The Role of Optimism in Climate Messaging: Effects of Positive Tipping Point Framing on Collective Action Intentions in the UK

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Abstract

This study investigated the role of dispositional optimism in shaping collective action intentions in response to climate messaging. Specifically, it examined whether optimism predicts stronger intentions to act and whether it influences the effectiveness of framing strategies focused on efficacy and social norms. A total of 450 UK participants aged 18–30 were recruited through Prolific and randomly assigned to one of three message conditions: a control message featuring positive tipping point framing, a message emphasizing efficacy, or a message combining efficacy and social norms. Participants then reported their intentions to engage in collective climate action. Higher levels of optimism were associated with stronger collective action intentions, indicating that optimism may play a meaningful role in climate engagement. However, it did not increase responsiveness to the different message framings. Notably, only the social norms framing was consistently recognized by participants, while the efficacy and tipping point messages were less clearly perceived. Taken together, these findings highlight the potential of optimism as a direct predictor of collective action intentions, while pointing to the need for more effective framing strategies in climate messaging.

Keywords: optimism, collective action, climate communication, positive tipping points, climate change

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Approximately 3.3 to 3.6 billion people worldwide live in areas that are extremely vulnerable to the consequences of climate change (IPCC, 2022). These effects are mainly caused by extreme weather events as a result of global warming. An increased risk of flooding is one example of extreme weather. In the United Kingdom, one-fourth of the privately owned properties will be in areas at risk of flooding from rivers and the sea or surface water by 2050 (Environment Agency, 2024).

As global warming is one of the most urgent challenges of the 21st century, it requires immediate and large-scale collective action (Blackwood & Louis, 2012; Van Zomeren et al., 2012; Van Zomeren, 2013). However, motivating people to engage in pro-environmental behaviors remains a challenge. One way of addressing this issue is through the use of tipping point framing. In climate science, tipping points are instances beyond which environmental damage becomes irreversible (Steffen et al., 2018). In the context of this study, however, we will use tipping point framing to create a now-or-never perception: immediate action is required to either accelerate positive progress or avert negative outcomes (Roese & Epstude, 2017). A distinction is made between negative tipping points and positive tipping points. Unlike negative tipping points, which rely on fear appeals and generally result in disengagement from climate change (O'Neill & Nicholson-Cole, 2009), positive tipping point framing aims to evoke positive emotions like hope or enthusiasm, which have been linked to greater willingness to engage in collective climate action (Feldman & Hart, 2016; Nabi et al., 2018).

Optimism and Positive Tipping Point Framing

A key psychological factor that might influence the effectiveness of such framing is optimism. Optimism, broadly defined as the general expectation that positive outcomes will

occur (Scheier et al., 1994), has been linked to greater problem-solving, resilience, and engagement in social movements (O'Brien et al., 2018). Optimism is frequently divided into two types: dispositional optimism, which refers to an individual's stable tendency to expect positive results, and situational optimism, which is dependent on specific situations and experiences (Carver & Scheier, 2014). Dispositional optimism, in particular, has been associated with proactive coping strategies, increased perceived control, and persistent effort in achieving goals (Nes & Segerstrom, 2006). Therefore, this study will focus on optimism as a dispositional trait.

Optimism and Climate Change

Dispositional optimism may influence how individuals engage with climate issues. While direct studies on the role of optimism in climate communication are limited, related research suggests that positive emotions, such as hope, can enhance engagement, while doubt can impede action (Marlon et al., 2019). Such positive emotions increase engagement especially when messages emphasize efficacy and constructive solutions (Ojala, 2012). Furthermore, optimism has been associated with lower levels of climate anxiety (Pihkala, 2020), which refers to negative emotions such as worry, fear, and distress related to climate change, implying that it may help individuals maintain motivation in the face of challenging climate issues. Correspondingly, positive future-oriented thinking, such as utopian visions of a sustainable world, has been found to enhance motivation for collective action (Daysh et al., 2024).

These findings suggest that optimism may function as a key moderator in the effectiveness of climate action messaging. However, despite the growing interest in climate communication strategies, the role of optimism in shaping responses to positive tipping points remains underexplored.

Collective Action Intentions

Understanding climate action mechanisms requires an examination of key psychological theories related to collective action, efficacy, and social norms. Collective action is defined as an action taken by an individual on behalf of their group, with the intention of improving the condition of the entire group (Wright et al., 1990). Collective action intentions refer to an individual's willingness or planned effort to participate in such behavior (Van Zomeren et al., 2008). These intentions are considered reliable predictors of actual collective behavior (Bamberg et al., 2015), and are shaped by a range of psychological, social, and contextual factors. In the context of climate communication, collective action intentions may include support for environmental policies, participation in climate protests, or engagement in community-based sustainability efforts (Fritsche et al., 2018).

Environmental collective actions have become an important way for people to contribute to change, with the potential to influence public opinion, shape policy, and raise awareness (Fritsche, 2024; Gulliver et al., 2022). While not every effort fully reaches its goal, many still lead to real progress or help create momentum for future actions (Bosone et al., 2023). These experiences can also boost people's sense of agency and strengthen their long-term commitment to environmental causes (Jugert et al., 2016; Van Zomeren, 2013). Thus, understanding what drives people to form collective action intentions is key to designing climate communication that encourages public engagement.

Perceived Efficacy

Perceived (collective) efficacy, the belief that a group's effort can achieve significant impact, is a key determinant of engagement in pro-environmental movements (Van Zomeren et al., 2008). Framing that emphasizes the power of collective efforts can help strengthen this belief by reinforcing the idea that individual actions, when combined, have societal impact (Fritsche et al., 2018). This approach aligns with behavioral change theories that emphasize the role of perceived efficacy in fostering long-term engagement (Bandura et al., 1999).

