Social identification predicts behavioural engagement with environmental activist movements, but does not moderate the collective climate action intention-behaviour gap

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This article examines whether there is a collective climate action intention-behaviour gap amongst the British public, and the role of social identification in bridging the gap. Using a nationally representative survey (n=1100), we measured participant's intentions to take collective climate action (such as volunteering, sharing climate change information with friends, protesting), and actual behavioural engagement with Extinction Rebellion (XR), a large-scale environmental movement. We also measured psychological factors based on the Social Identity Model of Pro-Environmental Action (SIMPEA) model, such as social identification, and socio-demographic characteristics. We found 50% of the participants were inclined abstainers, i.e., they expressed intentions to take collective climate action despite not having performed any actions with XR so far. Based on a moderated mediation model, we found that social identification predicted behavioural engagement with XR but did not moderate the collective climate action intention-behaviour gap. We discuss why this may be the case, including the role of public perceptions of how effective and disruptive XR's actions are.

Introduction

There is a clear scientific consensus that human activities are altering the world's climate, with potentially disastrous effects for us all. Limiting the global average temperature increase to 'well below 2°C' will require widespread behavioural changes from the general public to reduce emissions, and coordinated actions to shape policy responses (Amel et al., 2017; Barth et al., 2021; Gunningham, 2019; Ostrom, 2010). However, despite the serious adverse consequences of climate change, and widespread public concern, behavioural responses have been rather muted (Evensen et al., 2021).

One way individuals can shape policy is through collective climate action, supporting and participating in environmental movements. Environmental movements have the potential to play a transformative role since they aim to address systemic issues such as climate regulations and governance, by raising public awareness, and changing opinions, preferences and behaviours (Castiglione et al., 2021; Gulliver et al., 2022; Richardson, 2020; Vestergren & Drury, 2022). Extinction Rebellion (XR) is one such movement, founded in 2018 (Extinction Rebellion, 2021). XR's strategy is based on collective action, using "non-violent civil disobedience" to protest about climate change. Past XR protests have increased environmental concern, and dissatisfaction with current government action (Kenward & Brick, 2023; Kountouris & Williams, 2023).

To increase their impact through membership, movements seek to behaviourally engage the public in several ways, including subscribing to newsletters, volunteering time and money, speaking to peers and family, and so on. However, this can be challenging. Despite the high levels of concern for the climate and ecological emergency in the UK (e.g. in Evensen et al., 2021), only 0.25% have joined XR (Extinction Rebellion, 2023). This is in line with previous research into the environmental intention-action gap, whereby individuals who are concerned and positively inclined to take action, fail to do so (Blake, 1999; Godin et al., 2005; Kollmuss & Agyeman, 2002; Sheeran & Webb, 2016). Correspondingly, researchers have called for more studies to measure actual behaviours rather than just behavioural intentions (Lange et al., 2023).

To identify possible paths through which individuals may be pushed to go beyond having intentions and actually act, we can look at behavioural models such as the Social Identity Model of Pro-Environmental Action (SIMPEA). This suggests that ingroup identification, ingroup norms and goals, and collective efficacy determine behavioural responses to large-scale environmental crises like climate change (Fritsche et al., 2018). Similarly, the Social Identity Model of Collective Action (SIMCA) proposes that identification with a disadvantaged group (group identity), and beliefs in the group's ability to change the situation can predict collective action (Van Zomeren et al., 2008). Therefore, lack of social identification with environmental movements might be an important barrier to taking collective climate action.

Collective behavioural engagement with an environmental movement may provide people with a shared sense of social identity, since they could feel as though they are a part of something bigger than themselves, and a larger collective (Vestergren et al., 2018). Feeling part of a group or social identification with a group can build collective identity, collective efficacy, and pro-environmental social norms. These psychological factors are important to motivate people to take collective climate actions over time. Meanwhile, lower social identification with environmental movements can be associated with a lower willingness to take collective climate action.

Existing research is limited, but does suggest that social identification is associated with collective climate actions and intentions. In Norway, for example, Haugestad et al. (2021) found that politicised social identity and group efficacy were positively related to protest intentions in the case of Friday's for the Future protests. Furlong & Vignoles (2021) also tested the SIMCA model by surveying 203 current or potential XR activists in the UK. They found two identity-based pathways to collective action behaviour and future intentions: first via moral convictions leading to anger leading to XR identification and then collective action, and second via global identification leading to participative efficacy and XR identification leading to collective action. Perceived group efficacy predicted collective action intentions but not behaviour. Apart from focusing on those already engaged with

XR, this study did not investigate revealed behavioural engagement, as it only measured collective action intentions and past XR engagement behaviours. Finally, based on interviews with 40 Black, Asian and Minority Ethnic (BAME) and working-class people in England and Wales, Bell & Bevan (2021) found that XR's tactics and messages have tended to alienate BAME and working-class people. This study suggests that social identification may depend on belongingness to socio-demographic groups.

