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Noth, Felix; Tonzer, Lena

published in

Energy Research and Social Science
2022

DOI (link to publisher)

[10.1016/j.erss.2021.102360](https://doi.org/10.1016/j.erss.2021.102360)

document version

Publisher's PDF, also known as Version of record

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citation for published version (APA)

Noth, F., & Tonzer, L. (2022). Understanding climate activism: Who participates in climate marches such as “Fridays for Future” and what can we learn from it? *Energy Research and Social Science*, 84, 1-7. [102360]. <https://doi.org/10.1016/j.erss.2021.102360>

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Original research article

Understanding climate activism: Who participates in climate marches such as “Fridays for Future” and what can we learn from it?[☆]

Felix Noth^{a,b}, Lena Tonzer^{a,c,*}^a Halle Institute for Economic Research (IWH), Kleine Märkerstraße 8, 06108 Halle, Germany^b Otto-von-Guericke University Magdeburg, Germany^c Vrije Universiteit Amsterdam, The Netherlands

ARTICLE INFO

JEL classification:

J16
M14
Q50

Keywords:

Fridays for Future
Climate change
Trust

ABSTRACT

Young people are marching around the globe to ask for measures against climate change and to protect the environment. Using novel survey data, we ask who participates in such powerful movements and what can be learned from our findings. The survey was conducted in German and is based on answers from more than 600 participants. We find that survey respondents are less likely to participate in climate marches like “Fridays for Future” in case they trust more in (large) corporations suggesting a link between trust and climate activism. We also ask whether worries about climate change or attitudes towards more environmentally friendly behavior match their participation frequency in climate marches. Results reveal that respondents being more worried about climate change or the environment tend to participate more often in marches addressing these concerns. Similarly, participation in climate marches correlates positively with acting environmentally sustainable. Hence, our findings might be relevant for corporations in case they want to keep the support of young customers participating in climate marches.

1. Introduction

“What do we want? Climate justice. When do we want it? Now!”

This statement could be listened to during climate marches of the movement “Fridays for Future” (FFF). Started by Greta Thunberg in summer 2018, many young people went to the streets on Fridays asking for climate justice in light of severe damages to our environment with probably unprecedented consequences for the life of young generations. Only when having established a global movement in 2018/19, the Covid-19 pandemic started.¹ Nevertheless, young people showed continued commitment, making it more likely to change the political and social environment regarding climate-related questions and keep their active political engagement in the longer term [1,2].

In this paper, we intend to assess who participates in climate related movements like FFF and we discuss what can be learned from this social movement [3–5]. First, we ask who is behind such a movement like FFF while focusing on the role of gender and trust. Second, we ask whether participation relates to worries of the young generation about

climate change and aligns with answers about real-life behavior such as taking public transportation. Our analysis is based on survey data for more than 600 young individuals, while the survey was conducted in German. We surveyed in October 2020 and the sample includes respondents who never participated in such movements, who participated sometimes, often or always.

Results show that participation in FFF and similar marches is related to gender. We find that women are more likely to participate in such marches compared to men, whereas this result is only weakly significant. The role of gender is also reflected by the fact that the movement is headed by female leaders, like Greta Thunberg in Sweden, Luisa Neubauer in Germany, or Anuna De Wever in Belgium. This circumstance is unique compared to the usual division of leadership in politics, corporations, regulatory bodies, social facilities, and even cultural or academic institutions, where women tend to be underrepresented [6–8].

Further, we look at the link between trust and participation in climate marches in our sample. Those survey respondents who have more trust in (large) corporations and decision-makers in the private

[☆] We are grateful to two anonymous referees for their very helpful comments. All errors are our own. We do not have conflicts of interests. No external funding was obtained for this research.

* Corresponding author at: Halle Institute for Economic Research (IWH), Kleine Märkerstraße 8, 06108 Halle, Germany.

E-mail addresses: felix.noth@iwh-halle.de (F. Noth), lena.tonzer@iwh-halle.de (L. Tonzer).

