

Elitism, trust, opinion leadership and politics in social protests in Germany[☆]

André Calero Valdez, Johanna Kluge & Martina Ziefle

Chair of Communication Science, Human-Computer Interaction Center

RWTH Aachen University, Germany^a

^aCampus Boulevard 57, 52074 Aachen, Germany

Abstract

Energy infrastructure projects often bring along protests. Protests as a form of political participation reveal perceptions of locals regarding a specific project. However, it is still unclear who protesters are and what drives them. Specifically, the attitude towards protest has not been extensively studied. We conducted an online survey study with 464 participants and used partially-least squares structural equation modeling to identify antecedents to protest attitudes. We included opinion leadership, trust in institutions, political efficacy and demographic factors in our model to determine possible causal relationships between these factors. We found that protest attitude is predominantly influenced by income, protest experience and political efficacy. No direct association was found for trust in institutions and opinion leadership.

Keywords: energy infrastructure, protest attitude, opinion leadership, political efficacy, fake news, post-truth politics, filter-bubbles

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1. Introduction

When novel forms of energy generation (e.g., wind turbines, geothermal energy, biogas utilization) are realized, somebody will complain; somebody will protest. Especially, the associated infrastructure planning as well as the rollout of energy technologies within urban environments attracts public attention and often 5 public criticism and resistance. The protests are not limited to specific energy forms and infrastructure planning projects. They can be observed in geothermal energy (Dowd et al., 2011; Kowalewski et al., 2014; Zaunbrecher et al., 2018), but also in wind power plants (Devine-Wright, 2005; Wolsink, 2000), bio gas (Wallquist et al., 2012; Emmann et al., 2013), hydrogen technology (Zimmer & Welke, 2012), and transmission lines (Devine-Wright & Batel, 2013; Atkinson et al., 2004; Soini et al., 2011). In recent years, 10 social science research has concentrated on examining social, personal, economic, and organizational factors that are related to the public acceptance of sustainable energy technologies and that might be responsible for a successful technology diffusion and efficient adoption within communities. In the meanwhile, a considerable body of knowledge is prevailing about the role on public perception of user diversity (Huijts et al., 2012), siting preferences and place attachments (Zaunbrecher et al., 2017; Manzo & Perkins, 2006), information and 15 communication duties (Stirling, 2008), and policy interventions (Wolsink, 2010).

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*Corresponding author

Email address: calero-valdez@comm.rwth-aachen.de (RWTH Aachen University, Germany)

Protests against energy infrastructure often occurs because stakeholders, whose acceptance is critical, are not involved in the planning process on time (Perlavičiute et al., 2018). Often policy makers aim at “resolving” possible conflicts and reducing public resistance. In an open and free democracy, protest in general is a form of political participation. It is an essential part of the modern democratic values. Protests and their varying forms evolve along with changes and transformation processes in society (see also: Giordano et al. 2018 in this special issue). This includes technical progress and the resulting social development, and changes. As such it has the potential to positively change social conflicts (Mouffe, 2000). In the case of renewable energy projects, protest as a form of participating in the development of such projects can be integrated through participation and communication (Cuppen, 2018). One must note that acceptance and protest are not necessarily on the opposite ends of the same spectrum when it comes to energy infrastructure. People often accept the technology globally but resist local implementation for multiple localized reasons (Zaunbrecher et al., 2016). In this case, participation and a transparent two-way communication play a large role (Kalkbrenner & Roosen, 2016), just like consistently integrating different approaches to participation across levels (Fraune & Knodt, 2017). Acceptance has been investigated with regard to its different facets (Wüstenhagen et al., 2007; Dermont et al., 2017). Acceptance of energy projects has been investigated in general (Zaunbrecher & Zieffle, 2015) and regarding contrasting contexts (Zaunbrecher et al., 2017). However, research on protest and its individual motivations and attitudes mostly focused on one specific protest context or topic (e.g., Huijts et al. 2014; De Groot & Steg 2010). Protest relating to renewable energy projects are on the one hand known for occurring in the social divide between individual beliefs and concerns, and on the other hand for societal and global challenges, such as climate change. Citizens living close to large scale energy projects may feel concerned because of possible negative effects such as e.g. noise pollution during the construction phase, or the loss of value of property. However, on a global perspective the benefits are large, while the overall costs are relatively low. On the individual level the perceived benefits are small, while the costs are very high. This makes it more difficult to bear those perceived costs (Althaus, 2012). Understanding when protest arises, who the key stakeholders are and how to address them becomes crucial when planning novel forms of energy generation.

1.1. Applicability of our results

In this article we aim to understand the antecedents of protests and their connections with opinion leadership, distrust in elites, and political efficacy as well as their interplay with the thematic field in which they are embedded. We use a German sample to limit the effect of cross-cultural differences towards protest. However, the method is extensible to other cultural contexts as well.

Protest itself is a phenomenon that often occurs in the context of energy projects. In this context—and following earlier work like Cuppen (2018)—we see protest as a form of social participation and thus as a strong resource in the development of energy projects. As such it is necessary to understand the nature of protest and its influencing factors. We suggest that a comparison of protest attitudes and the willingness to protest in different contextual areas could be helpful to find out more about the nature of protest. This will in turn help to understand protest as a social phenomenon in the energy context: do people who protest against large scale projects differ from people who protest against climate change?

2. Theoretical Background

Protest is a social phenomenon. It is a social process aiming at societal change, charging grievances and customizing relevant changes in society. As such, it is a form of political participation. Furthermore, it is a form of communication: Every protest has a message directed at a recipient and has an appellative character (Luhmann, 1996). Just like the definition of protest is not clearly set and covers its own field of research, the influencing components of protest are inconclusive. While some theoretical approaches focus on the structural aspects of protest (Kitschelt, 1986; Meyer & Minkoff, 2004) others see the involved and available resources (such as money, time and human capital) as the primary explanatory factor (Klandermans & Oegema, 1987; McCarthy & Zald, 1977). In addition, other approaches focus on the emotional and motivational components of protest behavior (Van Stekelenburg & Klandermans, 2013).