In this study we examine social identification and behavioural engagement with XR amongst the British public. We use a pre-registered nationally representative survey (n=1100) to investigate the relationship between both intentions to take collective climate action and actual behavioural engagement with XR, and the role of social identification in moderating this relationship. We also examine what behavioural and socio-demographic factors predict social identification with XR, supplementing the analysis with insights from qualitative data collected through open text responses. We apply the SIMPEA model to test the following hypotheses:

H1. An interaction between collective action intentions and social identification with XR will positively predict engagement with XR such that those who have high collective action intentions and high social identification with XR will have high engagement with XR
H2. Beliefs about XR's collective efficacy will significantly mediate the interaction effect of collective action intentions and social identification on engagement with XR
H3. Perceptions about social norms of climate action within XR will significantly mediate the interaction effect of collective action intentions and social identification on engagement with XR

Methods

We conducted an online survey with a nationally-representative sample of the British public between the 8th and 9th of December 2021. This research was approved by the

Research Ethics Board at LSE. All subjects gave written informed consent in accordance with the Declaration of Helsinki (2013). We pre-registered with the Open Science Framework (https://osf.io/jec9d), which also hosts the full code and data (XXXX).

Sample

We recruited participants using the online website Prolific Academic. The survey was available to all British adults, who were paid £1.72 for their participation. We planned to exclude any participants who failed the seriousness check question, did not complete the full questionnaire, or had a completion time three standard deviations below the mean duration. Based on the funding available we were able to recruit 1,100 UK participants, which provided us with 0.88 power to detect a small-to-medium effect ($f^2 = 0.02$) in a linear multiple regression analysis with 14 predictors, using G*Power.

Measures

After informed consent, participants were provided with a general overview of XR and asked about their familiarity with the organisation. Next, they reported past behavioural engagement with XR and the climate movement, their intentions to engage in future climate-related activities, their perceptions of XR, and answered questions related to psychological factors, socio-demographics and a seriousness check (Musch & Klauer, 1999). Finally, participants were given the option to volunteer time with XR by answering additional questions to help XR, our measure of behavioural engagement with XR. As an additional measure of behavioural engagement, participants were also given the option to click a link to join the XR mailing list. The full survey can be found in Supporting Information (SI 1).

Table 1. Survey variables with full descriptions and reliability scores

Variable	Description

Revealed behavioural engagement with XR – Time (Mortensen et al., 2019)	Binary variable representing whether or not a participant donated their time donation to answer five additional questions for XR
Collective climate action intentions	Numeric mean score of willingness to perform the following 4 behaviours, on a Likert scale from 1-5: - Donate to an environmental cause - Take part in public campaigns related to an environmental cause - Post on social media about your environmental views - Volunteer for an environmental cause *Cronbach's alpha = 0.84*
Belief in collective efficacy of XR (Adapted from Fritsche et al., 2017)	5-point Likert item representing agreement with the statement: "XR can make a real impact in addressing climate change"
Perceived norms of XR members (Adapted from Mildenberger & Tingley, 2021)	Numeric mean score representing what percentage of XR members are perceived to perform the following 4 behaviours: - take private actions on an individual level such as adopting a sustainable lifestyle to reduce climate change - take part in collective actions such as public campaigns and protests demanding government action on climate change - think that it is important to take action to reduce climate change - think that we all have a responsibility to take action to reduce climate change *Cronbach's alpha = 0.79*
Social identification with XR (Postmes et al., 2013)	5-point Likert item representing agreement with the statement: "I identify with XR"

Past pro-environmental behaviour	Numeric mean score representing past performance of the following 9 behaviours, on a Likert scale from 1-5: - Reading or learning more about climate or environment related topics - Donating to an environmental cause or organisation - Back-office volunteering for another environmental organisation - Wearing some symbol to identify as an environmentalist - Describing oneself as an environmentalist - Posting on social media about climate change or other environmental issues - Joining a march or rally related to environmental issues - Responding to misinformation on social media related to climate change or other environmental issues - Liking/commenting on/reposting others' posts about climate change or environmental issues *Cronbach's alpha = 0.87*
Climate change risk perceptions (Adapted from Van der Linden, 2015)	5-point Likert item representing agreement with the statement "Climate change will negatively impact those close to me, such as my friends and family."
Collective climate action efficacy (Adapted from Roser-Renouf et al., 2014)	5-point Likert item representing agreement with the statement "People like me, working together, can address climate change."
Climate action self-efficacy (Adapted from Roser-Renouf et al., 2014)	5-point Likert item representing agreement with the statement "The actions I take on my own can address climate change."