¹ See e.g. the website <https://fridaysforfuture.org/>. In November 2018, FFF strikes took place in 9 countries, while in 134 countries in March 2019, <https://fridaysforfuture.org/what-we-do/strike-statistics/list-of-countries/>.

sector are more likely to not attend FFF marches. We also present respondents questions on how they would react to (environmentally harmful) corporate fraud. Those respondents who would react stronger to such a corporate scandal by not planning to rebuy the firm's product also tend to be more likely to attend FFF events more often. Hence, there seems to be a relationship between lower values of trust in firms and climate-related activism.

Firms might be concerned by this result as well for the following additional findings. Regarding climate change concerns, we find that respondents who are more worried about climate change and environment-related questions tend to participate more often in FFF-like marches. Our results further show that participation in climate strikes correlates with acting environmentally sustainable. For example, respondents who replied that they care more about organic food or more frequently use the train, also attend more climate marches.

The study relates to the following literature. Very generally, studies by Boucher et al. [3], Martiskainen et al. [4], and Memmott et al. [5] have investigated the characteristics and motives of activists participating in movements such as FFF, Extinction Rebellion, and others. Based on interviews in six cities with 64 climate strikers in four different countries, Martiskainen et al. [4] find that protesters' knowledge, actions, and emotions about climate change and their incentives to participate in the strikes vary widely. Boucher et al. [3] further indicate that this heterogeneity varies with demographic groups but that all activists want a faster and stronger reduction of greenhouse gases. Memmott et al. [5] find similar heterogeneity in political attitudes of energy activists in the United States who are also younger, more demographically diverse and concerned about local environmental conditions than more traditional political activists.

The first and closely related strand of literature discusses the role of gender for environmental activism. For example, Alan et al. [9] focus on the role of social confidence as an important factor in being willing to make decisions on behalf of others. Their results show that, especially in adolescence, women lose such "social confidence" compared to men despite their abilities to act as leaders. The FFF movement dynamics could reduce such negative trends by generating female role models already within the group of young adolescents. For example, it is shown in the literature that the degree of women emancipation, the representation of women in leading positions, and informal exchange between women are key drivers of women's share in leading positions [8,10–12]. Consequently, the FFF movement gives a good example of female leaders' role in motivating women to become active.² These dynamics could have long-run effects, for example, in case this generation of young women continues to be more likely and willing to stay in leading positions.³ Case study evidence by Allen et al. [16] argues that women's leadership in the transformation towards a more sustainable energy system is critical in making these systems more equitable, resilient, and sustainable.

A second strand of closely related literature emphasizes the role of trust. Trust is a relevant factor shaping social interactions and economic outcomes [17,18]. Related literature shows that there can be a relationship between individuals' trust, corporate scandals, and economic outcomes [19–21]. A third strand discusses factors that drive environmentally friendly behavior and consumption. Johe and Bhullar [22] assess the role of psychological factors explaining consumption of organic products. Joshi and Rahman [23] focus on young and educated consumers to analyze what drives sustainable consumption decisions. It is not evident that environmental concerns result in pro-environmental behavior. For example, Tam and Chan [24] put forward

² Female leadership can thus encourage other women to act pro-environmentally next to social ties [13].

³ For example, Bertrand et al. [14] show for Norway, that quotas on female board members did not initiate a sustainable process but only helped those who became board members due to the quota. Amore et al. [15] find that education affects CEO's environmental decision-making.

that lacking trust in others and fears of free-riders can contribute to such a divergence. Finally, this study relates to the role of social movements for e.g. firm outcomes. For example, Lins et al. [25] find that less-discriminatory firms benefited in terms of firm value during the #MeToo movement. McDonnell and Werner [26] show that the sociopolitical environment can affect interactions between firms and politics.

This study is structured as follows. In Section 2, we describe the survey data. Section 3 presents results regarding the relation between gender and trust with participation in climate marches. The final Section 4 draws conclusions.

2. Survey data

Given that information on participation in climate marches linked to further characteristics of participants is not readily available, we conducted our own survey. The focus is on young respondents because this is the target group of the most prominent and current climate movement, "Fridays for Future".