In this paper, we focus on the individual self-concept and demographic properties of individuals and their effects on protest behavior. Also, the general attitude towards protest regarding different thematic areas and their influence on protest behavior is covered. Moreover, we will focus on the distrust in elites, political efficacy, opinion leadership and demographic data and refer to their role in the context of protest.

2.1. Distrust in Elites

The political system is not always the recipient of protest (communication), nor are politicians. In times of globalization and a complex world the counterpart of protest is often not easy to define for those who oppose something. In times of blurring boundaries between nations, political decisions and decision makers, decisions are not only made based on national democratic processes. Interest groups, global players and elites are gaining influence and political processes are getting more obscure. This is called post-democracy (Crouch, 2008). This term describes that stakeholders, who have not been democratically elected, influence political decisions. Consequently, distrust in elites arises in the general public. Distrust is not a new concept in this context. There has been a broad range of discussions about distrust and politics and the accountability of decision makers (e.g., Parry 1976). The concept of post-democratic distrust in elites integrates specific characteristics of today's societal challenges such as changes in democratic processes and political legitimization of decisions and decision makers (Crouch, 2008).

For that reason, as distrust leads to a critical perception of decision makers, the probability of protest increases in society. Thus, distrust in elites is one possible motivation to engage in protests and should consequently be integrated when examining protest. One major question in research on protest is why some people engage in protest and others do not. Obviously post democratic conditions concern the general public, but not everybody protests. Hence, next to distrust there have to be more factors influencing protest.

2.2. Political Efficacy

One concept that is often discussed in protest research is political efficacy. This concept ranks as a major contributor to engaging in political participation and thus political protest. Political efficacy describes a person's belief, that his or her acting within a political system could lead to change and that the political system offers enough leeway for change. Thus, a person with high internal political efficacy believes in their own ability to act within a political system, understands political processes and achieves change by their behavior (Campbell et al., 1954; Schulz, 2005; Van Zomeren et al., 2008). Internal political efficacy is an indicator for a well-functioning democracy, because it is a basic premise for active political participation and thus protest (Wright, 1981). Political efficacy also has an external component. External political efficacy is the feeling, that the responsible parties within a political system act responsibly and work for the common good. While the internal political efficacy might be stable over a person's lifespan, external efficacy varies regarding external factors such as government, political system, and political climate (Balch, 1974). Political efficacy also has a cynical dimension. Cynical people do not believe that they can make a difference. They also do not believe that the people in charge act for the common good. This includes feelings of resignation and frustration with politics (Schulz, 2005). Several studies provide empirical evidence that there is a relation between political efficacy and participation in political action (Niemi et al., 1991). Thus, efficacy is a factor to consider when it comes to the examination of protest. Also, there is empirical evidence that political efficacy is related to demographic factors, such as the level of education of a person (Niemi et al., 1991).

2.3. Demographic data

Studies in Germany examining protest participants and their characteristics found that protesters are often well educated and middle-aged (Norris et al., 2005; Van Aelst & Walgrave, 2001; Walter et al., 2013). This is primarily the case in the context of protest forms like demonstrations and local action groups (Walter et al., 2013). These demographic characteristics of typical protesters can be explained by structural conditions of protest. To engage in protest, education and knowledge to understand the often complex protest issues, are advantageous. To deal with terminologies, official agencies and administrative issues could discourage people with a lower educational level, as has been suggested by some authors (Van Aelst & Walgrave, 2001; Walter et al., 2013). Therefore, well educated people are structurally in a better position to place their topics.

Those observations about the structure of typical protesters suggest that there is a structural unfairness in political protest to the detriment of less educated people (Bentele et al., 2014; Van Aelst & Walgrave, 2001; Walter et al., 2013).

Internet and especially Social Media changed communication and information structures (Schroeder, 2018). As protest is a phenomenon related to the current developments of social and societal structures, protest conditions are also changing with the evolution of communication and information structures. Thus, some authors suggest that the influence of education will be less important when catching up about any topic is as easy as modern media suggest. Modern media provide information compiled by algorithms filtering data based on personal profiles. As a consequence, people only perceive information based on their past information behavior and thus, so called filter bubbles may emerge. This means that people only get access to a small part of information, framed by past information searches. Thus, filter bubbles may be the base for opinion building and lastly protest. Therefore, it is important to understand the interplay of opinions, believes, attitudes and protest. As a background for this, the role and influence of the thematic area and its influence and relation to protest is an important research topic. Next to that, the role of information in protest and how information about protest topics are distributed is another relevant research question.

2.4. Opinion Leadership

Therefore, another important factor to include in the examination of protest is how information is received and imparted in the context of a protest . Based on the increasing distrust in elites, personal information may gain importance in a trustful and reliable information and opinion building process. As Katz and Lazarsfeld first investigated, information flows through opinion leaders (Lazarsfeld et al., 1948). Opinion leaders receive information about a specific topic and based on that spread their opinion in their social environment. For that reason, the opinion leaders are an important part of opinion shaping in society and thus of agitating interest in thoughts about protest. Opinion leaders are characterized by an above average social interaction and communication, a more and targeted media consumption and their perceived competence by their social environment (Lazarsfeld et al., 1948; Nisbet & Kotcher, 2009; Weimann, 1994). These characteristics could also be found in an online context of information, communication and interaction (Karlsen, 2015).

Opinion leaders are a research subject that is often used, especially in the political context. Relations between political self-efficacy (Gnambs & Batinic, 2012; Shah & Scheufele, 2006) and political participation (Karlsen, 2015; Shah & Scheufele, 2006) have been observed. Therefore, opinion leadership might be an influencing factor in explaining protest intention as well as protest behaviors.

2.5. Thematic Area of Protest

As we have seen, information plays an important part in understanding protest. Consequently, the question how the topic of protest influences protest behavior and the attitude towards protest is another relevant research topic in understanding protest. Several studies examined in long term protest-event-analysis how protest issues changed over time. Those studies saw three main peaks of protest in Germany. The first could be observed in the late 1960s. Within this protest cluster the main issues were, for example, change of society, education and peace, while in the 1970s ecological topics like the anti-nuclear movement emerged. In the 1990s the main protest topics were democracy and immigration, which was mainly caused by the reunification of Germany (Hutter & Teune, 2012). While these observations show a conversion in protest topics depending on the historical context, there are only few studies that compare actual protests and their participants with each other and those studies mainly focus on demographic data of protesters rather than more specific motivational or personal concepts of the participants (Daphi et al., 2015). Thus, there are only few indicators as to how protest topics shape protest participation, or how the attitudes towards protest diverge between protest domains.