Environmental self-identity (Adapted from Clayton et al., 2021)	Numeric mean score representing agreement with the following 2 statements, on a Likert scale from 1-5: - Behaving responsibly toward nature– living a sustainable lifestyle, is important to who I am. - I consider myself a steward of our natural resources *Cronbach's alpha = 0.71*
Perceptions about XR's image	Numeric mean score representing agreement with the following 5 statements, on a Likert scale from 1-5: - XR activities seem too hippyish for my liking.* - Some of XR's activities targeting everyday people (e.g., morning commuters) are too disruptive for my liking.* - XR is too politically radical for my liking.* - XR membership adequately represents the various social classes and ethnic groups present in UK society. - XR activities that target big business and major industries (e.g., Amazon, airlines, etc.) are disruptive for good reason. *Cronbach's alpha = 0.78* (* = reverse coded)
Social norms about engagement with XR	Numeric mean score representing the percentage of the following groups that would be willing to participate in efforts organised by XR: - UK Adults - Your friends and family *Cronbach's alpha = 0.75*
Social norms about engagement with climate action	Numeric mean score representing the percentage of friends and family who perform the following 4 behaviours: - Take private actions on an individual level such as adopting a sustainable lifestyle to reduce climate change - Take part in collective actions such as public campaigns and protests demanding government action on climate change.

	- Think that it is important to take action to reduce climate change.
	- Think that we all have a responsibility to take action to reduce climate change
	Cronbach's alpha = 0.81

Notes: Construct means, standard deviations, maximums, and minimums can be found in Supplementary Information (SI 2-3).

Outcome Variables

To measure behavioural engagement with XR we gave participants the opportunity to sign up to XR's mailing list through an external link to a Google form. We then told respondents that they could volunteer their time (without extra remuneration) to help out XR by answering some additional questions and planned to score them on how many of the five additional questions they answered (adapted from Mortensen et al., 2019). As nearly all participants who consented to the further questioning answered all five questions, we also coded this second measure of revealed behavioural engagement with XR as a binary variable.

Mediators, Moderators, and Other Covariates

We created two measures of social identification with XR, a single measure and a composite. The single-item measure was agreement with the statement "I identify with XR". For the composite, we combined the first measure with two further items – these were "People who participate in XR initiatives are similar to the people around me (like my friends and family)" adapted from Leach et al. (2008) and "Given that 'X' represents Extinction Rebellion (XR), please select the pair of circles that best describe your relationship with XR" (see appendix X for related image), adapted from Postmes et al. (2012).

We adapted measures from Fritsche et al. (2017) and Mildenberger & Tingley (2021) to examine belief in the collective efficacy of XR and perceived norms of XR members (see

Table 1). We also recorded socio-demographic factors such as gender, age, ethnicity, income and education.

Qualitative Measures

In order to understand any unexpected results in our results, we elicited qualitative responses from participants about their perceptions of XR using open-ended questions. These were "In a few words, please write down what comes to mind when you think of XR", "Do you support XR's cause and their actions? In a few sentences, please tell us why or why not", and "In your opinion, what are some typical characteristics of an XR member?".

Data Analysis

Intention-Action Gap

To first establish whether there is indeed a gap between those who intend to take collective climate action and those who actually engage with XR (i.e., the intention-action gap), we calculated the percentage of participants who a) reported some intention to take collective climate action and b) had also previously taken any actions with XR (Sheeran, 2002). Based on their intentions, participants were classified as "inclined" or "disinclined", and based on their past actions with XR, they were classified as "actors" or "abstainers".

When Do Intentions Translate to Behaviour: Hypothesis Testing

To test our hypotheses, we used a moderated-mediation model where behavioural engagement with XR was the outcome, intention to take collective climate actions (composite) was a predictor, social identification with XR (single-item measure) was a moderator, and belief about XR's collective efficacy and perceived social norms of climate action within XR were both mediators. We used Hayes Process (Hayes, 2022) with 95% confidence intervals and 5000 bootstrapped resamples. As the revealed behavioural engagement outcome is a binary variable, the models used logistic regression in Hayes Process. We controlled for participants' age, gender, ethnicity, income, and education in all analyses. For construct intercorrelations see Supplementary Information (SI 2).

Exploring Determinants of Social Identification

To explore determinants of participants' social identification with XR, we ran a multiple linear regression on both the single item and the composite measure of social identification with XR. We included as possible predictors past pro-environmental behaviour, climate change risk perceptions, collective efficacy, self-efficacy, environmental self-identity, perceptions about XR's image, social norms about climate action and social norms about engagement with XR. Personal prioritisation of climate change and perceptions about sincerity of XR were removed due to multicollinearity ($r > 0.5$) (see SI 4).

Qualitative Data Analysis

We analysed the qualitative data using an inductive theoretical approach, without a predefined coding framework. Instead, it emerged in an iterative process, as we cycled repeatedly between reading, focused coding, reflection, and rereading (Adu, 2019; Tie, Birks and Francis, 2019). We identified relevant information in the transcripts on a line-by-line basis and generated new codes and categories as our understanding evolved. The codebook we developed is available in the Supplementary Information (SI 5). All coding was conducted by a single author (IP) in NVivo 12 Plus (QSR International).