We conducted the survey via the MaXLab of the University of Magdeburg, which has a pool of students across all disciplines who can be contacted to participate in lab experiments or online surveys. The experimental laboratory has invited 3,791 individuals to participate in the survey.⁴ Questions have been asked in German and we conducted the survey in October 2020. We obtained valid and fully completed surveys for 612 persons. The exact wording of the questions of interest and how the answer possibilities have been presented to the respondents can be found in the supplementary appendix (see Table A1). A description of all variables used in this study and taken from the survey questions as shown in the previous table can be found in Table A2.⁵

Table A3 shows the survey's composition across gender and age category, revealing that we have an equal distribution across sex. The mean age in the sample is close to 25 years, which ensures that we are looking at a sample of individuals addressed by the FFF movement, which is "youth-led and -organised".⁶ A key concern within this pool of (student) participants is that mostly young people are included, making it difficult to obtain representative results for general economic interest questions. However, for our research, the pool's composition is advantageous as we are specifically interested in this age group. Pupils and young adults initiated the social movement, and they motivate young people of their generation to follow them.⁷

Survey questions have been divided into different sections. We collect key characteristics like gender and age. Additionally, we ask questions about trust in different entities, like family, friends, state, and firms. We also construct hypothetical questions about car manufacturers committing fraud and producing cars with higher emissions and we ask respondents about their future consumption behavior. Further, we collect information on the participants' worries about climate change and their behavior regarding climate-sensitive real-life consumption decisions. Most questions have four answer possibilities ranging, for example, from "no, not at all" to "extremely" (see Table A2). Basic summary statistics are provided in Table A4 and show as well that the sample is balanced as regards gender and an average age of 25. Further interesting patterns are that respondents seem to trust relatives and friends, on average, more than the state and private firms. Moreover,

⁴ The invitation mail contained a link to the survey and the selection of students who received a mail out of those included in the pool happened randomly by the laboratory.

⁵ For further information on the survey please see Hasan et al. [27], where we used a different part of the survey data to detect whether culture proxied by religion affects individuals' decisions after experiencing corporate fraud.

⁶ See <https://fridaysforfuture.org/what-we-do/who-we-are/>.

⁷ Given that respondents are not underage, no ethical issues arise. Yet, extending the study to younger individuals and comparing the results to the student pool might be interesting for future analysis.

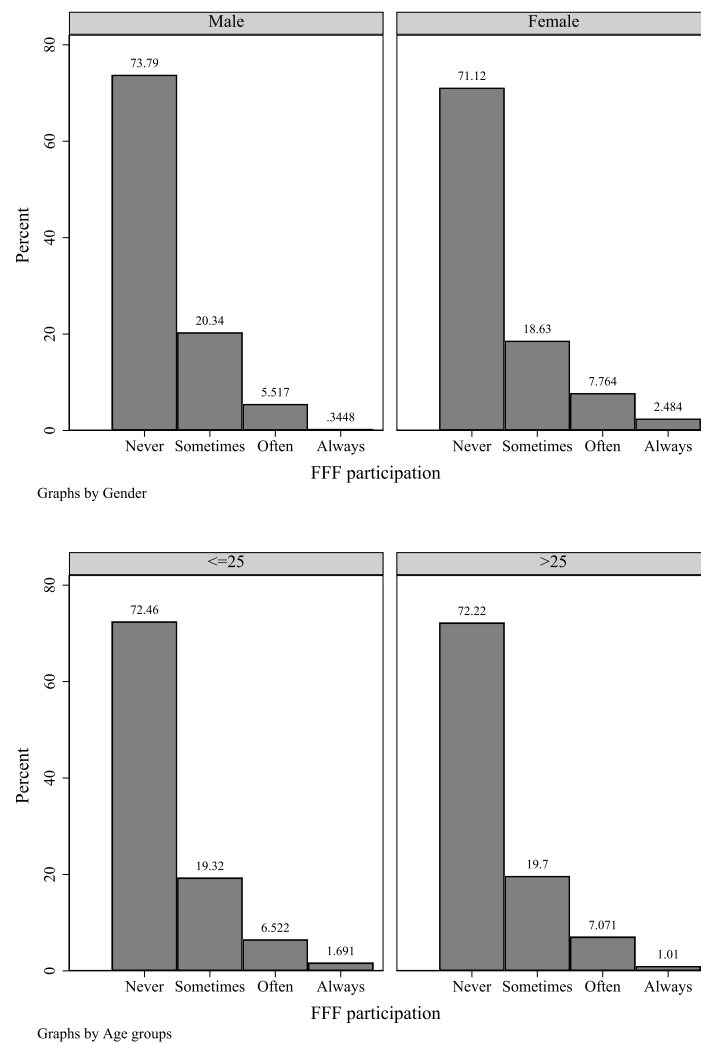


Fig. 1. FFF participation by gender and age.