An important theoretical perspective for understanding the effects of positive tipping point framing is empowerment theory (Peterson et al., 2006). Psychological empowerment is a key factor that can strengthen collective action intentions. Empowerment consists of cognitive, emotional, and behavioral components that enhance individuals' belief in their ability to enact change (Peterson et al., 2006). Crucially, perceived efficacy is embedded within the cognitive dimension of empowerment. In this way, enhancing perceived efficacy through climate messaging directly contributes to psychological empowerment, which in turn increases collective action intentions (Vasi & Macy, 2003). When a person feels empowered, they feel that their actions can have an impact on climate change and are thus more likely to act. Empowerment framing in climate messaging has been shown to strengthen resilience and drive collective action in social movements (Chan et al., 2017; Zimmerman, 1995). As perceived efficacy is embedded in empowerment, it is important to look at its impact on the effect of positive tipping point framing on collective action intentions.

Optimism and Perceived Efficacy

Optimism may influence how individuals perceive the effectiveness of collective climate action. Dispositional optimism has been linked to greater perceived control and goal-directed behavior (Carver & Scheier, 2014; Nes & Segerstrom, 2006). Optimistic individuals tend to approach challenges with proactive coping strategies and believe in their capacity to influence outcomes (Carver & Scheier, 2014). In climate communication, this mindset can cause stronger beliefs in the effectiveness of collective action.

Furthermore, optimistic people are more likely to believe that climate problems can be solved when people work together and share responsibility (Geiger et al., 2021). This mindset may make them more receptive to messages that emphasize the effectiveness of collective action (Fielding & Hornsey, 2016; Geiger et al., 2021; Ojala, 2012). As a result, optimism

could increase the effectiveness of communication strategies aimed at boosting perceived efficacy (Nes & Segerstrom, 2006).

Perceived Social Norms

Studies show that presenting climate action as a social norm rather than an individual burden boosts engagement (Nolan et al., 2008). When people see that their peers are already adopting sustainable practices, they are more likely to mimic them, helping accelerate social change. This is consistent with social proof theory (Cialdini, 2001), which argues that people use the actions of others to guide their own behavior, especially in uncertain situations. As a result, showcasing existing pro-environmental movements and their growing popularity could contribute to increasing people's confidence in joining the cause.

Perceived social norms are intertwined closely with the concept of momentum. In this study, we will use the terms interchangeably. The idea of perceived social norms is more widely recognized in the literature, whereas momentum highlights the growing and dynamic nature of social change (Sparkman & Walton, 2017; Tankard & Paluck, 2016). Both concepts involve people noticing and adopting others' behaviors, but momentum also shows that these behaviors are increasing over time. This perception of a growing movement can increase people's willingness to engage in collective action (Fritsche, 2024). Momentum framing highlights the increasing number of people taking pro-environmental action, strengthening social identity and encouraging participation. According to Sparkman & Walton (2017), people are more likely to adopt behaviors when they believe social change is actively occurring.

Optimism and Perceived Social Norms

In climate communication, optimism may amplify the impact of perceived social norms. When people expect positive outcomes, they are more likely to view collective efforts as effective and join group behavior that signals progress (Carver & Connor-Smith, 2010;

Nabi et al., 2018). This means that optimistic individuals could be especially responsive to messaging that emphasizes widespread participation in pro-environmental actions. Seeing others act may reinforce their belief that meaningful change is both possible and supported. Moreover, since optimism is linked to lower climate anxiety (Pihkala, 2020), it may help individuals to stay engaged in the face of growing climate threats, rather than becoming overwhelmed or disengaged. These insights suggest that optimism may play a meaningful role in how people react to climate messages that emphasize social change.

The Present Study

This study aims to investigate whether high levels of optimism predict stronger collective action intentions. Specifically, it examines whether individuals with higher dispositional optimism are more likely to be influenced by efficacy framing and social norms framing in climate communication. To explore this, the study poses the following research question: *Does dispositional optimism predict collective action intentions in the context of climate messaging?*

From this question, the following hypotheses were derived:

H1: High levels of optimism predict stronger collective action intentions.

H2: Optimism increases responsiveness to efficacy framing.

H3: Optimism increases responsiveness to social norms framing.

By testing these hypotheses, this study contributes to a deeper understanding of how psychological factors influence climate communication strategies, helping to create more effective messages that encourage collective action.

Methods

Sample

We recruited our sample through the online recruitment service Prolific Academic, compensating each participant with £1 for approximately 10 minutes of their time. We

established two criteria for the eligibility of our participants, which we enforced through Prolific's prescreening filters. Firstly, we restricted the age range to 18-30 years. This is because this group contains the highest proportion of environmentalists (Poortinga et al., 2023). Secondly, since this study focuses specifically on the issue of flooding within the UK, we also limited the sample to UK residents.

Furthermore, we conducted an a priori power analysis using G*Power 3.1 (Faul et al., 2007) to determine the required sample size for a one-way between-subjects ANOVA with three conditions. To detect a small-to-medium effect size ($f = 0.20$) with a power of 0.95 and $\alpha = 0.05$, the required sample size was 387 participants. We opted to collect 450 participants (150 per condition) to ensure sufficient power even for effects smaller than the conventional medium threshold.

Although a total of 451 individuals completed the survey, one was excluded for failing attention checks, resulting in a final sample of 450. The sample had a mean age of 25.8 years ($SD = 3.16$), ranging from 19 to 31. Of those who disclosed their gender, 42% were male, 56% were female, and a further 2% identified as non-binary / third gender.

Geographically, participants represented all 12 UK administrative zones. The most frequently reported zone was London, containing 17.6% of all participants, whereas Northern Ireland was the least represented, counting only 2% of participants. We measured participants' political orientations on a 7-point scale, where 1 indicated very left-leaning and 7 indicated very right-leaning. The mean score was 3.32 ($SD = 1.52$), suggesting that the sample was, on average, slightly left of centre. However, the relatively large standard deviation indicates considerable variability in political orientation among participants, suggesting a politically diverse and reasonably balanced sample. Finally, we recorded participants' highest completed education level. In total, 0.2% had completed only primary

school, 20.6% secondary school, and 9.9% vocational education. 46% held a university Bachelor's degree, and 23.3% had obtained a graduate or professional degree.

