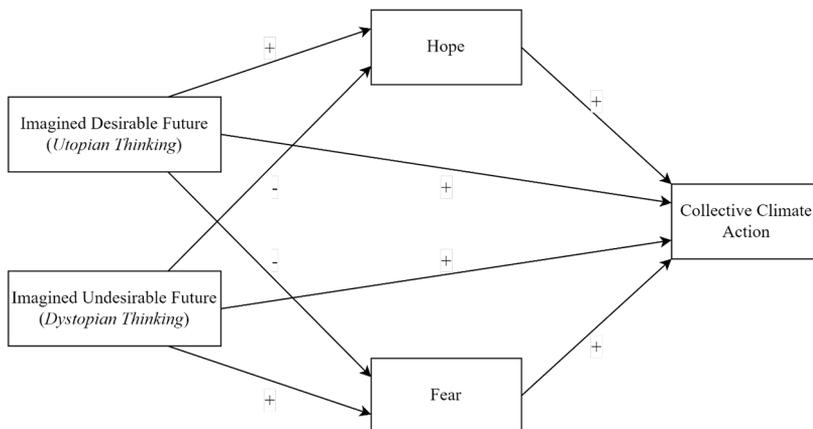
On the other hand, utopian narratives have also been shown to be important aspects of the movement to oppose climate change (e.g., McKnight, 2020). Recent studies have explored the possible role of positive utopian thoughts as a motivator for collective action in general (Fernando et al., 2018; Skitka et al., 2017) and climate change specifically (see Fernando et al., 2018). This literature suggests that imagining a positive future soci-

ety (i.e., utopian thinking) may play an important role in promoting collective climate action indirectly via inspiring hope (Badaan et al., 2020).

Although there is evidence for both positive and negative future-oriented cognitions (Fernando et al., 2018) and emotions (hope, fear: Armbruster et al., 2022; Reser & Bradley, 2017) in promoting collective climate action separately, to date, these have not been systematically considered side-by-side. In particular, the effects of positive, utopian, and negative, dystopian cognitions have been addressed separately, and the literature on future-oriented cognition has been separate from the literature on emotion. To understand the comparative effects of utopian and dystopian thinking on collective climate action and the overall effect of prospection, we used experimental methods to assess two discrete propositions about the role of future-oriented cognition and emotion (see Figure 1). Firstly, it is possible that positive thoughts of a future society in which climate change has been addressed (i.e., utopian thinking) will positively affect collective climate action due to increased hope. Second, it is also possible that negative thoughts of a future society in which climate change has not been addressed (i.e., dystopian thinking) motivate collective climate action via their association with feelings of fear. It is also possible that both forms of prospection will induce greater commitment to collective climate action relative to a neutral (present-focussed) control.

Figure 1

Conceptual Depiction of the Utopian Thinking and Dystopian Thinking Hypotheses



The Effect of Future-Oriented Cognition and Emotions on Collective Climate Action

Collective climate action occurs when one takes actions “as a representative of the group, and that aims at reducing climate change” (Fritsche & Masson, 2021). Examples of collec-

tive climate action behaviours can be found in movements such as Fridays for Future, where on the 15th of March 2019, hundreds of thousands of people worldwide protested the international lack of action to combat climate change (Pigott, 2021). It is important to note that, although there is an emphasis on co-acting with others, our definition of collective action emphasises the importance of the *psychological* collective (“doing it for us”). In that sense, collective actions can also occur in isolation of other group members (e.g., signing a petition), where the goals of the actor are to advance the circumstances of the group as a whole (Wright et al., 1990). Such collective actions can include personal, ostensibly “lifestyle” actions, engagement in mass protest events and more disruptive forms of engagement (see Thomas et al., 2019).

In the context of climate change, much of the discourse focuses on the pervasive, negative impact of human activity on the future of the Earth. Thus, whereas feelings of anger about the *present* status quo are known to be strong drivers of collective action (see van Zomeren et al., 2008, for a meta-analysis), it may be that in the climate context, perceptions of the future and the associated cognitions and emotions, are driving factors behind collective climate action (Milfont et al., 2014).

Prospection refers to the process of thinking about and evaluating possible futures (Suddendorf et al., 2018). Suddendorf and colleagues (2018) linked prospection to human adaptation and survival mechanisms due to giving individuals foresight of possible threats to their safety. From this foresight, individuals can guide their actions towards either realising a positive future or avoiding a negative future (Baumeister et al., 2016). Prospection has also been linked to accepting the need to change current climate-related processes (Coulter et al., 2019). In the context of climate change, the threat of climate degradation to the survival of humanity gives reason to imagine potential futures in ways that are likely to be consequential for action in the present (see also Bain et al., 2013).

However, one complexity is that any future-oriented cognition and emotion can be positive and/or negative. It may be that the valence (i.e., positive versus negative) of the imagined future also shapes the relationship between cognition, emotion and action, as detailed below.

Imagining the Positive: The Effect of Utopian Thinking on Collective Climate Action Via Hope

Imagining a positive future, in which climate change has been addressed, may stimulate collective climate action (see Figure 1). *Utopian thinking* involves imagining an idealised positive version of the future (Fernando et al., 2018). It can serve three functions: to inspire change from current societal conditions to their ideal, to induce criticism of the current society, and/or to compensate for current negative conditions (as a form of escapism; Badaan et al., 2020; Fernando et al., 2018). Fernando and colleagues (2018) examined these psychological functions of utopian thinking by experimentally comparing

the effects of participants who reflected on current society relative to participants who had imagined a positive utopian society. Strong support was found for an association between utopian thinking and inspiring change through increasing desire for collective action and decreasing perception of the current status quo as just and fair (see also Kashima & Fernando, 2020).

We anticipate that thinking about a positive utopian future may increase collective climate action intentions by eliciting feelings of hope (see Figure 1). *Hope* is a positive future-oriented emotion elicited through imagining a desirable future outcome (Cohen-Chen et al., 2017), with previous research linking feelings of hope with increased support for social change (Badaan et al., 2020; Greenaway et al., 2016; Skitka et al., 2017). Additionally, hope has been regarded as an approach-oriented emotion, consistent with the approach style of motivation (Badaan et al., 2020). In other words, hope may motivate people to engage in positive actions to achieve a desirable outcome. Therefore, as utopian thinking involves imagining a desirable future, feelings of hope are likely to be evoked, leading to greater commitment to collective action.

While the primary focus of the utopian thinking hypothesis is on the direct and indirect associations between positive future-oriented cognitions (utopian thinking), emotions (hope), and action, it is also possible that utopian thinking will have a palliative effect on other negative future-oriented emotions. Indeed, Kleres and Wettergren (2017; see also Ojala, 2012) theorize that hope can help to manage and down-regulate the threat and feelings of fear that are commonly associated with discussions of climate change. Figure 1 anticipates that imagining a positive future on the issue of climate change (and the associated feelings of hope) may also diminish feelings of fear.

Avoid the Negative: The Effects of Dystopian Thinking on Collective Climate Action Via Fear

It is also the case that imagining a negative dystopian future may also stimulate collective climate action (Figure 1). *Dystopian thinking* is similar to utopian thinking in that such thoughts relate to imagined futures that can be used to compare to and criticise the current society. However, while utopian thoughts are thought to be positive, abstract and different from present-day society (Badaan et al., 2020), dystopian thoughts are typically based on imagining an undesirable future based on present-day flaws (Hjerpe & Linnér, 2009). In the context of climate change, dystopian thoughts are usually based on scenarios featuring inhospitable planetary consequences such as rising sea levels and extreme weather events (Hjerpe & Linnér, 2009). Though it has been previously suggested that dystopian thinking may motivate collective action (Kashima & Fernando, 2020), we are not aware of any experimental tests of these effects generally or in the context of climate change specifically, nor are we aware of attempts to compare utopian and dystopian thinking systematically, side-by-side.