The figure shows the percentage share of respondents choosing answer possibility “no, never”, “sometimes”, “often”, or “always” to the question about the frequency of attending FFF marches. The upper panel splits the sample in male and female participants. The lower panel splits the sample by individuals being younger/older than the average respondent, that is, the left part is for respondents younger than or equal to 25 years, the right part for respondents older than 25 years.

the statistics show that worries about fine dust values are, on average, less severe than about climate change in general.

In the following regression analysis and to ease interpretation, we reclassify answers into two categories for the questions with more than two answer possibilities. For example, survey respondents are asked whether they worry about climate change. Answer options include “no, not at all”, “somewhat”, “very” and “extremely”. We then code the variable to be one if the respondent answered “very” or “extremely”, and zero otherwise.

3. The role of gender and trust for climate activism

To understand who participates in FFF, we start with some basic descriptive statistics on key individual characteristics. Respondents have been identified to take part in the social movement depending on their answer to the question on “Have you already participated in marches for protection of the environment such as “Fridays for Future?””, which could be answered as: no, never/sometimes/often/always. Given that Fridays for Future is recently the predominant movement in this field, we conjecture that younger people mainly participated in that one.

Fig. 1 shows the fraction of individuals answering that they attend FFF marches never, sometimes, often, or always. It can be seen that women show a higher percentage when it comes to frequent

participation, which is in line with De Moor et al. [28], De Moor et al. [29] and Sommer et al. [30]. However, the figure gives only a first impression and we assess the role of gender in bivariate and multivariate regressions as well in the following. When we look at respondents below or above the average age, we do not see relevant differences in their FFF participation. The distribution looks quite similar for respondents being younger than or equal to 25 years (left) and for respondents older than 25 years (right).

To extend the analysis and establish relationships between a broader range of variables, we run regressions of the FFF outcome variable on gender and trust, as well as worries about climate change. We acknowledge that results are not causal but show correlations between participation in marches such as FFF and individual characteristics.

Table 1 reveals that the coefficient of gender is positive and (weakly) significant, indicating that women are more likely to attend the marches (Column (1)). While there can be different reasons behind this finding, such as women caring more about the environment or others, a supporting factor – as shown by prior and related studies – could be that the movement is led by a woman [8,10–12]. More research on the determinants of female participation in FFF marches is, however, needed to differentiate between the role of female leadership for female activism compared to other factors.

When it comes to trust, the picture is more diverse (see Table 1, Columns (2)–(5)). Survey respondents trusting more in their closest

Table 1
Regression: Role of gender and trust (in firms) for FFF participation.

	FFF participation (0/1)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Gender	0.044** (0.022)	0.044** (0.022)	0.043** (0.022)	0.045** (0.022)	0.038* (0.022)	0.037* (0.022)	0.034 (0.022)	0.044** (0.022)
Age	0.001 (0.041)	0.001 (0.041)	-0.003 (0.041)	0.000 (0.041)	-0.005 (0.041)	0.005 (0.039)	0.004 (0.039)	0.010 (0.039)
Trust relatives		-0.013 (0.042)						
Trust friends			0.083*** (0.013)					
Trust state				0.012 (0.023)				
Trust firms					-0.064*** (0.022)			
Buy product again						-0.080*** (0.022)		
Buy related product							-0.095*** (0.025)	
Buy product from another firm								-0.085*** (0.031)
Observations	612	612	612	612	612	612	612	612
R-squared	0.006	0.007	0.010	0.007	0.011	0.027	0.035	0.023

This table shows regression results of the dependent variable FFF participation on gender and age and variables related to trust (in firms). FFF participation is a dummy variable being one if the respondent goes often or always to FFF marches and zero otherwise. Gender takes a value of one for females. Age takes a value of one if the respondent is younger than/ or 30 years. Trust is a dummy variable that takes a value of one if the respondent mostly/ always trusts its counterpart. The product-related variables are one in case the respondent would mostly/ always repurchase the product. Robust standard errors are given in parentheses. See Table A2 for a detailed description of every variable.