In summary, protest is a complex phenomenon. The understanding of personal and motivational factors of protesters, as well as influencing attitudes and the role of protest issues, have not been adequately researched. Thus, the focus of the present paper will be on the investigation of political efficacy, distrust in elites, opinion leadership, demographic data and the protest thematic area. For the latter we especially compare energy-related topics with other anchoring domains (i.e., animal rights, democratic values, etc.). In light of

the filter-bubble phenomenon that provides a feedback loop regarding institutional trust and in particular political cynicism, it is becoming increasingly important to understand the importance of these factors (see Figure 1).

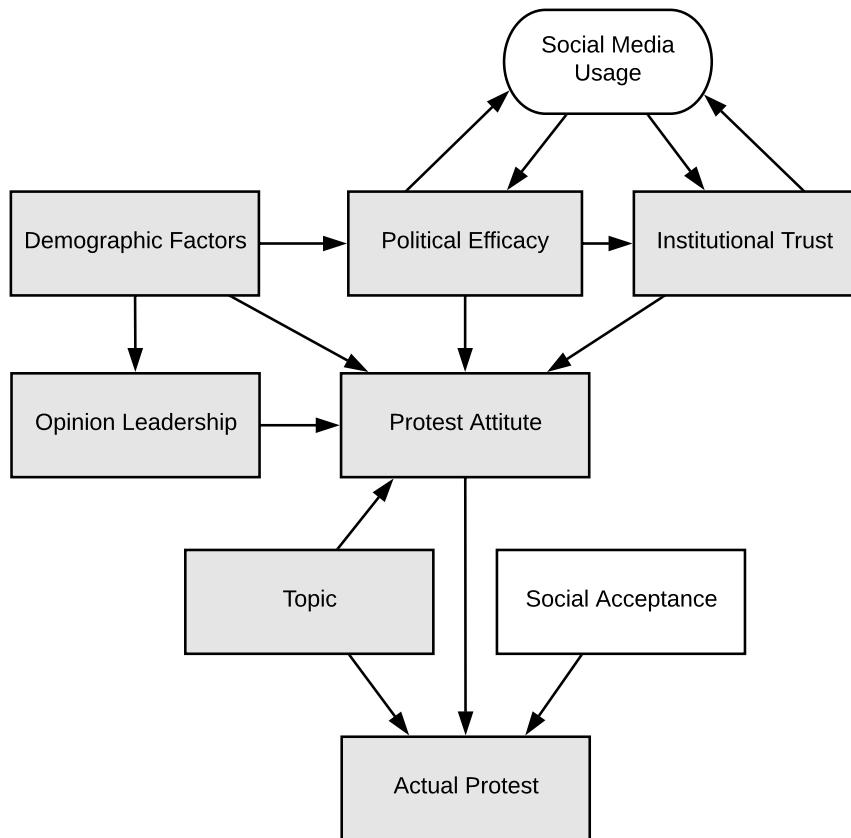


Figure 1: Theoretical Framework: Whether actual protest occurs depends on topic and social acceptance of the specific technology. However, the individual protest attitude determines the individual influence on the actual protest.

3. Method

In order to understand who will participate in protests, we conducted a questionnaire study with 464 participants. In order to collect a broad sample national-wide, we conducted an online questionnaire. The survey data was collected in the summer of 2017 in Germany using convenience sampling and snowball sampling. Participants volunteered to take part in the survey and were not gratified for their efforts. In the beginning of the survey, detailed information was given about the purpose and the aim of the study. We also stressed that participants should feel free to comment on the topic and to openly share opinions. In addition, in line with privacy standards in empirical studies, we let the participants know that none of their answers can be referred to them personally.

3.1. Measuring Instrument

We assessed the following variables using the following items. As demographic data we assessed age, gender, and the level of education. We used the opinion leadership scale by Childers (1986) to measure how much an individual identifies as an opinion leader (5 items) from their own perspective. We measured political efficacy in its three sub-scales (internal, external, cynicism) using three items each (Schulz, 2005).

To assess to what degree a person already distrusts various institutions we measured trust in journalism (2 items, see Table 1), conspiracy thinking (2 items), distrust in politics (2 items), and trust in elites (3 items).
 180 These items were measured on a six-point Likert scale (1: strongly disagree, 6: strongly agree). We measured the experience in protesting by assessing in how many different forms of protest a person has participated (7 possible forms: petition, letters, demonstration, strike, public, citizens' initiative, other). Lastly, we assessed the motivation for participating in a protest using three different sentence structures for the following topics.

- 185 1. Protection of the Environment
- 2. Animal Rights
- 3. Social Injustice
- 4. Political Decisions (TTIP, Migration, etc.)
- 5. Climate Change
- 6. Peace
- 190 7. Large Infrastructural Projects
- 8. Nuclear Power
- 9. Human Rights

For each of these topics we asked participants whether they felt that it is an imperative to protest (must protest), whether others should protest for this topic (others should), and whether they thought it was worthwhile protesting for this topic (worthwhile). Those attitudes were measured on a six-point Likert scale (1: strongly disagree, 6: strongly agree).

Table 1: Scales and items used to measure institutional trust.