We propose that thoughts of a negative dystopian future may motivate collective climate action also via its association with feelings of fear (Figure 1). *Fear* is a negative future-oriented emotion experienced as a response to events that may threaten or compromise a person's safety (Silver et al., 2002; Torabi & Seo, 2004). Reser and Bradley (2017) noted a general paucity of experimental research regarding the efficacy of fear appeals in climate change communication. However, some research has identified fear as an important facilitator of collective action to 'cope' with the climate crisis (see van Zomeren et al., 2010) and other individual climate-adaptive behaviours (e.g., Meijnders et al., 2001 but see Palosaari et al., 2023). Figure 1 suggests that thoughts of the negative future consequences of the climate crisis may persuade people to take collective action due to associated feelings of fear.

While the primary focus of the dystopian thinking hypothesis is on the direct and indirect associations between negative future-oriented cognitions (dystopian thinking), emotions (fear), and action, it is also possible that dystopian thinking will affect other future-oriented emotions. Miller et al. (2009) show that fear can suppress the relationship between other emotions and action. In this context, however, we theorized that imagining a negative, dystopian future may also diminish feelings of hope. Figure 1 anticipates that dystopian thinking (and feelings of fear) may be associated with lower hope.

The Current Research

Collective climate action has been increasing internationally as the adverse effects of climate change become increasingly apparent (Fisher & Nasrin, 2021). However, little research has experimentally examined the relative roles of positive future (utopian) and negative future (dystopian) thinking in motivating engagement in collective climate action. We fill this gap to examine the effect of utopian thinking in motivating collective climate action via hope and the effect of dystopian thinking in motivating collective climate action via fear.

Across the two studies, participants were asked to visualise, imagine, and write about either a positive (utopian) or negative (dystopian) future on the issue of climate change. Given the evidence of the important links between visual imagery, event construction and prospection (see Conti & Irish, 2021), participants were first asked to select images that best reflected their imagined positive/negative future. Given that utopias and dystopias involve imagining a future state of affairs, our rationale was that the images would help to prompt greater engagement and creativity in the task. Accordingly, participants then wrote about the positive/negative future before completing measures of emotions (hope, fear) and collective climate action intentions. A passive control group, who did not engage in positive or negative prospection, completed outcome measures to provide a neutral baseline comparison. This comparison will allow us to examine whether both forms of (positive and negative) prospection are useful in motivating action intentions.

Study 1 was an exploratory test of our hypotheses, and Study 2 was a pre-registered confirmatory test of our hypotheses (see Bird et al., 2022).

We assess two related but distinct predictions about the role of prospection in engagement in collective climate action. Firstly, evidence from Fernando and colleagues (2018) suggests that utopian thinking leads to increased societal engagement. If the *utopian hypothesis* is correct (see Figure 1), intentions to engage in collective action will be higher in the utopian condition than in the control condition. Furthermore, utopian thinking will have indirect effects on action via hope. Secondly, little research has empirically examined the relationship between dystopian thinking and collective action. However, it has been suggested that dystopian thoughts may have a similar motivating potential (Kashima & Fernando, 2020) and that negative stimuli have a disproportionately greater impact than positive stimuli (see, e.g., Baumeister et al., 2001; Rozin & Royzman, 2001). If the *dystopian hypothesis* is supported (see Figure 1), then the pattern of effects will be such that intentions to engage in collective action will be higher in the dystopian thinking condition compared to the control condition. We expected this relationship to be explained via increased feelings of fear. As outlined above, while our theorizing focussed primarily on positive cognitions and emotions (i.e., the utopian thinking hypothesis) or negative cognitions and emotions (i.e., the dystopian thinking hypothesis), our analysis also assessed effects on the countervailing emotion (see Figure 1).

Study 1

Method

Participants

Participants ($N = 414$) were residents of the United States recruited via Amazon's Mechanical Turk (MTurk) and reimbursed with \$2 USD. Of these, one was excluded for failing two attentional checks (determined by items such as "select disagree to show you are paying attention"). Thus, the final sample consisted of 413 participants. The sample was primarily male (52%). Ages of the sample ranged from 18 to 74 years ($M = 39.63$, $SD = 11.68$). Regarding political preference, the sample had a slight liberal bias ($M = 3.22$, $SD = 1.72$), with most participants reporting that they identified as Democrats (relative to Republicans). We conducted a power analysis via Monte Carlo simulation in MPlus v8 for a mediation model with two predictor variables, two parallel mediators and one outcome variable. Based on the median effect size in social psychology (Lovakov & Agadullina, 2021), we assumed $\beta = .24$ for all relationships and thus implied indirect effects of $\beta = .0576$ (except for a correlation of $r = -.50$ between the variables representing experimental conditions). The analysis showed that for a statistical power of $> .80$ for all direct and mediated relationships and indirect effects, a minimum sample size of 300 was required. We oversampled to account for possible data exclusions based on our stated criteria.

Design

We adopted a three-cell (utopian thinking, dystopian thinking, control) between-groups experimental design. Participants were randomly assigned to either one of the two experimental conditions (utopian or dystopian) or the control condition. The key dependent variable was intentions to engage in collective climate action. Hope and fear were measured as mediator variables.

Procedure

Participants were invited to participate in the study titled “Attitudes towards climate change” via Amazon’s MTurk. Participants first completed measures to ensure that they had adequate English language to comprehend the task instructions, and were residents of the United States. People who did not meet these criteria were exited from the study, while all other participants were redirected to complete the survey on Qualtrics via a web link. Participants then responded to screening measures concerning their belief in the existence of climate change and if they believed human activity was at least partly responsible for climate change. If participants answered “No” to either question, they were exited from the study. A pre-measure of group efficacy adapted from Wright and colleagues (2020) was also taken for exploratory purposes but is not considered further here.

Following these screening procedures, general information was given regarding climate change to provide standardised definitions and explanations about terminology. Participants were then randomly allocated to one of the three conditions (utopian thinking, dystopian thinking, or control). Participants in the control condition immediately continued to complete the outcome measures, without further reflection.

Participants in the utopian and dystopian thinking conditions first engaged in the imagination task. Those in the utopian thinking condition were instructed to “imagine a positive future, where climate change has been significantly addressed”. In contrast, those in the dystopian condition were asked to “imagine a negative future, where climate change has not been significantly addressed.” Given the links between visual imagery, event construction and prospection (Conti & Irish, 2021) and to spur engagement and creativity with the task, participants were shown ten condition-related images and asked to choose three that “best exhibit” their “imagined positive [negative] future”. Utopian-related images reflected positive aspects to combatting climate change such as different forms of reusable energy (e.g., solar panels) or a thriving coral reef. Dystopian-related images included pictures of fossil-fuel-based energy (i.e., traditional fuel-based vehicles) or a dying coral reef. The images were matched between conditions in their depiction of, for example, the natural landscape and urban environment. Finally, participants in both conditions were required to spend at least three-minutes typing a description of their imagined future in a text box. On average, participants spent 5 minutes and 15 seconds on the imagination task.

After completing the imagination task, participants in the manipulated conditions completed manipulation checks to evaluate the effectiveness of the manipulation. Primary measures of collective action intentions and emotional response were then obtained.

Measures

All items (unless otherwise described) were measured on a 1–7 Likert-type scale, where 1 = Strongly Agree and 7 = Strongly Disagree. Higher scores indicated higher levels of the relevant construct.