***Indicate significance at the 1% level.

**Indicate significance at the 5% level.

*Indicate significance at the 10% level.

Table 2
Regression: Role of climate and behavior for FFF participation.

	FFF participation (0/1)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Gender	0.044** (0.022)	0.039* (0.022)	0.040* (0.022)	0.042* (0.021)	0.041* (0.022)	0.043** (0.022)	0.033 (0.022)	0.035 (0.021)
Age	0.001 (0.041)	0.001 (0.040)	-0.004 (0.040)	0.000 (0.041)	0.010 (0.040)	0.005 (0.039)	0.002 (0.039)	-0.007 (0.040)
Worried about environment		0.082*** (0.018)						
Worried about climate change			0.080*** (0.019)					
Worried about nuclear plants				0.010 (0.023)				
Worried about fine dust values					0.092** (0.038)			
Donation						0.086*** (0.023)		
Care about organic food							0.079*** (0.022)	
Take train								0.097*** (0.022)
Observations	612	612	612	612	612	612	612	612
R-squared	0.006	0.024	0.024	0.007	0.022	0.031	0.027	0.037

This table shows regression results of the dependent variable FFF participation on gender and age and variables related to worries about climate. FFF participation is a dummy variable being one if the respondent goes often or always to FFF marches and zero otherwise. Gender takes a value of one for females. Age takes a value of one if the respondent is younger than/or 30 years. The variables related to worries about climate are one in case the respondent is very/extremely worried. Donation is one in case the respondent has donated to an environmental non-profit organization. The variables Care about organic food and Take the train are one if the respondent answers to do so sometimes/often. Robust standard errors are given in parentheses. See Table A2 for a detailed description of every variable.

***Indicate significance at the 1% level.

**Indicate significance at the 5% level.

*Indicate significance at the 10% level.

friends seem to participate more in FFF-like marches (Column (3) of Table 1). However, respondents who have more trust in decision-makers in the private sector, such as boards of large firms, seem to have less incentives to join FFF; vice versa, those who trust less in this sector are more likely to participate in climate marches [Column

(5), see also 31]. This result aligns with another response related to the probability of rebuying a fraudulent firm’s environmentally harmful product. Specifically, we ask respondents about their attitude to buy a new diesel car, knowing that the producer “AUTO” has manipulated emission values of such cars. Respondents who answer to buy that car

Table 3
Robustness (all covariates).

	FFF participation (0/1)			
	(1)	(2)	(3)	(4)
Gender	0.044** (0.022)	0.030 (0.022)	0.032 (0.021)	0.024 (0.022)
Age	0.001 (0.041)	-0.000 (0.039)	0.006 (0.038)	0.006 (0.037)
Trust relatives		-0.036 (0.043)		-0.029 (0.043)
Trust friends		0.092*** (0.022)		0.069*** (0.025)
Trust state		0.014 (0.024)		0.006 (0.024)
Trust firms		-0.067*** (0.023)		-0.051** (0.025)
Buy product again		-0.012 (0.036)		0.009 (0.035)
Buy related product		-0.074** (0.035)		-0.061* (0.034)
Buy product from another firm		-0.045 (0.035)		-0.034 (0.033)
Worried about environment			0.019 (0.025)	0.018 (0.025)
Worried about climate change			0.035 (0.026)	0.025 (0.025)
Worried about nuclear plants			-0.037 (0.024)	-0.036 (0.024)
Worried about fine dust values			0.075** (0.038)	0.069* (0.038)
Donation			0.061*** (0.022)	0.056** (0.022)
Care about organic food			0.045** (0.022)	0.037* (0.022)
Take train			0.073*** (0.022)	0.060*** (0.022)
Observations	612	612	612	612
R-squared	0.006	0.050	0.082	0.101

This table shows regression results of the dependent variable FFF participation on gender and age and variables related to trust and climate change worries. FFF participation is a dummy variable being one if the respondent goes often or always to FFF marches and zero otherwise. Gender takes a value of one for females. Age takes a value of one if the respondent is younger than/or 30 years. The remaining variables are defined as in Tables 1 and 2. See Table A2 for a detailed description of every variable. Robust standard errors are given in parentheses.