Deviations from the Pre-Registration

The survey was extensive and it is not possible to report all the hypotheses and analyses in the pre-registration in this paper. We have focused instead on just the hypotheses and analyses that relate to the intention-action gap and social identification.

Classification of outcome variable

We had intended to treat the time donation variable as both binary (whether consented to donate time) and continuous (how many questions answered for XR), but most participants who consented to donate time answered all five questions. The unanticipated reduced variance means we treated it as binary only.

Outcome variables not analysed

We did not analyse past behavioural engagement with XR as an outcome variable in our moderated mediation, due to concerns about reverse causality. We also only report one measure of revealed engagement with XR in the main text (time donated). Although we also measured sign-ups to the mailing list, this data was highly skewed (only 32 participants signed up). This analysis can still be found in the Supplementary Information section (SI 6).

Variables removed from model

Although we analysed the extent to which various constructs predict identification with XR (as pre-registered; see Table 5), we removed two predictor variables from this analysis – personal prioritisation of climate change and perceptions about sincerity of XR due to issues of multicollinearity as these variables correlated strongly ($r>0.50$) with social prioritisation of climate change and perceptions of XR's image.

Exploratory Analyses

As an additional analysis, we calculated the percentage of inclined-abstainers, disinclined-abstainers, inclined-actors, and disinclined-actors (Table 3). This frequency analysis provides information about the intention-action gap in our sample.

Results

Participants

The final sample consisted of 1100 participants, after 56 participants were removed for failing to complete the questionnaire, 2 for not consenting, and 3 for failing the seriousness check. The sample was representative of the British population on the basis of age, gender, income, and ethnicity (Table 2). However, 58% of our sample had a bachelor's degree or higher, while only 34% of the wider UK population have this level of education (ONS Census, 2021).

Table 2. Demographic statistics

Variable	N
Total sample size	1100
Age (mean (SD))	41.7 (13.7)
Gender (%)	
Woman	559 (50.9)
Man	534 (48.6)
Non-binary / prefer not to say	6 (0.54)
Education (%)	
Less than high school graduate	26 (2.4)
O level	94 (8.5)
A level	151 (13.7)
Some college or associate's degree	191 (17.4)
Bachelor's degree	435 (39.6)
Graduate degree or higher	203 (18.5)
Income (%)	
<= £20,000	329 (29.9)
£20,000 - £40,000	496 (45.1)
£40,000 - £60,000	176 (16)
£60,000 - £80,000	59 (5.4)
£80,000 - £100,000	25 (2.3)
> £100,000	14 (1.3)
Ethnicity (%)	
Asian	92 (8.4)
Black	45 (4.1)
White	923 (84.1)
Mixed	24 (2.2)

Intention-Action Gap

Roughly one-third (35.4%) of the sample were inclined actors, i.e., those who expressed some intention to take collective action and had performed some past behaviours with XR (SI 7). However, over half (50.09%) of the sample demonstrated an intention-action gap–they were inclined abstainers i.e., they expressed intentions to take collective climate action but reported taking no past actions with XR. The rest of the participants were disinclined abstainers (11.82%) and disinclined actors (2.64%), i.e., those who expressed no intention to take collective action and reported taking no past behaviour with XR, and some past behaviour with XR respectively. Given that inclined abstainers represent the greatest subsection of participants, these results suggest that there is a large collective climate action intention-XR behaviour gap.

Table 3: Collective climate action intention-XR behaviour gap – classification of participants according to current intentions to take collective climate action (inclined/disinclined) and past XR behaviours (actor/abstainer)

	Inclined	Disinclined
Actor	390 (35.45%)	29 (2.64%)
Abstainer	551 (50.09%)	130 (11.82%)

Note: N refers to the number of people in each cell, and the brackets contain what percentage of the entire sample they represent.

When Do Intentions Translate to Action: Moderated-Mediation Model

In partial support of Hypothesis 1, collective climate action intentions (direct effect: B=0.34, se=0.08, p<0.001) and social identification with XR (henceforth referred to as XR identification; direct effect: B=0.29, se=0.10, p=0.002; Table 4) both significantly predicted behavioural engagement with XR, in the form of time donation. However, we found no evidence of an interaction effect between general collective action intentions and social identification with XR – whether a participant identifies with XR does not seem to moderate the relationship between their general collective action intentions and their decision to donate time to XR (p>0.05).