Procedure

Study Design

The study employed a between-subjects experimental design with three experimental conditions. The control condition included positive tipping point message only, framing climate action as an optimistic and hopeful call to act. Second, an efficacy condition was incorporated, also featuring a positive tipping point message but emphasizing perceived efficacy by highlighting examples of previous successful collective actions. Lastly, the study had an efficacy + social norms condition, combining the efficacy framing with a social norms component, emphasizing that more and more people are engaging in climate action. Each message was embedded in a visually designed Instagram post, styled to closely resemble the appearance of real social media content from a climate activist group. Before seeing the post, participants were introduced to a fictional but realistic environmental organization. This introduction was provided to increase the realism and credibility of the manipulation. Additionally, each post featured a call to action and emotionally evocative imagery, such as photographs of flooded streets, designed to increase the visual impact and emotional engagement. Participants were randomly assigned to one of the three conditions, and the type of message served as the independent variable. The full manipulation texts can be found in Appendix A.

The main dependent variable was collective action intentions. Additional dependent variables, including self-reported motivation to act, an estimate of others' motivation to act, and emotional responses specific to the assigned message condition, were assessed. Other variables measured were: perceived efficacy, perceived social norms, perceived tipping point,

trust in the message, optimism, and environmental identity. All outcome measures were collected by self-report using 7-point Likert scales.

Participants completed the study online through a survey hosted on Qualtrics. Random assignment to the message conditions was implemented automatically within the platform Prolific.

Procedure

Upon accessing the questionnaire, participants were presented with an information sheet outlining the study's purpose, confidentiality, and their right to withdraw at any time. The study was presented as "your perceptions of some climate change related social media posts". The participants were required to provide active informed consent before proceeding.

First, demographic information was asked, followed by items measuring environmental self-identity and optimism. Participants were then randomly assigned to one of three experimental conditions. Each condition presented a different manipulation text. Following the manipulation, participants completed three manipulation check items to assess the effect of each condition. Next, they responded to items assessing behavioral intentions, sharing behavior, perceived social norms, emotional activation, and perceived efficacy.

The questionnaire took approximately 12.94 minutes to complete. After completion, participants were debriefed. The debriefing explained that there were three conditions, of which they were randomly assigned to one. After the debriefing, we asked for consent to use the participants' data and gave them the option to withdraw from the study.

Measures

The participants were presented with an online questionnaire containing the manipulations and multiple scales. The questionnaire collected the demographic information (e.g., age, gender, education) and different scales needed for measuring the variables entailed in our study. The measures of environmental self-identity and optimism were presented

before the manipulations, whereas the measures of emotional impact, perceived urgency, behavioral intentions, perceived efficacy, perceived social norms and sharing behavior were presented after. Shortly after viewing the post, participants had to answer questions serving as manipulation checks for perceived social norms ("More and more people are taking environmental actions") for perceived efficacy ("I feel like my actions can have an impact on climate change") and for perceived tipping point ("To what extent does the post communicate a tipping point (A now or never situation)?"). All scales were measured with Likert scales from one to seven. Furthermore, the reliability analyses of the scales were conducted using JASP. The full questionnaire can be found in Appendix A. However, not all included scales (sharing behavior, emotional impact, and several single item measures) are relevant to this specific research paper, since the questionnaire was used as a part of a bigger research project.

Optimism

The trait of optimism was measured to assess the general positive outlook of the participant. The Life Orientation Test Revised (LOT-R) scale originally used by Scheier et al. (1994) was used, since it has shown high reliability ($\alpha = 0.89$). The participants were asked to rate six statements, such as "In uncertain times, I usually expect the best" , on the scale from 1 *(not at all)* to 7 *(completely).* Three of the items (2, 4, 5) were reverse coded, for example "If something can go wrong for me, it will.".

Collective Action Intentions

Collective action intentions looked at how willing participants were to engage in some common collective action behaviors. An adaptation of the Environmental Action Scale (Alisat & Riemer, 2015) was used for its assessment. Adaptations were made to make the items more relevant to the current times (e.g. changing the mentioned online tools from MySpace and blogs to Instagram and TikTok). The participants were asked to rank how

willing they are to engage in 14 different actions contributing to the efforts reducing flooding, such as "Educate myself about environmental issues (e.g., through media, television, internet, etc.)". Their answers were recorded on a scale from 1 (*not at all*) to 7 *(extremely).* The scale showed a very high reliability with $\alpha = 0.96$.

Perceived Social Norms

Perceived social norms measured the degree in which participants perceive collective climate action to be in line with injunctive and descriptive norms. The items were adapted from Cialdini et al. (1990) to fit with the climate change context of the present study, i.e. referring to collective climate action instead of littering. Participants were asked to what extent they agreed with several statements, on a scale from 1 (*completely disagree*) to 7 (*completely agree*). One such statement of the subscale of descriptive norms was: "Participating in collective climate action, such as signing petitions or joining campaigns, is something that many people do". Another statement that was part of the injunctive norms subscale was: "People around me think it's important to get involved in efforts to fight climate change". Perceived social norms has a total of seven items with a very high reliability, $\alpha = 0.90$.

Perceived Efficacy

To measure perceived efficacy, the Collective Efficacy Appraisal scale from Bosone et al. (2023) was used, where it was originally in French, but translated to English for publication. Despite the translation, we rephrased some items for grammatical clarity. The scale encompassed two subscales: participative efficacy and collective efficacy, of three items each. In the context of this study the scale assesses if participants believe their individual climate actions can have an impact and to what extent they believe collective climate action can effectively fight climate change and protect the environment. To measure this, participants were asked to rate to what extent they agree with several statements, with

answer options ranging from 1 (*completely disagree*) to 7 (*completely agree*). For example, one of the statements from the participative efficacy subscale was: "My active involvement would significantly contribute to our collective efforts to protect the environment". Another example, from the collective efficacy subscale, was: "When I ask myself whether we can overcome the environmental crisis, my answer is, "Yes, we can." The total scale consists of six items with a very high reliability, $\alpha = .93$.