Item-text (translated from German)	Scale
Politics only follows economic demands and does not address the desire of the people.	Distrust in politics
I see no benefit in elections, parties do what they want anyways.	Distrust in politics
In politics many things happen behind closed doors.	Conspiracy Thinking
Large corporations only follow their own interests.	Conspiracy Thinking
Journalism in Germany provides objective news about current topics.	Trust in Journalism
Journalism in Germany is easily manipulated. (-)	Trust in Journalism
I trust the judgment and decisions of board members and business leaders.	Trust in Elites
I trust the judgment and decisions of leaders in science, e.g., Professors.	Trust in Elites
I trust the judgment and decisions of leading politicians in Germany.	Trust in Elites

3.2. Description of the Sample

From the 464 participants which volunteered to take part in the study, 190 participants were male (40.9%) and 274 were female (59.1%). The age range was wide, ranging from 13–85 years ($M = 30.6$, $SD = 13.1$).
 200 Males in our sample were slightly older ($M_{male} = 32.4$, $M_{female} = 29.4$, $t(466) = -2.48$, $p < .05$). The sample was of relative high education. Out of 464 participants, 217 have a university degrees, 63 completed professional training, 145 have a high-school degree (Abitur), 25 have finished German Realschule and 14 have finished German Hauptschule (the lowest school graduation). Only 4 participants did not finish any school.

205 3.3. Statistical Methods and Procedures

To understand our data, we use descriptive statistics and report 95%-confidence intervals on all point estimates. When we use null-hypothesis-significance-testing we set our level of significance to $\alpha = 0.05$. We use parametric tests when applicable, but test non-parametric tests, when assumptions of normality are violated. However, since parametric tests are very robust, especially given our sample size, we report the **210** parametric test results. Only when both tests differ, non-parametric results are reported. We use hierarchical cluster analysis in SPSS using ward linkage to determine the optimal number of clusters for both variable and case-based clustering. For case-based clustering, we then use the optimal cluster-count in *another k-means clustering to obtain a more simplified view of the cluster-centroids*.

We use partial-least-squares structural equation modeling (PLS-SEM) in Smart-PLS 3.0 (Ringle et al., **215** 2015) to understand the causal relationships of the antecedents of protest attitude. The benefit of PLS-SE modeling lies in the possibility for causal inference in modeling. Directed paths test causal reasoning behind connected latent factors. However, a fitting model does not necessarily prove causal relationships, as other models could also fit the data. PLS is used in exploratory research and to determine key drivers for outcome variables—which determines protest attitude in our case (Hair et al., 2011). For the PLS-SE model we **220** report the path-coefficients, the r^2 was adjusted for the predicted variables in the inner model. We denote the significant relationships from the bootstrapping procedure. We report Cronbach's alpha for all scales and report the average explained variance as quality measures of our model (see the Appendix for factorial analyses). We use PLS-SEM because of our exploratory approach. In PLS-SEM different hypotheses can be tested by removing/adding individual paths depending on the applied t-tests in a bootstrapping procedure. **225** One must note that to confirm the findings from exploratory structural equation modeling confirmatory analyses (e.g., using CB-SEM) are needed (Hair et al., 2011).

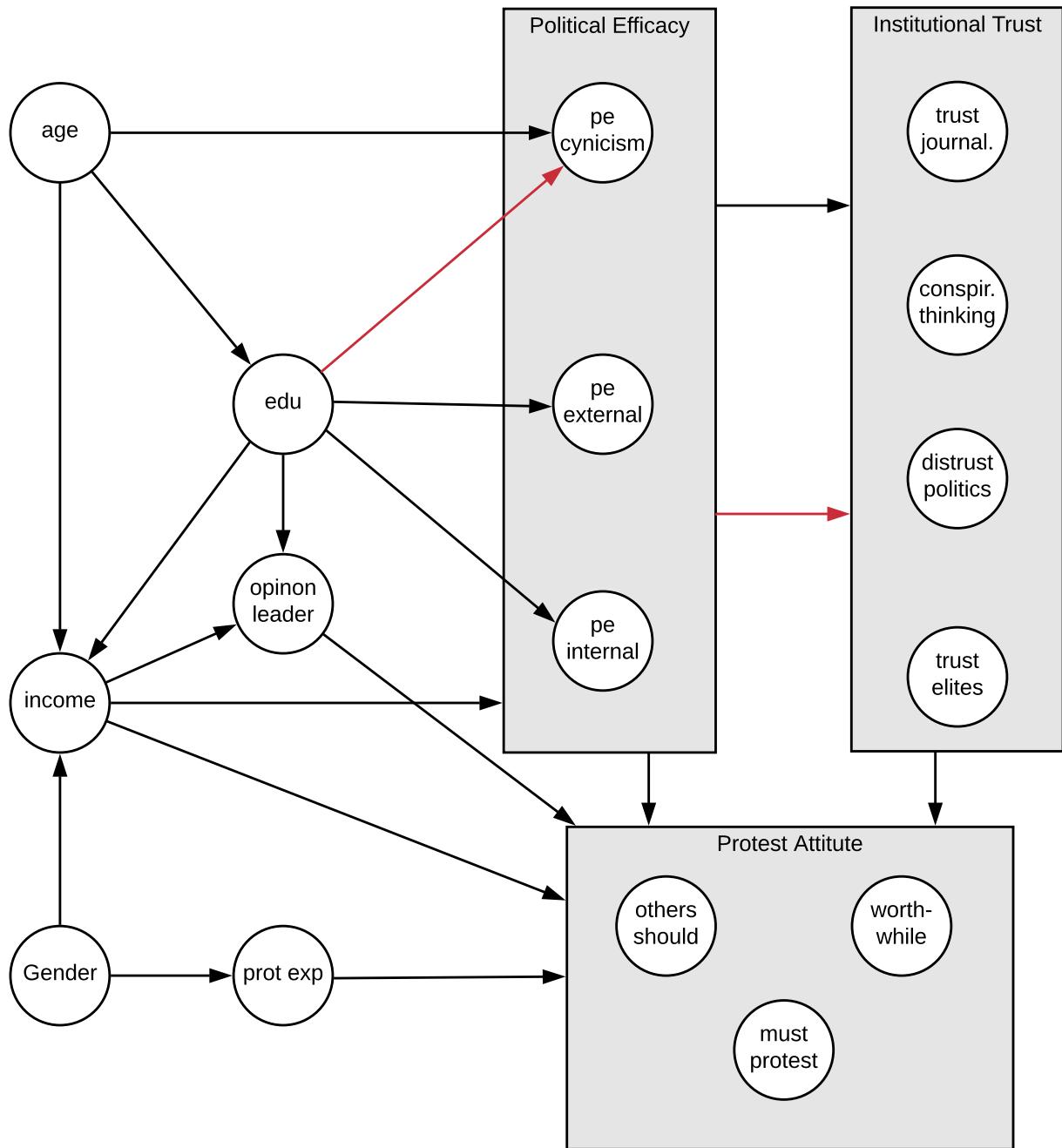
In order to find our explanatory model, we first model relationships found in previous work. We assume that with increasing age, both education and income increase. (see also Figure 2). Further more, people of higher education are expected to be opinion leaders, especially if they have a larger income. We assume that **230** being female has a negative effect on both income and protest experience. The general hypothesis behind our work is that we assume that demographic factors determine perceptions of political efficacy, which in turn affect attitudes towards factors of institutional trust (e.g., high political cynicism increases distrust in politics). We assume that actual protest attitude is determined by both institutional trust and political efficacy. We then test various hypotheses by fully connecting the variables of interest. Afterwards, we remove **235** connections that are non-significant using bootstrapping procedures. In the end our inner model only contains significant relationships. All indicators that were not significant in predicting the scale, were also removed. We tested the discriminant validity of all latent factors by measuring the heterotrait monotrait (HTMT) ratio described by Hair et al. (2011). This simulation-based measure has shown better reliability than the Fornell-Larcker criterion or cross-loadings. All factors had lower HTMT ratios than 0.9 (see Table A.3 in the **240** appendix) indicating that our indicators indeed measure separate latent factors.