Table 4. Moderated mediation of collective climate action intentions on revealed behavioural engagement with XR (time donation), with social identification with XR as a moderator, belief in collective efficacy of XR and perceptions of social norms among XR members as mediators, and controls for demographic variables.
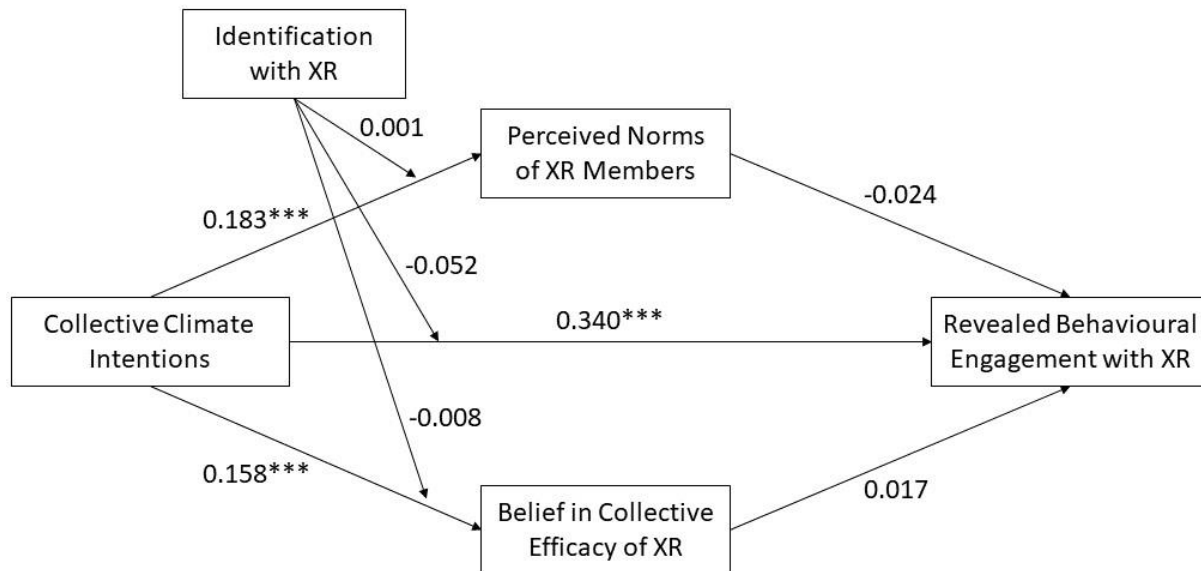
	Coefficients [95% CI]
Direct effects:	
Collective climate action intentions	0.340***
	[0.180, 0.500]
Belief in collective efficacy of XR	0.017
	[-0.168, 0.203]
Perceived norms of XR members	-0.024
	[-0.164, 0.117]
XR identification	0.300**
	[0.112, 0.489]
XR identification * collective action intentions (interaction)	-0.052
	[-0.178, 0.074]
Index of moderated mediation:	
XR identification * collective action intentions through XR collective efficacy	-0.008
	[-0.011, 0.011]
XR identification * collective action intentions through XR member norms	0.001
	[-0.006, 0.009]
Covariates:	
Gender	-0.044
	[-0.316, 0.228]
Ethnicity	0.036
	[-0.335, 0.408]
Age	0.227**
	[0.085, 0.370]

Education	0.052
	[-0.087, 0.191]
Income	0.090
	[-0.044, 0.223]
Observations	1,095
Log Likelihood	69.08
CoxSnell R^2	0.061

Notes: Values represent standardised logistic regression coefficients with 95% confidence intervals. Model is a moderated mediation model with collective climate action intentions as predictor, belief in the collective efficacy of XR and perceived norms of XR members as mediators, identification with XR as moderator, and time donation to XR as the dependent variable. Model includes gender (1 = Male, 0 = Female/Other), ethnicity (1 = White, 0 = BAME), age, education, and income as covariates. The model without covariates can be found in Supplementary Information (SI 8). *p<0.05; **p<0.01; ***p<0.001.

As we did not find an interaction effect of collective action intentions and social identification on engagement with XR, we were also unable to find any mediation effects on the absent interaction (contrary to Hypotheses 2 and 3). We did find that general collective action intentions significantly predicted participants' collective efficacy beliefs related to XR (B=0.16, se=0.03, p<0.001) and their perceived social norms of engagement with XR (B=0.18, se=0.03, p<0.001). However, neither collective efficacy beliefs nor perceived social norms predicted revealed behavioural engagement.

Figure 1. Path diagram for the moderated mediation of collective climate action intentions on behavioural engagement with XR, with social identification with XR as a moderator, belief in the collective efficacy of XR and perceptions of social norms among XR members as mediators.