Single Item Measures

Several single item measures were included in the questionnaire to gain additional information for potential exploratory analyses and to add context. Participants were asked to what extent they agreed with several statements, on a scale from 1 (*strongly agree or not at all*) to 7 (*strongly disagree or a lot*). Perceived urgency was measured with: "Climate change is an urgent issue", perceived tipping point with: "Climate change has reached a tipping point" and perceived consequences with: "If climate change is not addressed, we face severe consequences". Other single item measures were specifically related to the post. These items included message resonance: "To what extent does this post's message resonate with your personal beliefs and values?" and trust in the message: "To what extent do you trust the message in this post?" Lastly, the post's ability to motivate the participant was measured with: "To what extent does the post motivate **you** to take action in order to mitigate the effects of climate change?" and the perceived ability to motivate other people with: "To what extent do you think this post will motivate **other people who view it** to take action in order to mitigate the effects of climate change?"

Results

In this section, we report the results of statistical analyses regarding the relationship between optimism and collective action intentions under different message conditions. The data was analyzed using IBM-SPSS Statistics 28.

Descriptive Statistics

The means, standard deviations, and correlations of the revelant variables are shown in Table 1. All variables were significantly correlated, with an especially high correlation between behavioral intentions and perceived efficacy ($r = 0.72$).

Table 1

Descriptive statistics and correlations.

Variable	Mean (*SD*)	1	2	3	4
1. Behavioral intentions	4.18 (1.50)	-			
2. Optimism	4.30 (1.35)	.31*	-		
3. Perceived social norms	4.48 (1.24)	.69*	.29*	-	
4. Perceived efficacy	4.99 (1.34)	.72*	.36*	.65*	-

Note. $N = 450$. All variables were ranked on a 7-point scale. *$p < .05$

Manipulation Checks

A one-way ANOVA was conducted to test whether our manipulations worked, the three conditions being: control, efficacy, and efficacy + social norms. Table B1 (Appendix B) summarizes these results. The social norm manipulation was successful, as indicated by a significant manipulation check, $F(2, 447) = 3.44$, $p = .033$, $\eta^2 = .015$. However, there was no difference between conditions in terms of efficacy, $F(2, 447) = 0.74$, $p = .477$, $\eta^2 = .003$, or the control condition, $F(2, 447) = 0.01$, $p = .990$, $\eta^2 = .000$. It can be concluded that the social norm manipulation was succesful, but efficacy and tipping point framing were not perceived by the participants.

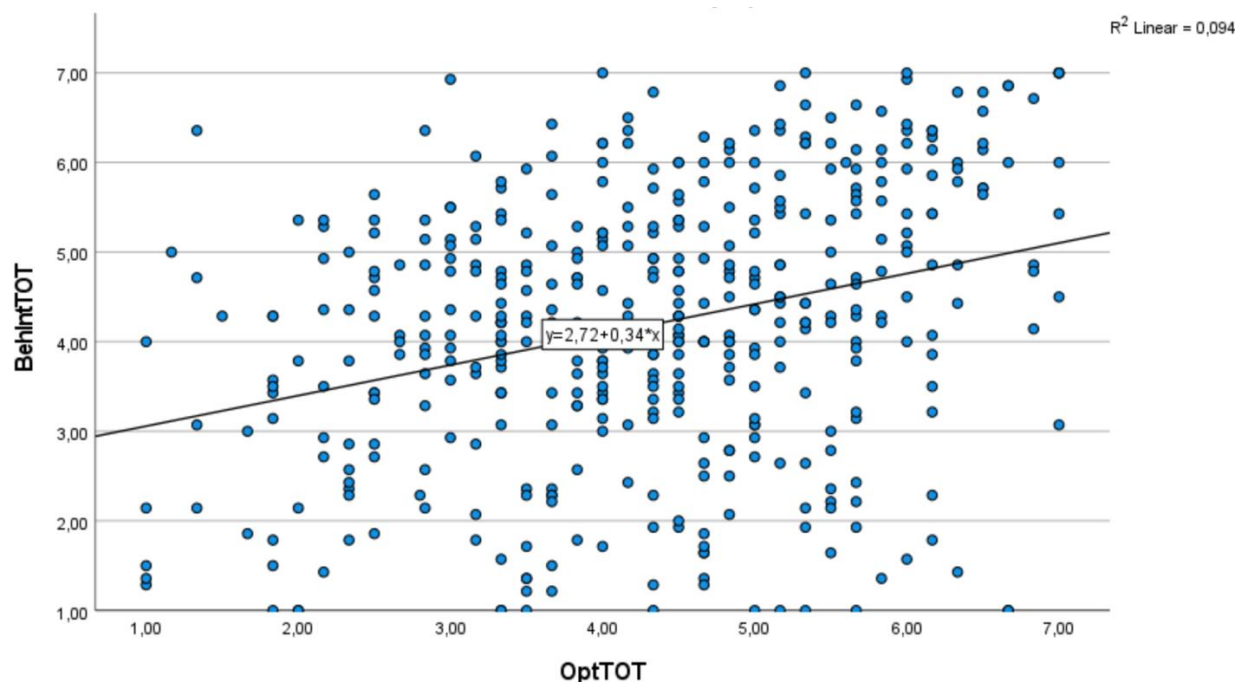**Effect of Optimism on Collective Action Intentions**

A simple linear regression was conducted to examine whether high levels of optimism predict stronger collective action intentions. Assumptions of linearity, homoscedasticity, and normality of residuals were assessed and met. The scatterplot of standardized residuals

(Figure B2) and the normal P-P plot (Figure B3), which can be found in Appendix B, showed no serious violations.

The results showed that optimism significantly predicts stronger collective actions, $F(1, 448) = 46.32$, $p < .001$ (Figure 1), accounting for 9.4% of the variance in collective action intentions ($R^2 = .094$), meaning optimism alone explained about 9% of the differences in participants' intentions.. The regression coefficient was significant, indicating that for each one-point increase in optimism, collective action intentions increased by 0.34 points, 95% CI [0.24, 0.44] ($SE = 0.05$, $t = 6.806$, $p < .001$). Thus, H1 is supported.

Figure 1

Scatterplot with a regression line showing the relationship between dispositional optimism (X-axis) and collective action intentions (Y-axis). Higher levels of optimism were associated with stronger intentions to take climate action.