Manipulation Checks — After completing their assigned thinking task, participants were asked to answer two questions assessing the time referent (past/present/future) and valence (positive/negative) attributes of their reflections. To measure the time referent of thinking, participants were required to select the point on a slider ranging from -3 (past), 0 (present) to 3 (future) that best represented the timepoint that they focussed on during the task.

To measure how utopian/dystopian their imagined future was, participants were given the prompt: “Think about what you thought and wrote about a moment ago and indicate to what degree it had the attributes below.” The given attributes included terms such as “Desirable”, “Utopian” and “Pro-Social”. The nine items formed a reliable scale, $\alpha = .94$, with higher measures reflecting a more utopian future.

Emotions: Hope and Fear — Participants were asked to indicate the extent to which the imagination task made them feel: hope [optimism] and fear [afraid] via two items, respectively. The measures for hope ($\alpha = .86$) and fear ($\alpha = .92$) were both reliable. Other filler items/emotions were included (i.e., anger, despair, optimism, thoughtful) but are outside the scope of this study.

Collective Climate Action Intentions — Intentions to take collective climate actions were measured using eight items adapted from Bliuc et al. (2015). The items included a raft of actions including attending peaceful and disruptive protests, making changes to one’s own energy behaviours, donating, and political actions like voting and petitioning. Two example items were: “I intend to sign a petition advocating to end inaction on climate change” and “I intend to reduce my own energy consumption”. A Principal Components Analysis (PCA) with Varimax Rotation showed that the items loaded onto two factors which together explained 69.09% of variance. Examination of the rotated matrix showed that several items cross-loaded and that there was otherwise no clear conceptual basis for distinguishing the two factors. Given that we had no a priori theoretical rationale for examining the effects of utopian thinking in relation to different

types of collective action, we retained all eight items as a unitary scale with good reliability, $\alpha = .85$.

Exploratory Measures – Other measures assessing moral conviction and environmental cognitive alternatives were employed but are not considered further here. The datasets and verbatim materials for both studies are available on an open access repository; we transparently report all exclusions and omissions below (see Bird et al., 2023).

Results

Preliminary Analyses

There was no missing data. Preliminary examination of the correlations revealed that hope, $r = .23$, $p < .001$, and fear, $r = .43$, $p < .001$, were both associated with collective action although fear was more strongly associated with action than was hope, $z = 3.24$, $p = .001$.

Table 1 presents each respective condition's means (standard deviations) for the manipulation checks and the key variables. Collective action intentions were significantly lower than the scale midpoint of 4, $t(412) = -3.26$, $p < .001$, suggesting that participants were generally disinterested or selective in how they wanted to engage in collective action. The overall mean score for hope was also significantly lower than the scale midpoint, $t(412) = -8.20$, $p < .001$, and the sample score for fear was not significantly different from the scale midpoint, $t(412) = -1.01$, $p = .16$, suggesting that this sample were low in hope but ambivalent/neutral about their feelings of fear.

Table 1

Table of Means (Standard Deviations) for Manipulation Checks (Time Referent and Utopia) and All Key Variables, According to Experimental Condition (Utopian, Dystopian, Control) (Study 1)

Variable	Overall Sample (N = 413)	Utopian Condition (N = 134)	Dystopian Condition (N = 125)	Control (N = 154)
Time Referent	2.65 (0.64)	2.68 (0.63)	2.61 (0.66)	–
Utopia	4.19 (1.83)	5.75 (0.78)	2.51 (0.96)	–
Hope	3.37 (1.58)	3.62 (1.52)	3.06 (1.53)	3.40 (1.60)
Fear	3.91 (1.83)	3.80 (1.85)	4.15 (1.90)	3.81 (1.75)
Collective Action	3.80 (1.21)	4.01 (1.18)	3.80 (1.27)	3.63 (1.16)

Manipulation Checks

To check the effectiveness of the experimental manipulations, the time referent of thinking and valence manipulation checks were examined. The control group did not complete these measures as they did not participate in an imagination task. Participants

in both manipulated conditions were expected to report future-focused thinking and to be similar in the degree to which they did so. Specifically, the overall mean scores for both conditions were expected to be close to 3, indicating a focus on the future. Means (see Table 1) showed that both conditions reported scores indicating a focus on the future, $t(257) = .89$, $p = .38$, $d = .11$.

The valence (positive/negative) of the thinking tasks was examined by comparing scores between the utopian and dystopian conditions. Those in the utopian condition were expected to report high mean scores reflecting endorsement of the utopian qualities of their imagined future. In contrast, those in the dystopian condition were expected to report low mean scores indicating an absence of positive, utopian attributes. Table 1 shows that the means for either condition were as expected, $t(239) = 29.76$, $p < .001$, $d = 3.73$. We concluded that the experimental manipulation was successful.

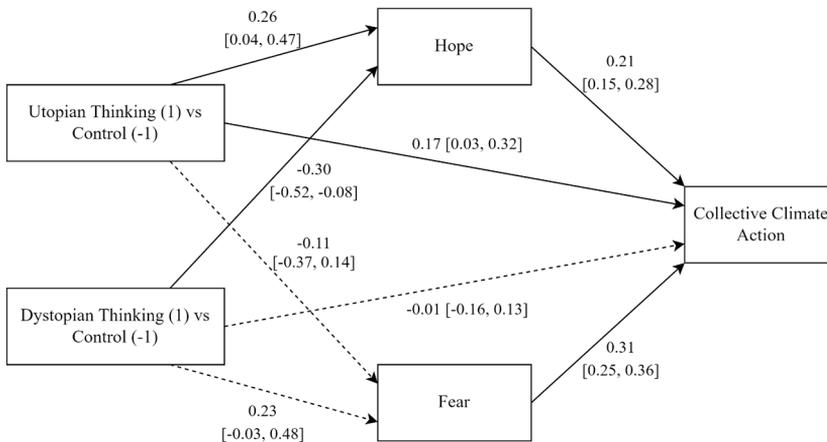
Main Analyses

The primary analyses were conducted using Hayes' (2020) Version 3.5 PROCESS macro with 10000 bootstrap samples and 95% confidence intervals (Model 4). Collective action was entered as the dependent variable (Y), experimental condition was entered as the independent variable (X), and individual measures of hope and fear were entered as parallel mediator variables (M), allowing us to consider the effects on the future-oriented emotions relative to the other. As the independent variable had three levels, to compare experimental conditions within one analysis the multi-categorical option in PROCESS was used to create two effect codes. Effect Code 1 compared the effect of utopian thinking (coded 1) relative to the control (coded -1). Effect Code 2 compared the effect of the dystopian thinking (coded 1) relative to the control (coded -1). The unstandardised regression coefficients (b) and 95% CIs for effects are shown in Figure 2.

We first assessed the primary utopian hypothesis that positive future-oriented thoughts would lead to greater collective climate action intentions via increased hope. Consistent with this prediction and previous research, Figure 2 shows that utopian thinking had a significant positive effect on hope, and that hope, in turn, had a significant positive effect on collective climate action. The indirect effects (Table 2) indicated that utopian thinking indirectly predicted higher action via increased hope. Utopian thinking also had a direct effect on action, over and above its effect via hope. In relation to the secondary hypotheses (that utopian thinking would reduce fear), Figure 2 shows that utopian thinking did not alter fear, but that fear was positively associated with collective action. Table 2 shows that the indirect effect of utopian thinking on action via (reduced) fear was not significant suggesting that utopian thinking does not palliate fear. The total effect of utopian thinking on action was significant, $b = 0.19$, $SE = 0.08$, 95% CI [0.02, 0.36]. This pattern of results provides good preliminary support for the utopian hypothesis.