*Notes: Values represent standardised logistic regression coefficients with 95% confidence intervals. Model is a moderated mediation model with collective climate action intentions as predictor, belief in the collective efficacy of XR and perceived norms of XR members as mediators, identification with XR as moderator, and time donation to XR as the dependent variable. Model includes gender (1 = Male, 0 = Female/Other), ethnicity (1 = White, 0 = BAME), age, education, and income as covariates. *p<0.05; **p<0.01; ***p<0.001.*

Exploring predictors of social identification: Multiple linear regression

We found that the strongest predictor of social identification with XR was the extent to which participants perceived XR members positively (B=0.50, SE=0.02, t(1091)=19.37, p<0.001; Table 5). Other significant predictors were perceived social norms of participation with XR (B=0.24, SE=0.02, t(1091)=9.88, p<0.001), participants' environmental self-identity (B=0.10, SE=0.03, t(1091)=3.83, p<0.001), and their past pro-environmental behaviours (B=0.13, SE=0.03, t(1091)=5.27, p<0.001). Participants' climate change risk perceptions, self-efficacy, and perceived social norms of climate action among friends and family did not significantly predict social identification (*p*>0.05). As a robustness check, we re-ran the same analysis replacing the single item measure

of XR identification with the 3-item composite measure, and obtained a similar pattern of results (SI 9).

Table 5: Estimates from the multiple linear regression model investigating predictors of social identification with XR, both the single item measure and composite measure.

Predictor	Coefficients [95% CI]
Past pro-environmental behaviour	0.142***
	[0.090, 0.195]
Environmental self-identity	0.111***
	[0.055, 0.168]
Perceptions of XR's image	0.505***
	[0.454, 0.556]
Social norms about engagement with XR	0.258***
	[0.207, 0.308]
Social prioritisation of climate change	0.077**
	[0.023, 0.131]
Climate change risk perception	-0.001
	[-0.054, 0.051]
Collective efficacy	0.044
	[-0.012, 0.099]
Self-efficacy	-0.041
	[-0.091, 0.009]
Social norms of climate action	-0.035
	[-0.087, 0.017]
Gender	0.100*
	[0.012, 0.18]
Ethnicity	0.131*
	[0.013, 0.249]
Age	0.041
	[-0.006, 0.088]

Education	-0.0002
	[-0.045, 0.044]
Income	-0.010
	[-0.054, 0.033]
Observations	1,095
Adjusted R^2	0.559
Residual SE (df = 1090)	0.707
F Statistic (df = 9; 1090)	99.864***

Notes: Values represent standardised regression coefficients with 95% confidence intervals. Model is a multiple linear regression model of a bundle of constructs on identification with XR with covariates gender (1 = Male, 0 = Female/Other), ethnicity (1 = White, 0 = BAME), age, education, and income. Model 1 uses a single-item response to the question "How much do you identify with XR", while model 2 uses a composite composed of three different measures of social identification with XR. Models without covariates can be found in Supplementary Information (SI 10). *p<0.05; **p<0.01; ***p<0.001.

Qualitative Data Analysis

Theoretical saturation was reached by 400 responses, but we continued to code 706 responses in total. Responses to each of the three questions are presented below.

Participant's support for XR

When asked about support for XR, participants generally said they supported the cause (N=437; Fig 2A). However, roughly half of these responses clarified that they supported the cause but not the actions (N=268). For those who said they did not support the cause (N=207), they mostly did not support XR's actions (N=159) or did not identify with XR (N=22).