***Indicate significance at the 1% level.

**Indicate significance at the 5% level.

*Indicate significance at the 10% level.

nevertheless once again (Column (6)), or buy a related product (car with gasoline engine) from the manipulating firm (Column (7)), or buy a similar product like the one that was manipulated but from another firm, i.e. a diesel car from another car producer (Column (8)), are unlikely to be seen in climate-related marches. Hence, individuals who indicate a lower probability to change their buying decisions following some news on environmental fraud, are also less likely to participate in strikes asking for more protection of the environment.

In Table 2, we shift the focus to worries about the environment and related behavior. It becomes evident that FFF participants seem to be much more worried about the environment, climate change, or fine dust values.⁸ Individuals are also consistent in their stated behavior: A higher frequency in FFF participation correlates positively with donations to environmental non-profit organizations, consumption behavior, i.e. respondents care about organic food, and the more frequent use of public transportation for traveling.

⁸ A group of scientists, “Scientists for Future”, has written a statement to support the concerns raised by protesting young people based on scientific evidence [32] (seereporthere).

Table 4
Differences in individual attitudes & behavior across FFF and non-FFF participants.

	FFF participants	Non-FFF participants	p-value
<i>Individual traits</i>			
Gender	0.66	0.51	0.05
Age	0.92	0.92	0.96
<i>Trust and firms</i>			
Trust relatives	0.90	0.92	0.69
Trust friends	1.00	0.96	0.15
Trust state	0.50	0.48	0.74
Trust firms	0.02	0.11	0.05
Buy product again	0.24	0.52	0.00
Buy related product	0.32	0.63	0.00
Buy product from other firm	0.58	0.78	0.00
<i>Climate and behavior</i>			
Worried about environment	0.94	0.72	0.00
Worried about climate change	0.92	0.70	0.00
Worried about nuclear plants	0.42	0.36	0.44
Worried about fine dust values	0.32	0.15	0.00
Donation	0.72	0.43	0.00
Care about organic food	0.78	0.50	0.00
Take train	0.78	0.45	0.00

This table shows averages across personal trait variables and other survey variables for the subsample of participants taking part in FFF often or always and the subsample taking part only sometimes or never. The last column shows the p-value of differences in means tests. The sample is composed of 612 survey participants. The variables are all transformed into dummy variables before calculating mean values. Gender takes a value of one for females. Age takes a value of one if the respondent is younger than/or 30 years. Trust is a dummy variable that takes a value of one if the respondent mostly/always trusts its counterpart. The product-related variables are one in case the respondent would mostly/always repurchase the product. The variables related to worries about climate are one in case the respondent is very/extremely worried. Donation is one in case the respondent has donated to an environmental non-profit organization. The variables Care about organic food and Take the train are one if the respondent answers to do so sometimes/often. See Table A2 for a detailed description of every variable.

To corroborate these results, we conduct robustness tests using first a multivariate model including all covariates at a time (Table 3).⁹ Across all our specifications, the signs of the coefficients stay robust, which supports the detected relationships. However, in multivariate regressions, the coefficient of gender turns insignificant. This result suggests that the more relevant drivers are those related to trust and worries about the environment.

Second, we vary the method of analysis and visualize pairwise correlations between the answer to the FFF participation question and another variable (Fig. 2). The correlations confirm the established pattern: Female correlates positively and significantly with FFF participation. Higher trust in firms, in contrast, correlates negatively and significantly with attendance of climate marches such as FFF. Positive and significant correlations appear between worries about climate-related issues and participation in climate marches and all variables that capture respondents’ answers on how they will (possibly) behave.