Figure 2

Unstandardised Regression Coefficients and 95% CIs for the Mediation Test of Utopian Thinking vs Control and Dystopian Thinking vs. Control on Collective Climate Action Through Hope and Fear (PROCESS Model 4) (Study 1)



Note. Dotted lines denote nonsignificant effects at $p < .05$.

Table 2

Test of Mediation (PROCESS Model 4): The Effect of Future-Oriented Thinking (Utopian Thinking, Dystopian Thinking) on Key Outcome (Collective Climate Action Intentions) Through Emotional Response (Hope, Fear) (Study 1)

Indirect Effect	<i>b</i>	Boot SE	Boot 95% CI (LL, UL)
UT relative to Control → Hope → CCAI	.05	.03	.01, .11*
UT relative to Control → Fear → CCAI	-.04	.04	-.12, .04
DT relative to Control → Hope → CCAI	-.06	.03	-.12, -.02*
DT relative to Control → Fear → CCAI	.07	.04	-.01, .16

Note. UT = utopian thinking; DT = dystopian thinking; CCAI = collective climate action intentions; LL = lower limit; UL = upper limit.

* $p < .05$

We next assessed the dystopian hypothesis that negative future-oriented thoughts would positively affect collective climate action through increased fear. Figure 2 shows that, while fear was positively related to collective climate action, dystopian thinking did not significantly increase feelings of fear—although the path was marginal ($b = 0.23$, $p = .08$). Dystopian thinking did not directly affect collective climate action and the indirect effect of dystopian thinking on action through fear was not significant (Table 2).

Figure 2 also reveals an intriguing pattern in relation to the countervailing emotion, hope. Specifically, Figure 2 shows that dystopian thinking lowered hope, and hope was, in turn, associated with collective action. Thus, dystopian thinking fostered lower collective climate action intentions via reduced hope (Table 2); but, unexpectedly, did not influence climate action intentions via fear. Given these countervailing forces, the total effect of dystopian thinking on collective action was not significant, $b = -0.01$, $SE = 0.09$, 95% CI [-0.17, 0.16]. In combination these results provide mixed support for the dystopian thinking hypothesis.

Discussion

Study 1 provided preliminary evidence for the utopian thinking hypothesis. Specifically, imagining a positive future in which climate change had been addressed elicited a positive total effect on collective action and a significant indirect effect through increased feelings of hope. However, mixed evidence was found for the dystopian hypothesis. The effect of dystopian thinking on fear was marginal ($p = .08$) and there was no direct effect of dystopian thinking on action. Moreover, dystopian thinking had a palliative effect on action via diminishing feelings of hope resulting in a non-significant total effect of dystopian thinking on collective action.

One possible explanation for the lack of effect of dystopian thinking on action intentions involves the passive control condition. Recent research highlights that, when people consider climate change, they frequently imagine strongly negative and fear-invoking content (e.g., Hickman et al., 2021). Accordingly, those in the passive control condition may have reported similar levels of fear as those in the dystopian thinking condition partly because considering climate change generally is more strongly akin to perceiving a dystopian reality. We were, however, unable to empirically test this explanation because the control group did not complete the manipulation checks (which measured the degree to which cognitions were utopian/dystopian in nature) as they did not spend any time considering the issue. We therefore investigated this possibility in Study 2.

Study 2

To further investigate the effects of positive and negative future-oriented thoughts and emotions (hope and fear) on collective climate action, we conducted a conceptual replication of Study 1. While Study 1 was an exploratory test of the proposed effects, we pre-registered the primary hypotheses and focus of Study 2 (see Bird et al., 2022). It was predicted that utopian thinking would affect collective action indirectly via hope, whereas dystopian thinking would affect collective action indirectly via fear. Although we again tested effects of utopian/dystopian thinking on the countervailing emotion (i.e.,

effects of utopian thinking on fear; dystopian thinking on hope), we did not pre-register any predictions about these; these are therefore exploratory.

Study 2 adopted a similar design and procedure as **Study 1** with two exceptions. First, in addition to the passive control condition (in which participants did not ruminate about climate change, as in **Study 1**), we included an additional active control group. Participants in the active control condition were given an imagination task that asked them to consider the present-day reality in relation to climate change. Second, we ensured that participants in the active control condition completed the manipulation check items. Thus, we asked this group about the utopian/dystopian qualities of the present day, allowing us to assess the valence of the thinking in the control condition. We did not have any specific hypotheses about the difference between the two control groups. Still, we included both to ensure that consideration of the issue was not confounding the effects of the manipulations.

Method

Participants

Participants ($N = 444$) were residents of the United States recruited via Prolific and were reimbursed with approximately \$2.75 USD. The sample was primarily male (55.6%). Ages for the sample ranged from 18 to 82 years ($M = 39.80$, $SD = 13.16$). Regarding political preference, the sample had a liberal bias ($M = 2.96$, $SD = 1.66$). Statistical power considerations were based on the same Monte Carlo simulation as conducted for **Study 1**, again assuming minimum effect sizes of $\beta = .24$ for all relationships and $\beta = .0576$ for the indirect effects. A sample size of $N = 300$ was needed for the 3 conditions ($n = 100$ per utopian thinking, dystopian thinking, and control conditions). However, in **Study 2**, we used two alternate control conditions (an active and passive control) and, therefore, required a sample size of $N = 400$. We, again, oversampled to buffer against the possibility of data exclusions.

The procedure was identical to **Study 1** except for the inclusion of an active control group who were asked to “think about the current state of the Earth in relation to climate change.” On average, participants spent 6 minutes on the imagination task. The key dependent measures of collective climate action intentions ($\alpha = .89$) and emotions ($\alpha = .90$ for hope, $\alpha = .93$ for fear) were measured as in **Study 1**. A PCA with Varimax Rotation showed that, contrary to **Study 1**, the collective action items were underpinned by one factor that explained 59.96% of variance. We adapted our measures of the manipulation check in **Study 2**. Specifically, while in **Study 1** we focussed exclusively on the positive/desirable (utopian) attributes of the thinking, in **Study 2** the manipulation check was expanded to assess the degree to which the thoughts were desirable, utopian, possible and undesirable, dystopian (with the later 2 items reverse scored); these items formed a reliable scale, $\alpha = .82$.

Results

Preliminary Analyses

There was no missing data. A preliminary examination of the correlations revealed that hope, $r = .18$, $p < .001$, and fear, $r = .48$, $p < .001$, were both associated with collective action although fear was again more strongly associated with action than was hope, $z = 5.04$, $p < .001$.

Table 3 displays the cell means (standard deviations) for the manipulation checks and the key variables. It can be seen that, overall, collective climate action intentions were significantly lower than the scale midpoint of 4, $t(439) = -4.42$, $p < .001$, again suggesting that participants may have been either generally uninterested in collective climate actions, or selective in how they wanted to engage. As in Study 1, the overall mean score for hope was also significantly lower than the scale midpoint, $t(439) = -11.52$, $p < .001$, and the sample score for fear was not significantly different from the scale midpoint, $t(439) = -1.80$, $p = .07$, suggesting that this sample was low in hope but ambivalent/neutral about their feelings of fear for the future.