Optimism as a Moderator

In both models below, we tested whether optimism changes the strength or direction of the effects of perceived efficacy or perceived social norms on collective action intentions.

Perceived Efficacy and Collective Action Intentions

A multiple linear regression was used to test whether the effect of efficacy framing is stronger when optimism is high. Participants in the third condition, the efficacy + social norms condition, were excluded from this analysis. The overall model was significant, $F(3, 300) = 12.25$, $p <.001$, accounting for approximately 10.9% of the variance in collective action intentions ($R^2 = 0.109$), meaning the model explained about 11% of why participants differed in their collective action intentions. In line with the previous analysis, optimism remained a significant positive predictor of collective action intentions, $B = 0.35$, 95% CI [0.18, 0.52], $SE = 0.09$, $t = 4.04$, $p <.001$, but perceived efficacy was not a significant predictor of collective action intentions, $B = -0.14$, 95% CI [-0.47, 0.19], $SE = 0.17$, $t = -0.85$, $p = .397$. The interaction between optimism and perceived efficacy was not significant, $B = 0.04$, 95% CI [-0.20, 0.28], $SE = 0.13$, $t = 0.32$, $p = .747$, suggesting that optimism did not change the effect of perceived efficacy on collective action intentions. Thus, H2 is not supported.

Perceived Social Norms and Collective Action Intentions

A multiple linear regression with an interaction effect was used to test whether the effect of social norms framing is stronger when optimism is high. Participants in the second (efficacy) and third condition (efficacy + social norms) were compared for this analysis, to isolate the effect of perceived social norms. The overall model was significant, $F(2, 293) = 10.18$, $p <.001$, accounting for approximately 9.4% of the variance in collective action intentions ($R^2 = 0.094$), suggesting that optimism and perceived social norms explained about 9% of the differences in participants' intentions. Optimism remained a significant positive predictor for collective action intentions, $B = 0.39$, 95% CI [0.22, 0.55], $SE = 0.09$, $t = 4.36$, $p <.001$. However, perceived social norms was not a significant predictor of collective action intentions, $B = 0.18$, 95% CI [-0.15, 0.51], $SE = 0.17$, $t = 1.05$, $p = .295$. The

interaction between optimism and perceived social norms was not significant, B = -0.11, 95% CI [-0.35, 0.14], SE = 0.13, t = -0.84, p = .403, suggesting that optimism did not change the effect of perceived social norms on collective action intentions. Thus, H3 is not supported.

Summary of the Regression Results

Table 3 provides a summary of the three regression models examining the effects of optimism, perceived efficacy, and perceived social norms on collective action intentions. The full regression table can be found in Appendix B (Table B4). Overall, the results showed a clear pattern: people who were more optimistic also reported stronger intentions to engage in collective action intentions, which supports H1. This relationship appeared consistently across the different analyses, suggesting that optimism plays a meaningful role in motivating collective efforts. However, there was no evidence that optimism made people more responsive to the manipulations of efficacy and social norms. In other words, while optimism seems to have a direct positive influence on collective action intentions, it did not strengthen or weaken the effects of the framing people received.

Table 3

Regression models

Model	B	SE	95% CI Lower	95% CI Upper	t	p	R^2	*F(df)*	p(model)
Model 1: H1 – Optimism	0.341	0.050	0.24	0.44	6.81	<.001	.092	46.32 (1, 448)	<.001
Model 2: H2 – Efficacy x Optimism	0.040	0.125	-0.21	0.29	0.32	.747	.109	12.25 (3, 300)	<.001
Model 3: H3 – Social Norms x Optimism	-0.105	0.125	-0.35	0.14	-0.84	.403	.094	10.18 (2, 293)	<.001

Discussion

This study aimed to investigate the role of optimism in using positive tipping point framing to stimulate people to take action against climate change, specifically in response to flooding in the United Kingdom. We examined whether dispositional optimism predicted collective action intentions, and whether it increased susceptibility to efficacy and social norms framing. Our first hypothesis was supported: we found that people who are more dispositionally optimistic are more likely to engage in collective action intentions. However, we found no support for our second and third hypotheses: optimistic people are not more susceptible to efficacy and social norms framing than people who are less optimistic. Additionally, the manipulation checks indicated that the efficacy and social norms manipulations did not work as intended, which may have limited the ability to detect moderation effects, and thus may have had an effect on the interpretability of the third and second hypotheses.

Theoretical Implications

Positive tipping points were used in this study as a way to frame collective climate action with urgency and hope, instead of fear. While our manipulation checks showed that this framing was not clearly perceived, the concept is still theoretically relevant. Positive tipping point framing aims to evoke hope and motivation by highlighting that meaningful change is still possible, if we act now (Nabi et al., 2018; Roese & Epstude, 2017). The finding that optimism was a consistent predictor of collective action intentions fits with this idea. It suggests that people who already expect positive outcomes may naturally align with the hopeful message that positive tipping points try to communicate. This aligns with existing research showing that positive emotions and hopeful outlooks can support pro-environmental behavior (Fielding & Hornsey, 2016; Nabi et al., 2018). Importantly, our study examined trait optimism, while many studies focus on induced optimism or emotion states. It may be helpful

for future climate communication to consider how stable traits like optimism shape people's responses to hopeful or future-oriented messages.

Building on this, our findings provide new insight into the broader role of optimism in climate communication. While earlier studies have shown that emotions like hope and beliefs about efficacy and social norms can increase climate action, less was known about how a stable personal trait like optimism fits into this picture. Our results show that people who are more optimistic are also more willing to take collective action, which supports previous research linking optimism to motivation and persistence in difficult situations (e.g., Nes & Segerstrom, 2006; O'Brien et al., 2018). However, we did not find that optimistic people were more susceptible to messages about efficacy or social norms. Since our manipulations did not work as intended, it is possible that these effects could not be properly tested. Still, the results highlight the relevance of optimism in collective climate action and suggest that stable personality traits deserve more attention in climate communication research.