4. Results

We begin by describing the results from a descriptive point of view. When looking at the protest experience in our sample, we found that the average amount of experience in different forms of protest was relatively low with $M = 1.88$ ($SD = 1.08$, on a scale from 0 to 7). Participants were rather cynical **245** about political participation and showed a medium score of $M = 3.94$ ($SD = 0.93$) in the political efficacy cynicism scale. The participants also showed a low external political efficacy ($M = 3.2$, $SD = 0.88$) and medium internal political efficacy ($M = 3.64$, $SD = 1.0$). This indicates that the sample generally felt a low power in participation in political affairs. On average, the opinion leadership scale showed a value of $M = 2.83$ ($SD = 0.8$), indicating that most participants did not feel like opinion leaders. When looking at **250** the institutional trust it was interesting to see that participants showed a low trust in journalism ($M = 3.18$, $SD = 0.95$), a low distrust in politics ($M = 3.39$, $SD = 1.11$), a low trust in elites ($M = 3.18$, $SD = 0.88$), but a high tendency towards conspiracy thinking ($M = 4.77$, $SD = 0.85$).

We found gender differences for opinion leadership ($t(438) = 2.437$, $p < .05$) indicating that males identify more strongly as opinion leaders ($M = 2.91$) while women do less so ($M = 2.72$). Similarly, women showed

Hypothesized Inner Model for Protest Attitude



Legend:

Black arrows indicate positive hypotheses, red arrows indicate negative hypotheses

Figure 2: Hypothesized interactions of our variables. Arrows that run from individual variables to gray boxes indicate that we hypothesize that all target variables are influenced by the source variables.

255 lower scores in internal political efficacy ($M = 3.35$) than men ($M = 4.07$, $t(424) = 7.836$, $p < .001$). All other measures showed no gender differences.

When looking at the topics for protest, we see that these are evaluated quite similarly (see Figure 3). The imperative to protest is highest for human rights, and lowest for large infrastructural projects. This matches the belief on whether protesting this topic is worthwhile. Protesting against large infrastructural projects is considered not to be worthwhile. Interestingly, when indicating whether others should protest, large infrastructural projects receive the highest rating. This indicates that this topic is generally considered to be important to protest against, but people do not perceive, that they could be successful by protesting themselves regarding the specific topic. However, low external political efficacy reduces whether protests are worthwhile in all topics. Human rights and peace are topics for which the participants see a strong imperative and do also not strongly believe that others should protest instead of themselves. Protesting these topics seems to be perceived as more effective compared to other topics. In general, the differences on protest behavior and protest attitudes are relatively low between the topics.

When using hierarchical clustering using Ward Linkage we find four clusters in the variables. The first cluster encompasses the topics: protection of the environment, climate change and nuclear energy. The second cluster includes social injustice and animal rights, the third cluster is peace and human rights, and the last cluster is political decisions and large infrastructural projects.