> "They are too far removed from society, they don't understand that normal people trying to make ends meet can't uproot their lifestyle so quickly and people have other issues they want to sort out." - *R150 (Female, 31, 2021)*
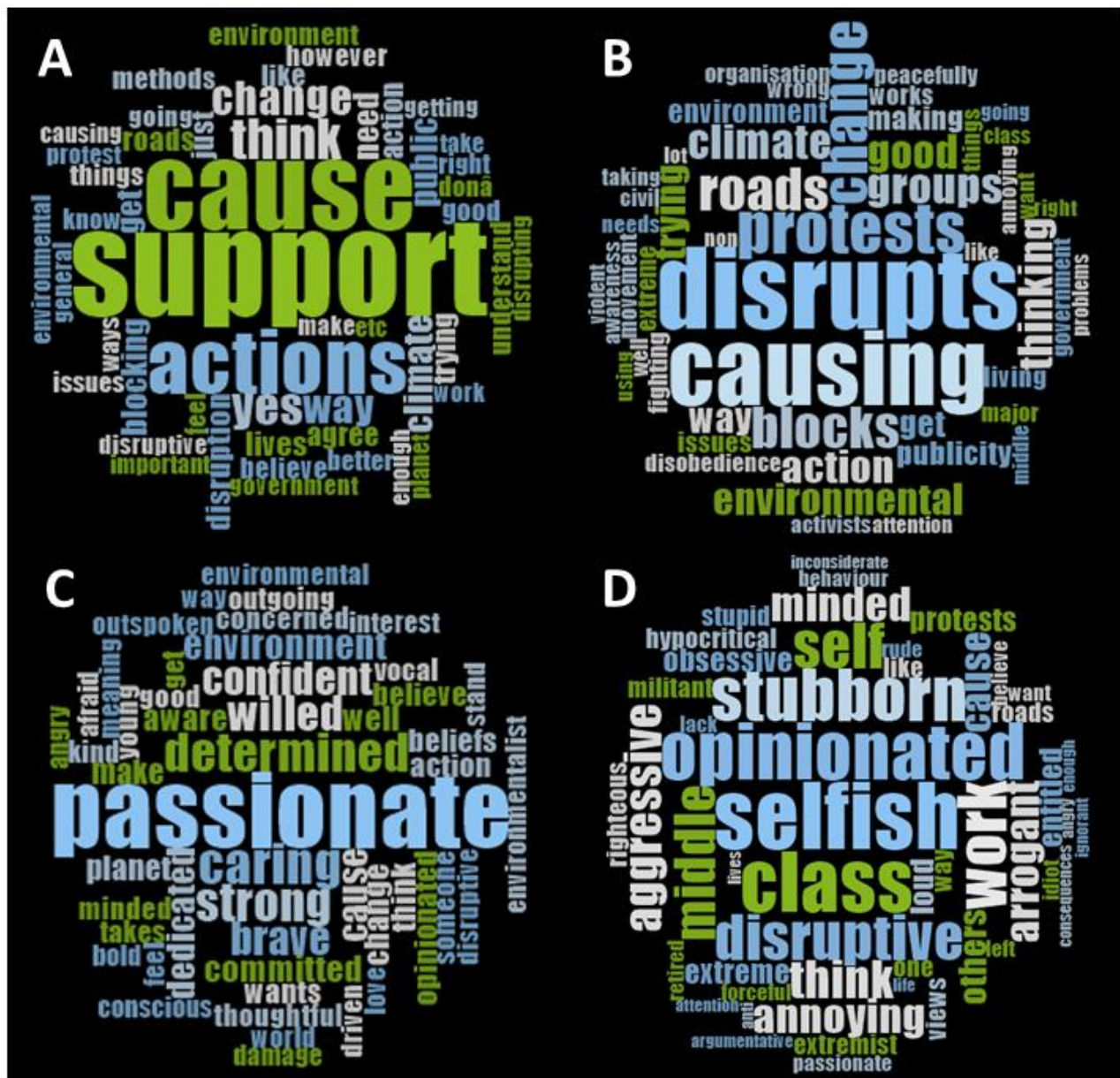
Figure 2. Word clouds of the coded qualitative data (N=706). Responses to three questions: A) "Do you support XR's cause and actions?", B) "What comes to mind when you think of XR?", and "In your opinion, what are some typical characteristics of an XR member?" - separated into C) positive and D) negative responses.

Participant's perceptions of XR

When asked what comes to mind when you think of XR, the most common theme was XR's actions (N=203) and the impacts of those actions (N=279; Fig 2b). Actions were generally described in a neutral (N=82), or negative (N=104) manner. "Disruption" was closely associated with actions (N=257), usually negatively - often due to the impacts on the general public (N=93). Protests (N=149) and road blocks (N=115) were the most frequently mentioned types of actions, but few respondents discussed specific actions (and not all of these were actually undertaken by XR! N=19).

> "Although I can understand why they want to take their actions, I feel their targets should be the politicians making the decisions, not the general public." - *R498 (Male, 63, 2021)*

> *"*They are so extreme and cause disruption to honest people trying to do necessary and urgent things in their lives, such as attend hospital. They cause misery to ordinary people who don't have much power." - *R437 (Female, 40, 2021)*

Many responses passed judgement on XR members (N=172), which were roughly equally split in sentiment (positive: N=75; negative: N=97). Descriptions of XR as a group (N=169) tended to be neutral, but a substantial minority of these comments portrayed XR as a radical organisation (N=59), using phrases such as chaos (N=26) or extreme/extremists (N=52).

Participants' perceptions of typical XR members

When asked to describe the typical characteristics of an XR member, participants focused mainly on character and background, with few comments on appearance or behaviours. Many responses passed judgement on XR members, and these were roughly equally positive (N=173; Fig 2c) and negative (N=194; Fig 2d), while less were mixed (N=78). The most common positive descriptors were passionate, strong, and determined. The most common negative descriptors were selfish, stubborn, and opinionated.

> "Caring, vocal, takes risks for what they believe, admirable and honest." - *R276 (Female, 38, 2021)*

"Affluent people who have plenty of time to glue themselves to roads while everyone else is desperately trying to get to work on time." - *R420 (Female, 57, 2021)*

In terms of backgrounds, the most predominant attribute that arose was class, usually middle-class (N=52). There was a perception that XR members do not work because they're students (N=15), retired (N=18), and wealthy (N=12). Age estimates were evenly spread between young (N=23) and old (N=18). There were surprisingly few comments on race (white; N=20) and politics (left; N=25). The most common behaviour mentioned was veganism (N=39).

Discussion

We found that although there was a large collective climate intention-action gap, general collective action intentions did significantly predict revealed behavioural engagement with XR. This effect was not moderated by social identification with XR, although social identification was a significant predictor in its own right. We also found that general collective action intentions significantly predicted participants' collective efficacy beliefs related to XR and their perceived social norms of XR, although neither beliefs nor norms predicted revealed behavioural engagement.