Third, we compare individual characteristics and answers between the group of people responding to attend marches such as FFF often or always and the group having answered never or sometimes by conducting difference in means tests (Table 4). Here we find a significant difference between survey respondents who often or always attend FFF-like marches versus others when looking at gender. Significant differences in the same direction as previously established also occur for trust in firms, worries about the environment, and environment-related behavior.

⁹ Robustness tests keeping the original scale of the covariates can be found in the supplementary appendix (Tables A5–A6)

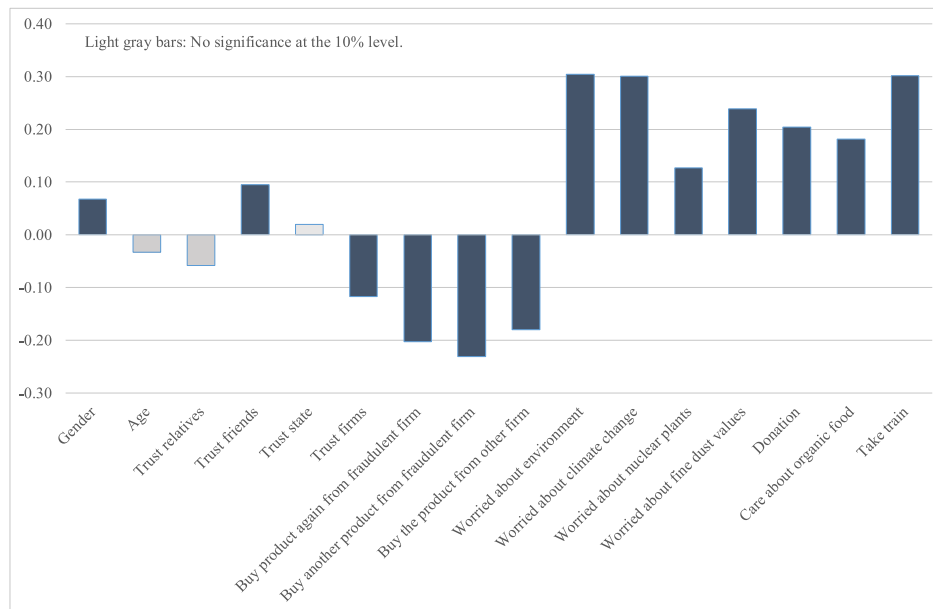


Fig. 2. Correlations between FFF participation and individual attitudes & behavior.

The figure shows pairwise correlations between the FFF participation variable coded between 1 (=“no, never”) and 4 (=“always”) and individual traits as well as answers to questions on trust (in firms), climate and behavior. See the data description in Table A2 for the definition of the variables. Light gray bars indicate no significance at the 10% level.

4. Discussion and conclusion

This short paper shows three features of climate-related movements such as “Fridays for Future (FFF)” based on survey data collected in Germany in 2020 for more than 600 young individuals.

First, there is some (albeit weak) evidence that women are more likely to participate in climate marches. This result points towards relevant implications for leadership and diversity in general. Women are still underrepresented in boards, political or educational institutions. Positive spillovers of role models on other women are thus highly needed to foster diversity in decision making bodies. Assessing the role of (female) leadership and participation in social environmental movements as well as possible spillovers effects seems an interesting avenue for future research. Second, higher trust in corporations significantly correlates with less frequent participation in climate marches. Hence, corporations might consider becoming more environmentally sustainable when aiming to keep the trust and support of young customers taking part more frequently in climate strikes. This is important because, third, we find that young people participating in climate-related marches such as FFF are more likely to show some environmentally friendly behavior regarding consumption, public transportation, and donation.

Hence, while younger generations might have limited access to power in political institutions or corporations, changes in their behavior might have economic and political implications. For example, changes in the consumption behavior of parts of the younger generation could have implications for incumbent firms and social movements might impact firm outcomes. Obviously, pressure to move towards more environmentally friendly technologies and products is only significant if a sizable part of young adults values it and individuals’ stated behavior maps into real actions. Further research might be useful to understand the relevance of such dynamics.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary data

Supplementary material related to this article can be found online at <https://doi.org/10.1016/j.erss.2021.102360>.

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