Practical Implications

The results of this study provide helpful ideas for improving public involvement in climate action. Although the message framings we tested did not have the expected effects, the link between optimism and collective action intentions suggests that encouraging optimistic thinking might help motivate people to take climate action.

While this study examined optimism as a stable trait, targeted messaging or positive psychology exercises may still help evoke a more optimistic mindset in the short term (Meevissen et al., 2011). Stakeholders such as environmental organizations, educators, and policymakers could use this insight to better understand what drives people to get involved. Furthermore, they can actively shape their messaging to support a more positive outlook. For instance, climate campaigns might highlight real-life success stories or show how more and more people are joining the movement. Moreover, educators could encourage people to

imagine what a better, more sustainable future might look like, and policy announcements could be framed in ways that emphasize momentum and possibility instead of negative consequences alone. Recognizing optimism as an important psychological factor can help shape more effective and insight-driven climate engagement strategies.

Strengths of the Study

This study offers several methodological strengths that enhance the credibility and applicability of its findings. The large sample size (N = 450) provided sufficient statistical power to detect even small effects, improving the reliability of the results. The 18-30 age group is highly engaged with climate issues (Poortinga et al., 2023), and is especially active on social media platforms where much climate messaging occurs. The inclusion of a control group and clearly defined experimental conditions allowed for meaningful comparisons and stronger causal inferences. Furthermore, all materials were tailored to a UK context, and we chose one of the most pressing issues in the UK: the risk of floods. This improves the relevance, real-world applicability, and reliability of the findings. Together, these features make the study relevant for both academic research and real-world communication efforts.

Limitations and Future Directions

While the results of this study contribute valuable insights into the role of optimism in climate communication, several limitations should be considered when interpreting the results.

First, the manipulation checks indicated that participants did not respond differently to the messages intended to highlight positive tipping points, which suggests that these messages may have been too subtle or not emotionally strong enough. Positive tipping points, in particular, may be harder to understand than the more familiar negative, threat-based messages often used in climate communication (O'Neill & Nicholson-Cole, 2009; Steffen et al., 2018), which are often immediately recognizable and emotionally charged. To address

this, future research could explore how to make positive tipping point messages more concrete. For example, by using relatable analogies or tangible everyday examples, making the abstract idea of systemic change feel more accessible.

Similarly, the efficacy framing did not evoke the intended effect: participants failed to notice or internalize the message's intended emphasis on empowerment. This could be due to the examples used being too generic or not emotionally compelling. Research suggest that efficacy framing is more effective when it is vivid, personally relevant, and paired with strong emotional cues (Feldman & Hart, 2016; Roese & Epstude, 2017). The subtlety in our manipulation may not have been enough to have an effect on the participants. Future studies should use more engaging formats, like short videos or interactive content, and test the messages in advance to make sure they work as intended.

Second, although the use of self-report measures was appropriate for assessing intentions, such data can still be influenced by factors as social desirability or demand characteristics. Future studies could include behavioral measures (e.g., petition sign-ups, online sharing behavior). Additionally, longitudinal designs that track participants' behavior over time could provide valuable insights, allowing researchers to observe changes and causal relationships more directly. All such approaches should maintain ethical standards such as informed consent and data privacy.

Finally, although this study used an experimental design to test the effects of message framing, optimism was measured as a stable trait and not manipulated. This means we cannot say for certain that optimism causes higher collective action intentions. Future research could explore this more directly by trying to increase optimistic thinking through interventions or messaging and then measuring its impact. It may also be helpful to examine other psychological factors – such as situational hope, personal values, or emotions – that might

interact with optimism or make climate messages more effective (Marlon et al., 2019; Nes & Segerstrom, 2006).

Conclusion

As the climate crisis continues to escalate, so does the urgency to understand why people behave the way they do. This study aimed to explore whether optimism could be a powerful force in collective climate action. The findings suggest that those who have a positive outlook on life are more likely to express intentions to take collective action. In a country like the UK, where rising flood risks are no longer future concern but a current reality, it is increasingly important to understand how traits like optimism shape people's willingness to take climate action. While optimism alone may not be the magic key to overcoming society's reluctance to act on climate change, it offers a compelling direction forward: not just reshaping climate messages, but reshaping how people see their role in building a better future. Future studies could explore how to foster this sense of hope, especially among those who feel disengaged or discouraged. Perhaps, in the rising waters, it is our optimism that will determine whether we remain passive observers or active participants in shaping a more sustainable and safe future.

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Appendix A – Questionnaire used in the study

Optimism

Please rate the following statements on how much you agree with them.

Question	Response format
In uncertain times, I usually expect the best.	7-point Likert scale
If something can go wrong for me, it will.	7-point Likert scale
I'm always optimistic about my future.	7-point Likert scale
I hardly ever expect things to go my way.	7-point Likert scale
I rarely count on good things happening to me.	7-point Likert scale
Overall, I expect more good things to happen to me than bad.	7-point Likert scale

Conditions

Climate change is already having a serious impact on the UK, and flood risks are increasing. According to the UK government's Environment Agency, by 2050, approximately one in four properties in the UK could be at risk of flooding due to climate change (Environment Agency, 2022). You are about to see a social media post shared by a group called Act for Change UK — a grassroots activist organization focused on protecting communities from flood risks. Their aim is to raise public awareness and pressure the government to strengthen flood defenses and take stronger action against climate change. Please take some time to look at the post and read the text carefully.

Condition 1: Control

Condition 2: Perceived efficacy

1 in 4 houses in the UK will be at the risk of flooding by **2050** due to the **climate change**

WE NEED TO ACT NOW!

Storm Bert, Stor... Storm Dennis, Storm Christoph, Storm Eunice, Storm H... ...rm Fran...

Storm Bert, Storm Kathleen, and Storm Darragh—these are just some of the devastating floods that have impacted the UK in 2024. Thousands of properties were damaged, with an estimated £11 million in losses. Countless people across the UK lost their homes, farms, and livelihoods, facing immense challenges in rebuilding their lives.

Flooding is a major threat and the risk has been growing rapidly in recent years. Since 2018, the number of properties at high risk has surged by 90%, and by 2050, one in four properties could be vulnerable to flooding.