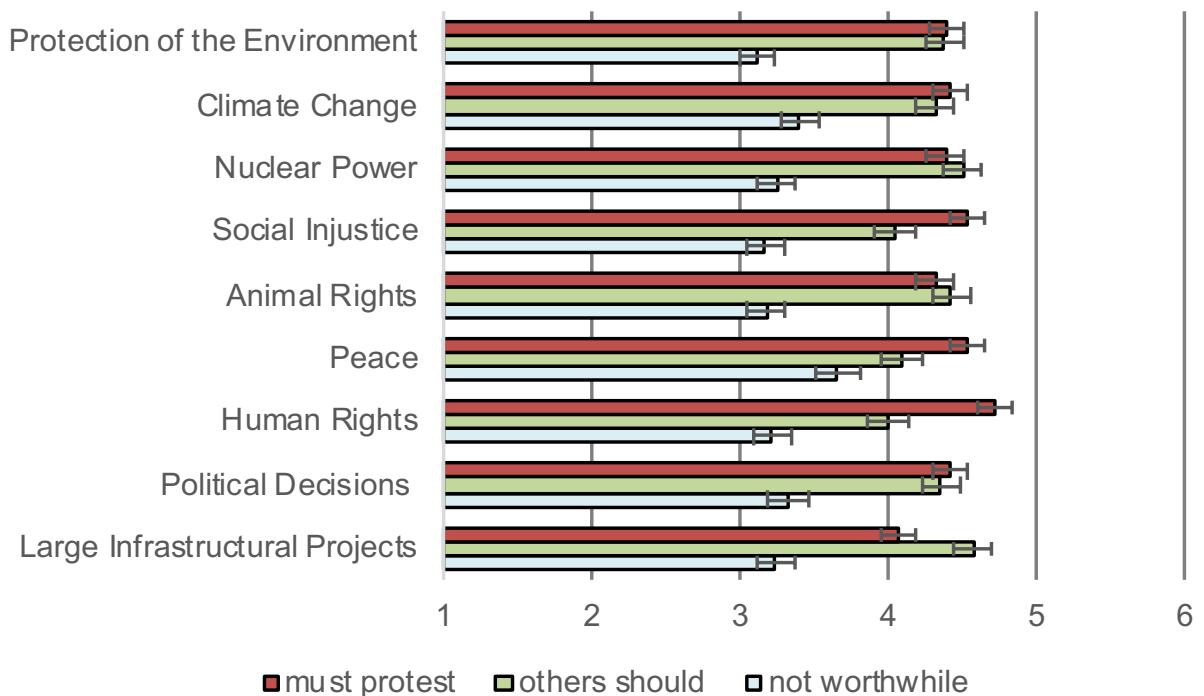


Figure 3: Comparison of the protest topics. Error bars denote 95%-confidence intervals on the means.

4.1. Results from structural equation modeling

The results from the structural equation modeling using partially-least-squares algorithm are depicted in Figure 2. The model quality is sufficient for our analysis in accordance with Fornell & Larcker (1981) as all AVE are larger than 0.5. However, the two item scales show low internal consistency (Cronbach's $\alpha < 0.7$) and must therefore be interpreted with care.

In our model (see Figure 2) we only depict the inner model for protest attitude. The external model (i.e., items loading on latent factors) are omitted for readability. However, the path coefficients for the items

Table 2: Assessment of the model and reliability of measurements. Cronbach's alpha measures the internal consistency of scales.

Scale	Cronbach's α	Average Variance Explained
Political Efficacy Cynicism	0.789	0.705
Political Efficacy Internal	0.851	0.770
Political Efficacy External	0.750	0.667
Opinion Leadership	0.801	0.626
Trust in Journalism	0.680	0.691
Distrust in Politics	0.630	0.729
Conspiracy Thinking	0.601	0.710
Trust in Elites	0.750	0.640
Protest Imperative (must protest)	0.950	0.715
Not worthwhile	0.907	0.576
Others should protest	0.940	0.678

exceed 0.7 in all cases, and 0.8 in most cases. We put the path coefficients on the arrows connecting latent construct variables and colored negative influences in red. We denoted the result of the significance testing by adding asterisks to the numbers. Inside the latent target variables, we added the r^2 adjusted to indicate, to what extend the variable is influenced by others.

In the sample age has a positive impact on the income a person has (as expected). Older participants show lower education. This can be explained by the fact that the necessity to study to make a living has increased over time¹ The older generation might have received less education, but at the same time receives higher incomes. Age also directly influences the cynicism a person feels regarding politics. Older participants are more cynical than younger participants. Moreover, older participants experience more internal political efficacy than younger participants. When looking at the level of education we see that it positively influences the external political efficacy. People with better education feel that they can influence politics more strongly.

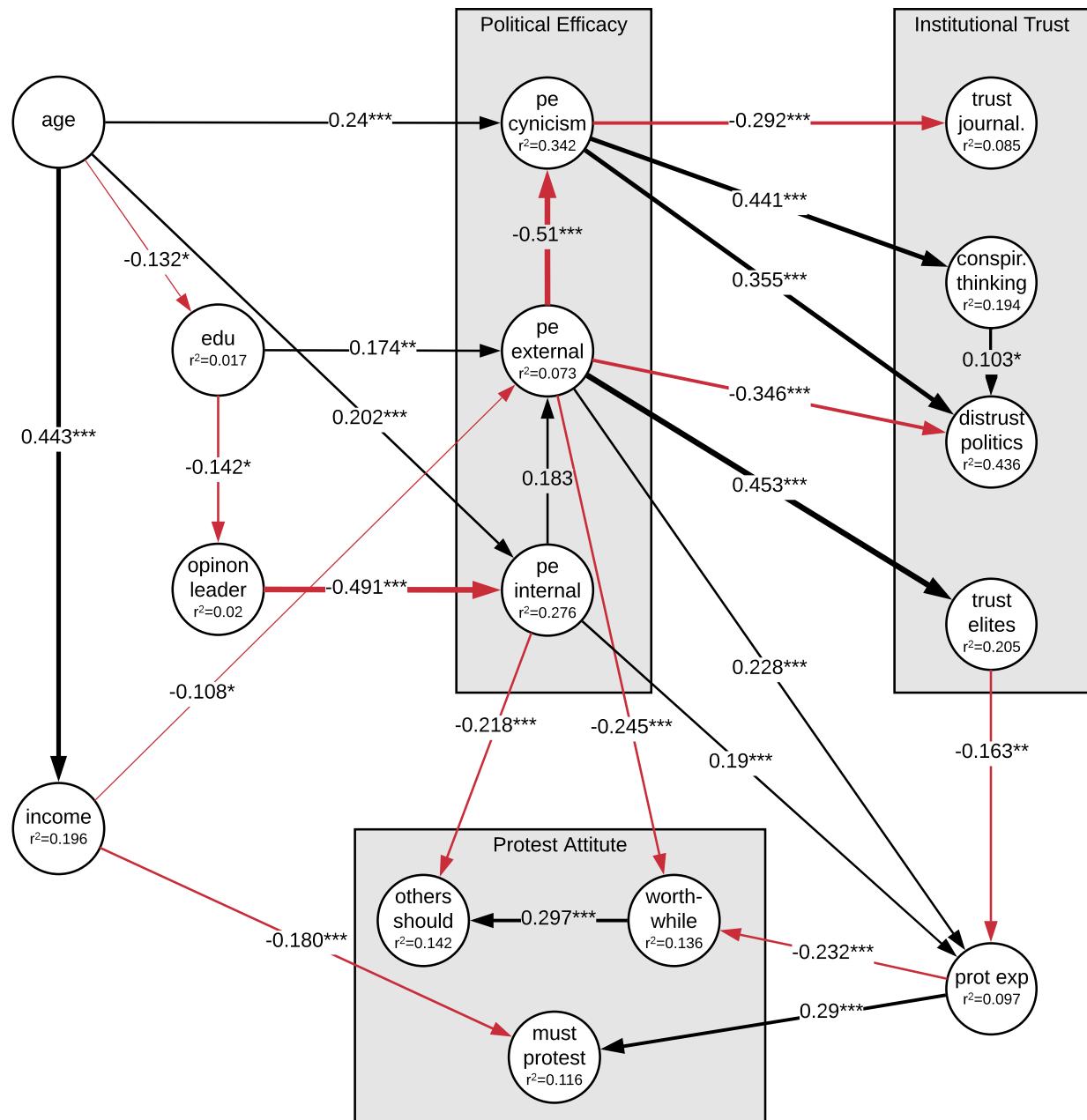
In contrast the perception of being an opinion leader is negatively associated with education. People with higher education report to be opinion leaders less often than people with lower education. Furthermore, being (or rather feeling like) an opinion leader negatively influences the internal political efficacy. Also, internal political efficacy influences external political efficacy, which in turn negatively influences cynicism. Both internal and external political efficacy show a positive relationship with protest experience. People that have protested show higher political self-efficacy. The external aspect of political self-efficacy influences the trust in elites and negatively influences the distrust in politics. People who feel that their political opinion is heard, trust elites and politics. Cynicism influences trust in journalism negatively, and conspiratorial thinking positively. It further increases distrust in politics, as does conspiratorial thinking. The only influence of the institutional trust variables on actual protest behavior or attitude is trust in elites. The more you trust elites the less likely you are to have participated in actual protest. No other such relationships were found.