Table 3

Table of Means (Standard Deviations) for Manipulation Checks (Time Referent and Utopia) and All Key Variables, According to Experimental Condition (Utopian, Dystopian, Control) (Study 2)

Variable	Overall Sample (<i>N</i> = 444)	Utopian Condition (<i>N</i> = 107)	Dystopian Condition (<i>N</i> = 109)	Active Control (<i>N</i> = 104)	Passive Control (<i>N</i> = 124)
Time Referent	2.24 (1.02)	2.54 (0.73)	2.67 (0.68)	1.47 (1.14)	—
Utopia	3.94 (1.65)	5.80 (0.82)	2.59 (0.73)	3.43 (1.17)	—
Hope	3.14 (1.58)	3.74 (1.62)	2.79 (1.46)	2.85 (1.49)	3.18 (1.57)
Fear	3.84 (1.83)	3.39 (1.69)	4.40 (1.88)	4.22 (1.71)	3.43 (1.81)
Collective Action	3.70 (1.41)	3.62 (1.43)	3.96 (1.35)	3.93 (1.45)	3.35 (1.36)

Manipulation Checks

To check whether the experimental manipulations were effective, the time referent of thinking (future, present or past) and utopian manipulation checks were examined. As in Study 1, the passive control group did not complete these measures because they did not participate in the imagination task. However, the additional active control group completed the manipulation checks.

The means in Table 3 show that the time referent varied across the three conditions $F(2, 317) = 60.19$, $p < .001$, $\eta^2 = .28$. As expected, participants were similarly future-focussed in both the utopian and dystopian conditions, $t(317) = -1.07$, $p = .28$, $d = .18$. However, the control condition focussed more on the present relative to the utopia

condition, $t(317) = -8.93$, $p < .001$, $d = 1.12$, and the dystopia conditions, $t(317) = -10.04$, $p < .001$, $d = 1.28$, consistent with expectations.

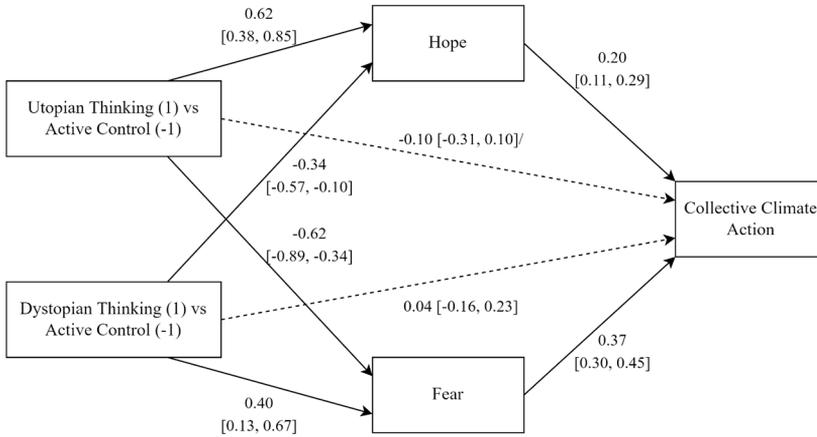
Next, the valence of the thinking was examined. The means for the conditions differed reliably (see Table 2), $F(2, 317) = 349.41$, $p < .001$, $\eta^2 = .69$. Reassuringly, the thinking was reported to be more positive in the utopian condition relative to the dystopian condition, $t(317) = 25.55$, $p < .001$, $d = 4.13$ and the control condition, $t(317) = -18.63$, $p < .001$, $d = 2.34$. We next examined our hunch that the weak/null effects of the dystopian condition in Study 1 were due to the similarity between a dystopian future and the present day. Table 3 shows that people in the present-day (active control) condition disagreed that there was anything positive (desirable, utopian) about the present. However, there was nevertheless a significant difference between the dystopian and active control conditions, $t(317) = 6.25$, $p < .001$, $d = 0.86$, such that those in the dystopia condition reported an even greater assessment of the negativity of their thinking than those in the control.

Main Analyses

The primary analyses were again tested using Hayes' (2020) Version 3.5 PROCESS macro with 10000 bootstrap samples and 95% confidence intervals (Model 4). Collective action was entered as the dependent variable (Y), experimental condition was entered as the independent variable (X), and individual measures of hope and fear were entered as parallel mediator variables (M). Given the independent variable had two separate control groups and three levels, the multi-categorical option in PROCESS was used to compare experimental conditions using two separate analyses. The first analysis used Effect Codes 1 and 2, with Effect Code 1 comparing the effect of utopian thinking (coded 1) relative to the passive control (coded -1) and Effect Code 2 comparing the effect of dystopian thinking (coded 1) relative to the passive control (coded -1). The second analysis used Effect Codes 3 and 4. Effect Code 3 compared the effect of utopian thinking (coded 1) relative to the active control (coded -1) and Effect Code 4 compared the effect of dystopian thinking (coded 1) relative to the active control (coded -1). Figure 3 displays the unstandardised coefficients relating to the effects of utopian and dystopian thinking on collective climate action intentions, relative to the passive control group, while Figure 4 displays the coefficients relative to the active control group.

Figure 4

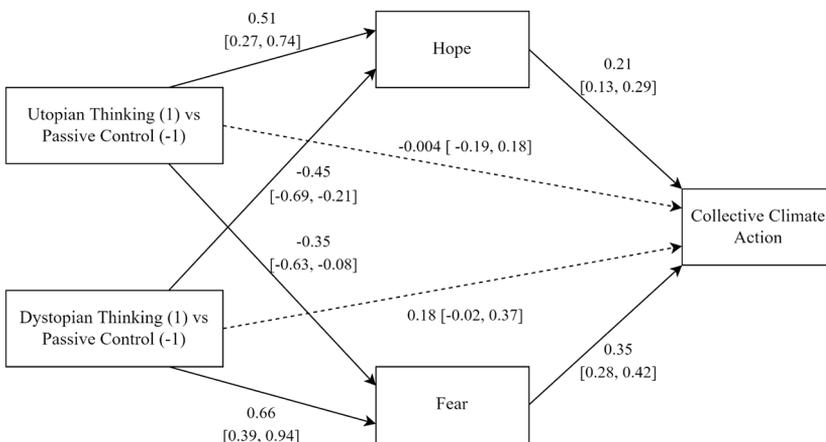
Unstandardised Regression Coefficients and 95% CIs for the Mediation Test of Utopian Thinking vs. Active Control and Dystopian Thinking vs. Active Control on Collective Climate Action Through Hope and Fear (PROCESS Model 4) (Study 2)



Note. Dotted lines denote nonsignificant effects at $p < .05$.

Figure 3

Unstandardised Regression Coefficients and 95% CIs for the Mediation Test of Utopian Thinking vs. Passive Control and Dystopian Thinking vs. Passive Control on Collective Climate Action Through Hope and Fear (PROCESS Model 4) (Study 2)



Note. Dotted lines denote nonsignificant effects at $p < .05$.

Table 4

Test of Mediation (PROCESS Model 4): The Effect of Future-Oriented Thinking (Utopian Thinking, Dystopian Thinking) on Key Outcome (Collective Climate Action Intentions) Through Emotional Response (Hope, Fear) (Study 2)

Indirect Effect	β	Boot SE	Boot 95% CI (LL, UL)
UT relative to PC → Hope → CCAI	.11	.04	.05, .18*
UT relative to PC → Fear → CCAI	-.12	.05	-.22, -.03*
DT relative to PC → Hope → CCAI	-.09	.03	-.16, -.04*
DT relative to PC → Fear → CCAI	.23	.05	.13, .34*
UT relative to AC → Hope → CCAI	.12	.04	.06, .20*
UT relative to AC → Fear → CCAI	-.23	.06	-.35, -.13*
DT relative to AC → Hope → CCAI	-.07	.03	-.13, -.02*
DT relative to AC → Fear → CCAI	.15	.06	.04, .26*

Note. UT = utopian thinking; DT = dystopian thinking; PC = passive control; AC = active control; CCAI = collective climate action intentions; LL = lower limit; UL = upper limit.