NOW is our moment to act and build a safer, more sustainable UK.

By embracing collective action we can protect communities and ensure a brighter future for generations to come.

Every step we take today brings us closer to a resilient and thriving tomorrow.

But we are not powerless— together, we can change this future.

Past efforts prove that we can be successful. In Hebden Bridge, hundreds of people banded together to plant a quarter-million trees, greatly reducing the risk of flooding. Locally, collective action has thus been successfully practiced. Now it's time to broaden the scope of our efforts to a national level.

Your every action helps the collective in building a better and a safer world. Your voice can drive change. Your actions can inspire others. Together, we can hold the government to account on its promises: strengthening flood defenses, cutting emissions and building a society that safeguards both people and the planet.

You have the power to make a difference!

Let's work together to make a real difference and shape a future where, by 2050, no house is at risk of flooding. A future where both people and nature can truly thrive.

The time to act is now - because a better world is within our reach!

Let's act now for a brighter future!

Condition 3: Perceived efficacy + Perceived social norms

1 in 4 houses in the UK will be at the risk of flooding by **2050** due to the **climate change**

WE NEED TO ACT NOW!

Storm Bert, Stor... Storm Dennis, Storm Christoph, Storm Eunice, Storm H... ...rm Fran...

Storm Bert, Storm Kathleen, and Storm Darragh—these are just some of the devastating floods that have impacted the UK in 2024. Thousands of properties were damaged, with an estimated £11 million in losses. Countless people across the UK lost their homes, farms, and livelihoods, facing immense challenges in rebuilding their lives.

Flooding is a major threat and the risk has been growing rapidly in recent years. Since 2018, the number of properties at high risk has surged by 90%, and by 2050, one in four properties could be vulnerable to flooding.

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By embracing collective action we can protect communities and ensure a brighter future for generations to come.

Every step we take today brings us closer to a resilient and thriving tomorrow.

But we are not powerless— together, we can change this future.

Past efforts prove that we can be successful. In Hebden Bridge, hundreds of people banded together to plant a quarter-million trees, greatly reducing the risk of flooding. Locally, collective action has thus been successfully practiced. Now it's time to broaden the scope of our efforts to a national level.

Your every action helps the collective in building a better and a safer world. Your voice can drive change. Your actions can inspire others. Together, we can hold the government to account on its promises: strengthening flood defenses, cutting emissions and building a society that safeguards both people and the planet.

You have the power to make a difference!

We are not starting from zero. Considering that the UK is currently the number one country in the world with the highest increase in climate activism, we have an actual chance to lead the world to a better future. Like a domino effect, action spreads.

More and more people are taking action to tackle climate change. People are signing petitions, organizing protests and pushing for policies that protect our future. Consequently, the pressure is building. With each raised voice, the call for change is becoming harder to ignore.

Your voice can add to the chorus of voices already speaking up.

Let's work together to make a real difference and shape a future where, by 2050, no house is at risk of flooding. A future where both people and nature can truly thrive.

The time to act is now - because a better world is within our reach!

Let's act now for a brighter future!

Emotional impact

In this section, you will be asked to rate your emotional experience when viewing the post. Please take a moment to reflect on the emotions that the post elicited in you and choose the response that best reflects your experience. To what extent did you feel the following:

	Response format
Excitement	7-point Likert scale
Enthusiasm	7-point Likert scale
Pride	7-point Likert scale
Hope	7-point Likert scale
Contentment	7-point Likert scale
Acceptance	7-point Likert scale
Comfort	7-point Likert scale
Relief	7-point Likert scale
Anger	7-point Likert scale
Fear	7-point Likert scale
Anxiety	7-point Likert scale
Guilt	7-point Likert scale
Resignation	7-point Likert scale
Despair	7-point Likert scale
Emptiness	7-point Likert scale
Sadness	7-point Likert scale

Manipulation checks

Question	Response format
More and more people are taking environmental actions.	7-point Likert scale

I feel like my actions can have an impact on climate change.	7-point Likert scale
To what extent does the post communicate a tipping point (A now or never situation)?	7-point Likert scale

Urgency

In this section you will be presented with a series of statements. Please read each statement carefully and consider your response.

Question	Response format
Climate change is an urgent issue.	7-point Likert scale
Climate change has reached a tipping point.	7-point Likert scale
If climate change is not addressed, we face severe consequences.	7-point Likert scale

Behavioural intentions

Question	Response format
To what extent does the post motivate **you** to take action in order to mitigate the effects of climate change?	7-point Likert scale
To what extent do you think this post will motivate **other people who view it** to take action in order to mitigate the effects of climate change?	7-point Likert scale

In this section, you will be asked to rate your likelihood of taking certain actions after viewing the post. Please consider each action carefully and indicate how likely you are to take action.

Question	Response format

Educate myself about environmental issues (e.g., through media, television, internet, etc.)	7-point Likert scale
Participate in an educational event (e.g., workshop) related to the environment	7-point Likert scale
Talk with others about environmental issues (e.g., spouse, partner, parent(s), children, or friends)	7-point Likert scale
Use online tools (e.g., Instagram, TikTok, Facebook) to raise awareness about environmental issues	7-point Likert scale
Personally write to or call a politician/government official about an environmental issue	7-point Likert scale
Become invovled with an environmental group or political party (e.g., volunteer, summer job, etc.)	7-point Likert scale
Financially support an environmental cause	7-point Likert scale
Participate in a protest/rally about an environmental issue	7-point Likert scale
Participate in a boycott against a company engaging in environmentally harmful practice	7-point Likert scale
Sign a petition (including online petitions) for an environmental cause	7-point Likert scale
Consciously make time to be able to work on environmental issues	7-point Likert scale
Participate in a community event which focuses on environmental awareness	7-point Likert scale
Spend time working with a group/organization that deals with the connection of the environment to other societal issues such as justice or poverty	7-point Likert scale

Sharing behaviour

Suppose you saw this post on social media, how likely are you to…

Question	Response format
Repost this on your social media for you friends/followers (e.g., Twitter, Facebook, Instagram, Reddit, etc.)	7-point Likert scale
Direct message this post to your close friends and family	7-point Likert scale
Share this post in specific social media groups related to your interests	7-point Likert scale
Share this with other people interested in the topic	7-point Likert scale

Perceived social norms

Rate the following statements on the extent to which you agree with them.