Past research in this area has largely focused on exploring social identity and collective action intentions in a smaller sample of XR activists to test the SIMCA model (Furlong & Vignoles, 2021), or using solely qualitative data to examine determinants of social identification (Bell & Bevan, 2021). We built on this work by measuring actual behavioural engagement in a larger sample of the general British population (n=1100) that is representative by age, gender and ethnicity.

The collective climate intention-action gap we identified echoes the findings of multiple other studies into private environmental behaviours such as eco-friendly purchasing, energy usage, and waste disposal (Grimmer & Miles, 2017; Mahardika et al., 2020; Wang

& Mangmeechai, 2021). Uncovering ways of bridging that gap is essential to scale up the performance of environmental behaviours in high-impact areas, from diets to non-violent direct action. Influenced by SIMPEA, we initially hypothesised that whether or not someone would act on their collective action intentions would depend on if they identified with XR as a group. Further, we thought that this interaction would be explained by participants believing XR is effective, and that other people would behave similarly. We were unable to find any evidence for these hypotheses.

Fortunately, our mixed-methods approach allows us an in-depth understanding of how XR is perceived, and the aspects of the movement that people approve and disapprove of. The qualitative data suggests that although some people may view XR as effective, they still dislike the disruption caused by XR actions. This may outweigh any potential impact of perceived efficacy or norms on behavioural engagement.

SIMPEA does not posit a specific relationship between important variables in predicting environmental behaviour, it just highlights that social norms, collective efficacy and social identity are all interrelated and affect behaviour (Fritsche et al., 2018). It also has not received extensive empirical testing. This was a first attempt at understanding how these variables relate to each other in their effect on behaviour, through a proposed moderated mediation. Although we found no evidence to support the moderated mediation, our findings do show the importance of social identification, if not collective efficacy and social norms.

As social identification with XR was an important predictor of actual behaviour, it is worth examining what other beliefs and attitudes are associated with it. These included the extent to which participants perceived XR members positively, perceived social norms of participation with XR, participants' environmental self-identity, and past pro-environmental behaviours. However, climate change risk perceptions, self-efficacy, and perceived social norms of climate action among friends and family did not significantly predict social identification. The lack of a significant relationship between social identification with XR and climate change risk perception suggests that being concerned

about the same issue is not enough to persuade people to identify with movements (i.e., having a common concern). Perceptions of both the movement's members and their actions are more influential.

Implications for practice

The importance of social identification may also indicate that public perception and support for environmental movements rests on more superficial elements such as their image and even perceived effectiveness (as opposed to demonstrating progress via disruptions, policy wins, etc.). While these movements may not have resources or the desire to devote to PR and other image-building activities, a more considered strategy regarding public perceptions and image may be necessary for mobilizing support and engagement. This should be done in an authentic way to maintain credibility and transparency.

To add to this, previous research from India shows that certain stances and actions taken by activists can alienate people, reducing the extent to which audiences are receptive to climate advocacy (Sabherwal, Shreedhar & van der Linden, 2021). So, activist groups may need to be mindful of how their actions are perceived, and the image they portray (See Table 5: perceived image of XR is strongest predictor of social ID). The public's social identification with activist groups, and therefore their behavioural engagement, is in turn contingent on how positively activists (and their actions) are perceived.

Given the role of perceived social norms of participation with XR and the extent to which participants perceived XR members positively in determining social identification with XR, it may be worth examining XR's appeal in diverse communities, both ethnically and in terms of class and education. Class in particular, was highlighted in the qualitative data from our participants, and it is possible that to improve and maintain long-lasting social identification to occur, XR and other movements will need to portray a diverse membership.

Limitations and Future Work

It can be difficult to measure intention-action gaps due to reverse causality when relying on stated previous behaviour, so we used a revealed behaviour approach with a behaviour that is arguably less directly relevant – volunteering time online to answer questions. Although in the same realm, this is several steps removed from volunteering time at an actual protest, or donating money to a cause – behaviours that are likely more desirable. The cross-sectional survey design also hampers causal inference. In the future, longitudinal data collection where collective action intentions are followed by realworld verification of desirable behaviours would be preferable, if trickier.

Which our study sample is largely representative of the UK, generalisability to other cultures is somewhat limited as we studied only a single, Western population. We also only looked at a single environmental movement, whose actions tend to be disruptive and gain wide (and often negative) media attention. Replication the study with other activist groups and in other countries could be valuable.

Conclusion

Our findings indicate that both collective action intentions and social identification with an environmental movement significantly predict behavioural engagement with that movement. However, a person's overall collective action intentions do not translate to behavioural engagement through the extent to which they socially identify with an environmental movement. Moreover, beliefs about the movement's collective efficacy and social norms may not be a predictor of revealed behaviour, as previously theorised.

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