* $p < .05$

We first assessed the primary utopian hypothesis that positive future-oriented thoughts would lead to greater collective climate action intentions via increased hope. As in Study 1, utopian thinking increased hope which, in turn, was positively correlated with collective climate action (see Figure 3 for passive control and Figure 4 for active control). The indirect effects of utopian thinking on action via hope were significant in comparison to both the passive and active control groups (Table 4). However, we did not observe a direct effect of utopian thinking on action. Looking at the effects of utopian thinking on the countervailing emotion (fear), Figures 3 and 4 show that, contrary to Study 1, utopian thinking lowered fear and had a negative indirect effect on collective action (Table 4). Thus, utopian thinking had countervailing effects on action by simultaneously increasing hope (and action in turn); and lowering fear (indirectly palliating action). These counteracting processes produced a non-significant total effect of utopian thinking on action, $b = -0.02$, $SE = 0.11$, 95% CI [-0.23, 0.20]. These results provide support for the pattern of effects of utopian thinking anticipated in Figure 1.

We next examined the dystopian thinking hypothesis that negative future-oriented thoughts would lead to greater collective climate actions via increased fear. Unlike Study 1 but consistent with our pre-registered expectations (see Figure 1), dystopian thinking increased fear which, in turn, was positively associated with collective action (see Figure 3 for passive control and Figure 4 for active control). The indirect effects of dystopian thinking on action via fear were significant relative to both the passive and active control groups (Table 4). There was also evidence for the secondary proposition that dystopian thinking would be associated with reduced action via the countervailing emotion, hope

(Figure 3 and Figure 4). There was a significant, negative indirect effect, such that dystopian thinking was associated with lower hope which was, in turn, positively associated with action (Table 4). These countervailing effects yielded a total direct effect that was significant for the comparison with the passive control group, $b = 0.32$, $SE = 0.11$, 95% CI [0.10, 0.53], but not for the active control group, $b = 0.12$, $SE = 0.11$, 95% CI [-0.10, 0.34]. Notwithstanding this difference, the fact that the pattern of effects is consistent across the active (Figure 4) and passive control conditions (Figure 3) suggests that these two control conditions did not yield markedly different responses. These results provide good support for the net pattern of effects of dystopian thinking anticipated in Figure 1.

Discussion

Study 2 aimed to replicate and extend upon the findings of Study 1. We also sought to determine whether the marginal and/or non-significant effects of dystopian thinking observed in Study 1 were due to the similarities between the present-day situation about climate change, and a dystopia. Including an additional active control condition, in which participants spent time considering and writing about the present-day, allowed us to measure the valence of present-day climate thought and assess whether rumination was a confound in the passive control condition. Overall, the effects of utopian and dystopian thinking were similar irrespective of whether they were compared to an active versus passive control condition and the pattern of effects suggested that people do indeed consider the present as more dystopian in nature, than utopian (Table 3). Consistent with Study 1 and the utopian hypothesis, positive indirect effects were found for utopian thinking on action intentions through hope, and negative indirect effects for dystopian thinking through hope. However, unlike Study 1, utopian thinking did not have a total effect on action and was negatively indirectly associated with action through reduced fear. The dystopian hypothesis was also supported, with an indirect effect of dystopian thinking on collective action intentions through fear, but also had a countervailing (negative) effect on hope. Overall, both forms of future-oriented thinking (positive and negative) appear to have the potential to motivate action intentions through inspiring hope and/or fear, but with some intriguing twists.

General Discussion

Collective climate action has an important role to play in tackling the climate emergency. Such action requires people to be able to conceive of, that is, *imagine*, its positive and negative implications for the future. The current research systematically investigates the effects of two forms of future-oriented cognition and emotion on engagement in collective climate action. Specifically, we tested two overlapping but distinct predictions about the effects of positive and negative future-oriented thinking and the mediating

role of emotions (hope and fear) on collective climate action. First, the utopian hypothesis predicted that positive future-oriented thinking (utopian thinking) would lead to increased collective climate action intentions, via evoking hope. Second, the dystopian hypothesis predicted that negative future-oriented thinking would increase collective climate action intentions via enhanced fear.

Across *Study 1* and *Study 2*, consistent support was found for the utopian hypothesis. The results showed that utopian thoughts lead to increased feelings of hope, which was associated with greater collective climate action intentions (*Study 1* and *2*). Although the total effect of utopian thinking on hope was significant in *Study 1*, it was not in *Study 2*. This lack of total effect in *Study 2* may be explained by the observation that utopian thinking was also perversely associated with reduced fear which produced a negative counteracting effect on collective action.

We found more mixed but nevertheless solid support for the dystopian hypothesis. In *Study 1*, dystopian thoughts were marginally associated with increased fear, which was associated with greater collective climate action intentions, but the indirect effect was not significant. In *Study 2*, however, dystopian thinking evidenced the expected significant effect on collective climate action via (increased) fear and also (reduced) hope. Thus, consistent with the dystopian hypothesis, imagining a negative future on the issue of climate change can enhance fear and, therefore, action. However, such negative cogitations also simultaneously undermined hope which was also positively correlated with action. The countervailing effects may help to explain the non-significant total effect of dystopian thinking on action that was observed in both studies.

An Eye Towards the Future?

Our approach draws on recent developments (e.g., Badaan et al., 2020; Fernando et al., 2018) to focus on the role of future-oriented thoughts and emotions, in inspiring collective climate action. The past literature regarding collective action largely considered the role of past or present-oriented thoughts and emotions (i.e., anger, guilt or sympathy; Brosch, 2021; van Zomeran & Iyer, 2009) in motivating behaviour. However, in the climate context—where speculation about the future is highly salient—we reasoned that it may be important to examine how people see that future and whether they do so in positive or negative terms. The positive direct effects of hope (Greenaway et al., 2016) and fear (van Zomeran et al., 2010) on intentions to take action were consistent across both studies, supporting the motivational potential of future-oriented emotions in spurring climate-related collective action. The findings of the present study contribute to the growing literature surrounding the potential benefits of future-oriented thought and emotions in motivating engagement with social change (see also Badaan et al., 2020; Kleres & Wettergren, 2017; Skitka et al., 2017).

Specifically, the current research highlights how prospection, that is, future-oriented thought that is both positive and negative, shapes emotion and action in the present

(Baumeister et al., 2016). Previous literature has suggested that many of the barriers to action in the context of climate change are not due to the direct impacts of the climate itself, but instead due to social constraints to sharing climate knowledge, ideas, and solutions (Coulter et al., 2019). Thus, our research findings highlight the importance of being able to freely prospect about the climate crisis to be motivated to rally against climate change.

The Counteracting Role of (Combinations of) Emotions

An additional yet intriguing finding here relates to potential counteracting effects of positive and negative emotions when imagining the future of our planet. Indeed, the lack of total effects of utopian and dystopian thinking on action may be linked to the effects of hope and fear acting in an oppositional force to the other. Imagining a positive, utopian future simultaneously enhances action via hope but has a sedative effect on fear and, in doing so, diminishes potential for action driven by fear. Conversely, imagining a negative, dystopian future enhances action via fear but palliates hope and, in doing so, diminishes potential for action driven by hope.

Prior literature has acknowledged the effect of positive emotions (i.e., hope, joy, contentment) in mitigating negative emotions (i.e., fear, anger, disgust) (e.g., Fredrickson, 2004). Previous research has also demonstrated that fear can suppress other emotions' relationship with action (e.g., anger; Miller et al., 2009) but also that the combination of anger about the present and hope for the future is associated with a sustained trajectory of action to bring about change (Thomas et al., 2022). Aside from these examples, the distinct and cumulative effects of combinations of emotions are little theorized or studied empirically, perhaps because some theories of emotion do not allow for the experience of multiple, contradictory responses in tandem. Future research should seek to understand how to counteract these nullifying effects to harness the cumulative power of hope and fear simultaneously.