What determines protest attitude? The imperative to protest is most strongly determined by protest experience followed by income. People with lower income are more likely to see protest to be imperative regardless of the topic. Whether it is worthwhile or not is influenced by external political efficacy. People with high external political efficacy report higher scores when asked whether protesting a subject is worthwhile.

Similarly, people with high internal political efficacy think that others should protest to a lesser extent, than people with low internal political efficacy. What is remarkable, is that neither opinion leadership nor institutional trust influence the attitude towards protest. So, who are these protesters? Who will protest when new energy infrastructure is planned?

¹Germany has shifted to the bachelor/master programs creating many highly educated young people. At the same time, many older people have had trainee programs, which is a very respectable career path in Germany. Therefore the younger generation now "formally" higher educated than the older generation.

Proposed Inner Model for Protest Attitude



Legend:

Figure 4: Results of the PLM-SEM Algorithm. Numbers on arrows denote path coefficients for possible causal reasons. Only significant paths (after bootstrapping) are shown. Red arrows indicate negative path coefficients.

4.2. Results from cluster analysis

We used hierarchical-clustering based on ward-linkage on the variables that are related to protesting to identify how many different types of protesting attitudes are present in our data. This clustering indicated that using two clusters showed the highest increase in explanatory power. In order to test how those two clusters appear using all variables of interest we set $k = 2$ and used k-means clustering. This has the benefit that the high-dimensional clusters now have clear centroids that can be described using means and confidence intervals. The results of a 2-means clustering shows that the two clusters mostly differ in their protest imperative. There is one cluster of “protesters” and one cluster of “non-protesters”. The resulting cluster classes were then analyzed with respect to our descriptive variables (see Figure 5).

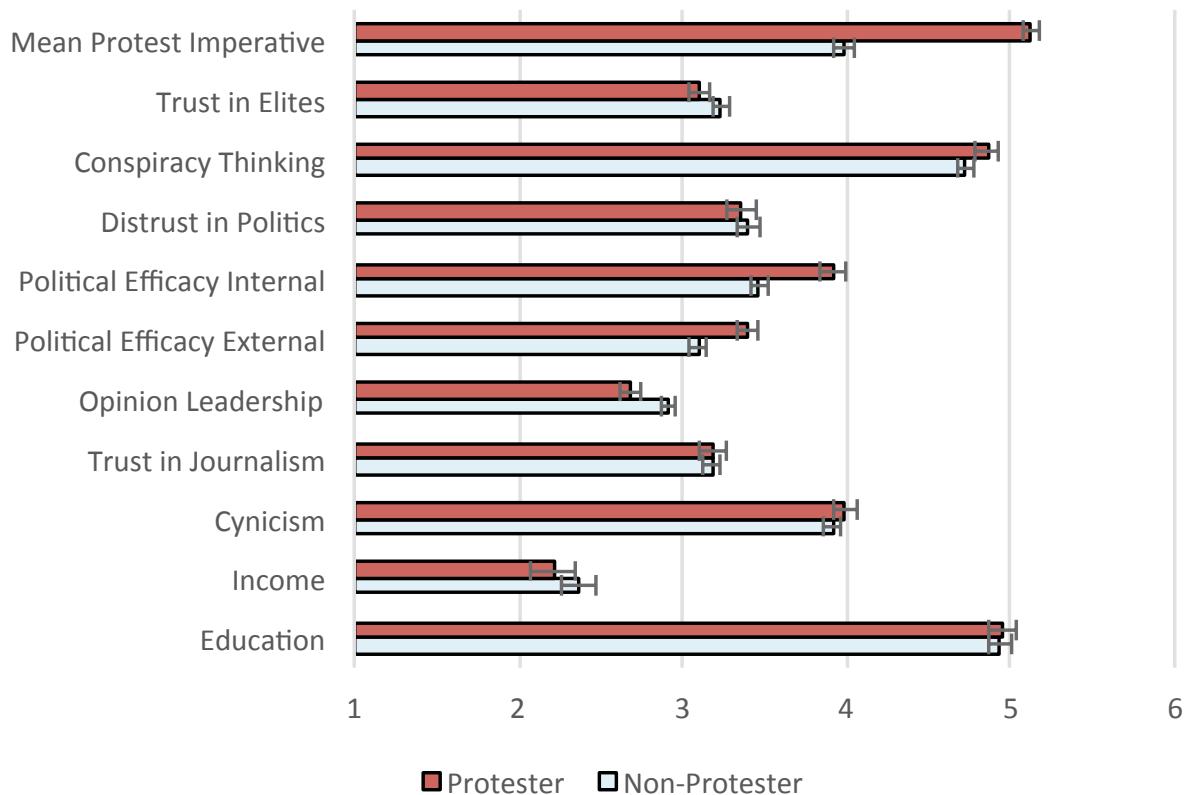


Figure 5: Comparison of k-Means Clustering between protesters and non-protesters. Error bars denote 95%-Confidence intervals. Large differences are only visible for political efficacy.