Question	Response format
Participating in collective action, such as signing petitions or joining campaigns, is something that many people do	7-point Likert scale
Many people in my community are actively engaged in climate activism	7-point Likert scale
Taking part in climate protests, environmental campaigns, or sustainability initiatives is common among people nowadays	7-point Likert scale
I often see people in social media share or promote collective climate initiatives	7-point Likert scale
Most people I know would support participation in collective climate action	7-point Likert scale
There is strong social support for taking action to address climate change together	7-point Likert scale

People around me think it's important to get involved in efforts to fight climate change	7-point Likert scale

Perceived efficacy

Rate the following statements on the extent you agree with them.

Question	Response format
I believe I can make a meaningful contribution to our collective efforts to reduce the negative impact of human activity on the environment.	7-point Likert scale
My active involvement would significantly contribute to our collective efforts to protect the environment.	7-point Likert scale
I am confident that my contributions can help ensure that, through collective efforts, we can address the environmental crisis effectively.	7-point Likert scale
When I ask myself whether we can overcome the environmental crisis, my answer is, "Yes, we can."	7-point Likert scale
Together, through collective efforts, we can fight the environmental damage caused by human activity.	7-point Likert scale
By working together, we can make a positive impact in protecting the environment.	7-point Likert scale
We can work together to have a positive impact for environmental protection.	7-point Likert scale

Poster

Please answer the following questions.

Question	Response format

To what extent does this post's message resonate with your personal beliefs and values?	7-point Likert scale
To what extent do you trust the message in this post?	7-point Likert scale

Open question

Question	Response format
This study focused on climate change as a potential 'tipping point' issue – a moment where urgent action could still lead to meaningful change. In your opinion, what are some other important issues currently facing the UK that might also be approaching a tipping point?	Open-ended

Appendix B – Figures and Tables

Table B1

One-way ANOVA results for the manipulation checks

	F	df	p	η^2
Tipping point framing	0.01	(2, 447)	.990	.000
Perceived efficacy	0.74	(2, 447)	.447	.003
Perceived social norms	3.44	(2, 447)	.033	.015

Figure B2

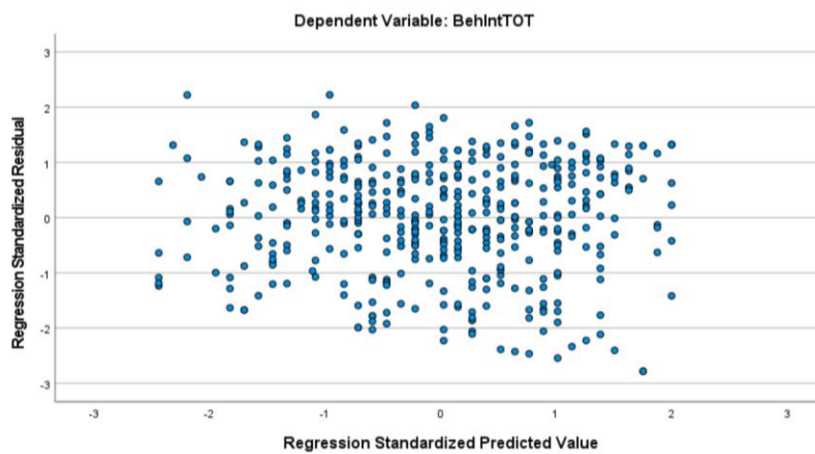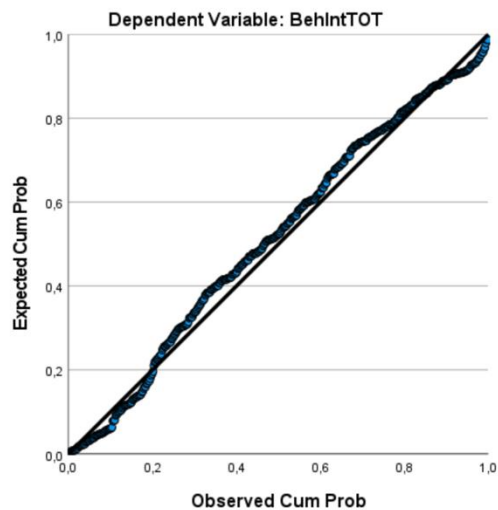*Scatterplot of standardized residuals vs. predicted values*

Figure B3

Normal P-P plot of standardized residuals

Table B4

Full regression table

Model/predictor	B	SE	95% CI Lower	95% CI Upper	β	t	p	R^2	F(df)
Model 1: H1 – Optimism								.092	46.32 (1, 448)
Constant	2.717	-			-	-	-		
Optimism	0.341	0.050	0.24	0.44	-	6.81	<.001		
Model 2: H2 – Efficacy x Optimism								.109	12.25 (3, 300)
Constant	4.223	-			-	-	-		
Perceived efficacy	-0.142	0.167	-0.47	0.19	-0.050	-0.85	.397		
Optimism (centered)	0.347	0.086	0.18	0.52	0.310	4.04	<.001		
Efficacy x Optimism (centered)	0.040	0.125	-0.20	0.28	0.020	0.32	.747		
Model 3: H3 – Social norms x Optimism								.094	10.18 (2, 293)
Constant	4.081	-			-	-	-		
Perceived social norms	0.176	0.168	-0.15	0.51	-0.060	1.05	.295		

Optimism (centered)	0.387	0.089	0.22	0.55	0.340	4.36	<.001
Social norms x Optimism (centered)	-0.105	0.125	-0.35	0.14	-0.070	-0.84	.403

Appendix C – Use of AI tools

In writing this bachelor's thesis, ChatGPT (GPT-4, OpenAI, accessed in April and May 2025) was used for finding several scientific papers. We asked for suggestions on keywords and topics. We selected and verified all sources ourselves using reliable academic databases.