Limitations and Future Directions

The current research adopted a novel experimental approach—having people imagine, visualise and reflect upon, utopian and dystopian societies on the issue of climate change—to address the question of inspiring greater collective climate action. We chose to limit our emotional analyses to hope and fear as the previous literature had linked both as two future-focussed emotions related to climate change (i.e., Badaan et al., 2020; Kleres & Wettergren, 2017). However, future research could expand effects to consider a fuller range of emotions to further and more comprehensively investigate the affective responses to future-oriented thinking and identify counteracting effects of positive and negative emotions.

Additionally, the current research primarily focusses on the impact of future-oriented thoughts on collective action within the climate change context within the United States. Accordingly, the present findings may be unique to the specific issue of the climate crisis as perceived by the United States sample. Climate change is a highly polarised issue within the United States (Chinn et al., 2020), thus, future studies could also expand the generalisability of the findings into other national contexts. Finally, our analysis included measures of commitment to climate action (i.e., intention) as a proxy for action or behaviour.

Conclusion

We opened this paper with the observation that effectively mitigating the ongoing negative effects of climate change is a crucial problem for the modern world. We aimed to provide evidence of the benefits of the human capacity to prospect—to “see” the future—in driving action. Thunberg (2019, above) speculated that feelings of hope are counterproductive but that a pervasive fear of the future will drive concerted action to challenge the status quo. The results of the current study suggest that hope and fear can sit alongside each other but that visions of both utopian or dystopian futures may be influential in evoking those emotions of hope and fear, motivating collective climate action, and promoting transformational change for a better world.

Openness and Transparency Statements

The present article has been checked by its handling editor(s) for compliance with the journal's open science and transparency policies. The completed *Transparency Checklist* is publicly available at:

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Author Contributions.

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EMMA F. THOMAS: Conceptualization. Funding acquisition. Investigation. Methodology. Project administration. Supervision. Visualization. Writing – review & editing.

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Diversity Statement. In the list below, the check mark (☑) indicates which steps were taken to increase diversity within the context of this paper. Steps that were not taken or did not apply are unmarked (☐).

- Ethnically or otherwise diverse sample(s)
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- Inclusive materials
- Sampling justification
- Extensive sample description
- Discussion of generalizability
- Diverse reference list
- Underprivileged / minority author(s)
- Early career author(s)
- Degree of privilege/marginalization considered in authorship order
- Author(s) from sampled population (avoiding 'helicopter science')

Supplementary Materials. The following table provides an overview of the accessibility of supplementary materials (if any) for this paper.

Type of supplementary materials	Availability/Access
Data	
Data for Study 1 and Study 2.	Bird et al., 2023
Code	
Code not available because analyses were conducted with the use of menu-interface in SPSS v27.	—
Material	
Material for Study 1 and Study 2.	Bird et al., 2023
Study/Analysis preregistration	
Preregistration for Study 2.	Bird et al., 2022
Other	
No other materials are available.	—

Badges for Good Research Practices.

Open data: YES.

Open code: NO.

Open materials: YES.

Preregistration: YES.

Diversity statement: YES.

Note: YES = the present article meets the criteria for awarding the badge. NO = the present article does not meet the criteria for awarding the badge or the criteria are not applicable.

References

- Armbruster, S. T., Manchanda, R. V., & Vo, N. (2022). When are loss frames more effective in climate change communication? An application of fear appeal theory. *Sustainability*, *14*(12), 7411. <https://doi.org/10.3390/su14127411>
- Badaan, V., Jost, J. T., Fernando, J., & Kashima, Y. (2020). Imagining better societies: A social psychological framework for the study of utopian thinking and collective action. *Social and Personality Psychology Compass*, *14*(4), Article e12525. <https://doi.org/10.1111/spc3.12525>
- Bain, P. G., Hornsey, M. J., Bongiorno, R., Kashima, Y., & Crimston, C. R. (2013). Collective futures: How projections about the future of society are related to actions and attitudes supporting social change. *Personality and Social Psychology Bulletin*, *39*(4), 523–539. <https://doi.org/10.1177/0146167213478200>
- Baumeister, R. F., Bratslavsky, E., Finkenauer, C., & Vohs, K. D. (2001). Bad is stronger than good. *Review of General Psychology*, *5*(4), 323–370. <https://doi.org/10.1037/1089-2680.5.4.323>
- Baumeister, R. F., Vohs, K. D., & Oettingen, G. (2016). Pragmatic prospection: How and why people think about the future. *Review of General Psychology*, *20*(1), 3–16. <https://doi.org/10.1037/gpr0000060>
- Bird, L., Daysh, S., Thomas, E. F., Wenzel, M., (2022). *How thoughts about the future shape climate action*. [Preregistration for Study 2]. OSF. <https://doi.org/10.17605/OSF.IO/M69KJ>
- Bird, L., Daysh, S., Thomas, E. F., Wenzel, M., Lizzio-Wilson, M. (2023). *How thoughts about the future shape climate action*. [OSF project page containing data and materials for Study 1 and Study 2]. OSF. <https://osf.io/352jc/>
- Bliuc, A.-M., McGarty, C., Thomas, E. F., Lala, G., Berndsen, M., & Misajon, R. (2015). Public division about climate change rooted in conflicting socio-political identities. *Nature Climate Change*, *5*(3), 226–229. <https://doi.org/10.1038/nclimate2507>
- Brosch, T. (2021). Affect and emotions as drivers of climate change perception and action: A review. *Current Opinion in Behavioral Sciences*, *42*, 15–21. <https://doi.org/10.1016/j.cobeha.2021.02.001>
- Chinn, S., Hart, P. S., & Soroka, S. (2020). Politicization and polarization in climate change news content, 1985–2017. *Science Communication*, *42*(1), 112–129. <https://doi.org/10.1177/1075547019900290>
- Cohen-Chen, S., Crisp, R. J., & Halperin, E. (2017). A new appraisal-based framework underlying hope in conflict resolution. *Emotion Review*, *9*(3), 208–214. <https://doi.org/10.1177/1754073916670023>
- Conti, F., & Irish, M. (2021). Harnessing visual imagery and oculomotor behaviour to understand prospection. *Trends in Cognitive Sciences*, *25*(4), 272–283. <https://doi.org/10.1016/j.tics.2021.01.009>
- Coulter, L., Serrao-Neumann, S., & Coiacetto, E. (2019). Climate change adaptation narratives: Linking climate knowledge and future thinking. *Futures*, *111*, 57–70. <https://doi.org/10.1016/j.futures.2019.05.004>

- Fernando, J. W., Burden, N., Ferguson, A., O'Brien, L. V., Judge, M., & Kashima, Y. (2018). Functions of utopia: How utopian thinking motivates societal engagement. *Personality and Social Psychology Bulletin*, 44(5), 779–792. <https://doi.org/10.1177/0146167217748604>
- Fisher, D. R., & Nasrin, S. (2021). Climate activism and its effects. *Wiley Interdisciplinary Reviews: Climate Change*, 12(1), Article e683. <https://doi.org/10.1002/wcc.683>
- Fredrickson, B. L. (2004). The broaden-and-build theory of positive emotions. *Philosophical Transactions of the Royal Society of London: Series B. Biological Sciences*, 359(1449), 1367–1377. <https://doi.org/10.1098/rstb.2004.1512>
- Fritsche, I., & Masson, T. (2021). Collective climate action: When do people turn into collective environmental agents? *Current Opinion in Psychology*, 42, 114–119. <https://doi.org/10.1016/j.copsyc.2021.05.001>
- Greenaway, K. H., Cichocka, A., van Veelen, R., Likki, T., & Branscombe, N. R. (2016). Feeling hopeful inspires support for social change. *Political Psychology*, 37(1), 89–107. <https://doi.org/10.1111/pops.12225>
- Hiatt, S. R., Grandy, J. B., & Lee, B. H. (2015). Organizational responses to public and private politics: An analysis of climate change activists and US oil and gas firms. *Organization Science*, 26(6), 1769–1786. <https://doi.org/10.1287/orsc.2015.1008>
- 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 Planetary Health*, 5(12), e863–e873. [https://doi.org/10.1016/S2542-5196\(21\)00278-3](https://doi.org/10.1016/S2542-5196(21)00278-3)
- Hjerpe, M., & Linnér, B.-O. (2009). Utopian and dystopian thought in climate change science and policy. *Futures*, 41(4), 234–245. <https://doi.org/10.1016/j.futures.2008.09.007>
- Kashima, Y., & Fernando, J. (2020). Utopia and ideology in cultural dynamics. *Current Opinion in Behavioral Sciences*, 34, 102–106. <https://doi.org/10.1016/j.cobeha.2020.01.002>
- Kleres, J., & Wettergren, Å. (2017). Fear, hope, anger, and guilt in climate activism. *Social Movement Studies*, 16(5), 507–519. <https://doi.org/10.1080/14742837.2017.1344546>
- Lovakov, A., & Agadullina, E. R. (2021). Empirically derived guidelines for effect size interpretation in social psychology. *European Journal of Social Psychology*, 51(3), 485–504. <https://doi.org/10.1002/ejsp.2752>
- McKnight, H. (2020). “The oceans are rising and so are we”: Exploring utopian discourses in the school strike for climate movement. *Brief Encounters*, 4(1), 48–63.
- Meijnders, A. L., Midden, C. J. H., & Wilke, H. A. M. (2001). Communications about environmental risks and risk-reducing behavior: The impact of fear on information processing. *Journal of Applied Social Psychology*, 31(4), 754–777. <https://doi.org/10.1111/j.1559-1816.2001.tb01412.x>
- Milfont, T. L., Bain, P. G., Grigoletti, L. V. S., Gouveia, V. V., & Kashima, Y. (2014). Examining how projections about the future of society are related to present-day climate change action. *PSICO*, 45(3), 359–368. <https://doi.org/10.15448/1980-8623.2014.3.17336>

- Miller, D. A., Cronin, T., Garcia, A. L., & Branscombe, N. R. (2009). The relative impact of anger and efficacy on collective action is affected by feelings of fear. *Group Processes & Intergroup Relations*, 12(4), 445–462. <https://doi.org/10.1177/1368430209105046>
- Neas, S., Ward, A., & Bowman, B. (2022). Young people’s climate activism: A review of the literature. *Frontiers in Political Science*, 4, Article 940876. <https://doi.org/10.3389/fpos.2022.940876>
- Ojala, M. (2012). Hope and climate change: The importance of hope for environmental engagement among young people. *Environmental Education Research*, 18(5), 625–642. <https://doi.org/10.1080/13504622.2011.637157>
- Palosaari, E., Herne, K., Lappalainen, O., & Hietanen, J. K. (2023). Effects of fear on donations to climate change mitigation. *Journal of Experimental Social Psychology*, 104, Article 104422. <https://doi.org/10.1016/j.jesp.2022.104422>
- Pigott, A. (2021, October 26). Young climate activists have far more power than they realise. *Conversation*. <https://theconversation.com/young-climate-activists-have-far-more-power-than-they-realise-170537>
- Reser, J. P., & Bradley, G. L. (2017). Fear appeals in climate change communication. *Oxford research encyclopedia of climate science*. <https://doi.org/10.1093/acrefore/9780190228620.013.386>
- Rozin, P., & Royzman, E. B. (2001). Negativity bias, negativity dominance, and contagion. *Personality and Social Psychology Review*, 5(4), 296–320. https://doi.org/10.1207/S15327957PSPR0504_2
- Silver, A., Haeney, M., Vijayadurai, P., Wilks, D., Pattrick, M., & Main, C. J. (2002). The role of fear of physical movement and activity in chronic fatigue syndrome. *Journal of Psychosomatic Research*, 52(6), 485–493. [https://doi.org/10.1016/s0022-3999\(01\)00298-7](https://doi.org/10.1016/s0022-3999(01)00298-7)
- Skitka, L. J., Hanson, B. E., & Wisneski, D. C. (2017). Utopian hopes or dystopian fears? Exploring the motivational underpinnings of moralized political engagement. *Personality and Social Psychology Bulletin*, 43(2), 177–190. <https://doi.org/10.1177/0146167216678858>
- Suddendorf, T., Bulley, A., & Miloyan, B. (2018). Prospecption and natural selection. *Current Opinion in Behavioral Sciences*, 24, 26–31. <https://doi.org/10.1016/j.cobeha.2018.01.019>
- Swim, J. K., Stern, P. C., Doherty, T. J., Clayton, S., Reser, J. P., Weber, E. U., Gifford, R., & Howard, G. S. (2011). Psychology’s contributions to understanding and addressing global climate change. *American Psychologist*, 66(4), 241–250. <https://doi.org/10.1037/a0023220>
- Thomas, E. F., Bury, S. M., Louis, W. R., Amiot, C. E., Molenberghs, P., Crane, M. F., & Decety, J. (2019). Vegetarian, vegan, activist, radical: Using latent profile analysis to examine different forms of support for animal welfare. *Group Processes & Intergroup Relations*, 22(6), 836–857. <https://doi.org/10.1177/1368430218824407>
- Thomas, E. F., Duncan, L., McGarty, C., Louis, W. R., & Smith, L. G. E. (2022). MOBILISE: A higher-order integration of collective action research to address global challenges. *Political Psychology*, 43(S1), 107–164. <https://doi.org/10.1111/pops.12811>

- Thunberg, G. (2019, February 18). "Our house is on fire": Greta Thunberg, 16, urges leaders to act on climate. *Guardian*.
<https://www.theguardian.com/environment/2019/jan/25/our-house-is-on-fire-greta-thunberg16-urges-leaders-to-act-on-climate>
- Torabi, M. R., & Seo, D. C. (2004). National study of behavioral and life changes since September 11. *Health Education & Behavior, 31*(2), 179–192. <https://doi.org/10.1177/1090198103259183>
- van Zomeren, M., & Iyer, A. (2009). Introduction to the social and psychological dynamics of collective action. *Journal of Social Issues, 65*(4), 645–660.
<https://doi.org/10.1111/j.1540-4560.2009.01618.x>
- van Zomeren, M., Postmes, T., & Spears, R. (2008). Toward an integrative social identity model of collective action: A quantitative research synthesis of three socio-psychological perspectives. *Psychological Bulletin, 134*(4), 504–535. <https://doi.org/10.1037/0033-2909.134.4.504>
- van Zomeren, M., Spears, R., & Leach, C. W. (2010). Experimental evidence for a dual pathway model analysis of coping with the climate crisis. *Journal of Environmental Psychology, 30*(4), 339–346. <https://doi.org/10.1016/j.jenvp.2010.02.006>
- Wright, J. D., Schmitt, M. T., Mackay, C. M., & Neufeld, S. D. (2020). Imagining a sustainable world: Measuring cognitive alternatives to the environmental status quo. *Journal of Environmental Psychology, 72*, Article 101523. <https://doi.org/10.1016/j.jenvp.2020.101523>
- Wright, S. C., Taylor, D. M., & Moghaddam, F. M. (1990). Responding to membership in a disadvantaged group: From acceptance to collective protest. *Journal of Personality and Social Psychology, 58*(6), 994–1003. <https://doi.org/10.1037/0022-3514.58.6.994>