As taken from the outcomes, there is no large distinction between the cluster members with respect to our measured variables. The only variables showing significant differences are the mean protest imperative, which was expected, as this variable was used for clustering. Protesters show higher political self-efficacy both internally and externally. At the same time, they consider themselves not as strongly as opinion leaders in comparison to the non-protesters.

5. Discussion

The results revealed that the attitudes towards protest in Germany are shaped mainly by income and protest experience. Furthermore, the necessity and worthwhileness are shaped by beliefs about political

self-efficacy. Interestingly there are no strong differences between topics related to energy infrastructure and other topics (human rights, peace, animal rights). Our results thus indicate that people either believe that protest is worthwhile in general or they do not. This seems to depend more on a personal attitude regarding this form of participation than on the topic itself. This might also be an effect of the decontextualized and generic wording of the protest topics in the questionnaire. Previous research (Van Aelst & Walgrave, 2001) has shown that protesters are typically of medium age, of high education and have resources to spare (i.e., time, contacts, social network). We could not confirm this in our convenience sample. We did however find evidence for social differences in protest attitude. People with better political self-efficacy showed higher willingness to participate in protest than people with lower political self-efficacy. This is in line with previous findings on political participation.

When looking at institutional trust it becomes obvious that some participants who show low trust in politics, low trust in journalism, and low trust in elites derive these beliefs from a cynicism in political efficacy. The connection between distrust and a cynical attitude is in line with findings of other authors (Erber & Lau, 1990; Craig, 1993). Furthermore, Krouwel and Abts suggest the combination of these two attitudes is linked to the occurrence of populism (Krouwel & Abts, 2007). Also, the recent work of Blumer et al. 2018 and Kammermann & Dermont 2018 (this special issue) show for the swiss national energy strategy, that support from energy transition is largely impacted by political beliefs and public perceptions. Following that, when you adopt a stance of “us vs. them” in the political sphere, suddenly journalism becomes “fake news”, politicians become straw-men for the rich, and elites are secretly in control exploiting the public. These people are most likely to fall for filter bubbles and echo chambers as their inherent distrust in media increases the self-selection bias in independent media outlets. In Germany, this phenomenon is most prevalent in the alt-right movement (Rühl, 2017), which also shows signs of rejecting climate change science and rejecting renewable energy. However, in our sample we could not identify these subjects. This could have been caused by the sampling strategy or, alternatively, by the unwillingness of participants to be opinion-polled in the German alt-right movement. It is important to note that—just because our sample did not show indications of connections between a broken institutional trust and protest attitude—such a connection might still exist in a very specific subgroup of the population.

For the rest of the sample under study, protest is an attitude in itself and not necessarily topic dependent. It could be the case that protest is triggered locally and that people with a high imperative to protest engage in it when the cause matches their internal value structure. Reasons for joining protest for a given subject depend on four values according to (Perlavičiute et al., 2018). Depending on how much biospheric, altruistic, egoistic, and hedonic the values of an individual are, different topics become more important. For example, people with high biospheric values would show a higher willingness to protest nuclear energy. Our example topics did not cover the breadth of possible topics to span all possible value combinations. But the variable clustering analysis shows that the first cluster (i.e., protection of environment, climate change, nuclear energy) covers the value biospheric orientation. The second cluster—animal rights and social injustice—addresses the altruistic motivation, similarly as the third cluster of peace and human rights, which partially covers egoistic values. The last cluster political decisions and large infrastructure projects mostly addresses large scale decisions that could be in conflict with local egoistic motives (e.g., noise pollution, loss of value of property), and other values. Thus it could be considered to be related to the domain of egoistic values. Sadly, we did not include a topic to cover the hedonic values of protest. It would be interesting to design a study that includes the effect of values on protesting attitudes.

We did not assess the emotional aspects of protest in this study. Research by Van Stekelenburg & Klandermans (2013) and also by Huijts et al. (2007) have tried to investigate how emotions affect protest behavior, however the settings used in this study did not provide the specificities for evoking a strong emotional response. We were interested in protest attitudes and their relations to individual variables rather than affective components of protest. Affective components probably play a large role in spontaneous participation and extended participation in protest. However, with respect to energy infrastructure, local specifics mostly cause affective components in protest. It could be interesting to replicate the study in different actual protest settings and then add the specific emotional component to the survey to assess whether attitude or affect or both influence protest behavior the most.

Similarly to Fraune (2015), we found an influence of gender on participation in protest. Women tend

to be less active in protest and show lower scores for the imperative to protest. However, we also found that women show a lower political self-efficacy (internally and externally), but in our final model gender did not play an influential role. Gender was a “carrier-variable” measuring the underlying differences in self-beliefs between genders. Future studies will have to find out, where these differences come from and if a more balanced sample regarding the gender distribution would show the same results. Are these subject to political education, are they caused by interest or do they reflect a general tendency to be underrepresented in democratic processes. This finding alone provides ample opportunity for further research. This is particularly important when planning energy infrastructure. As women do not seem to participate in protest, their wants and needs regarding energy transformation can easily be overlooked and might therefore not be integrated into the process. Novel mechanisms to enable participation of women in energy transformation are thus required.

Overall, we consider protest to be a specific part of political participation. Within acceptance research in the context of large scale technologies planning and roll-out, protest and public resistance are phenomena which are mostly considered as something that should be prevented (Franks et al., 2014). Yet, understanding protest provides deeper insights into the individual attitudes of citizens and their core values of locals in a unique way and provides real-life participation and two-way communication opportunities (Perlaviciute et al., 2018). Policy makers should not try to prevent protest but should try to embrace the willingness to participate in democratic processes thus analyzing who protests and why (Cuppen, 2018). By including these stakeholders in future development (e.g., participatory design procedures, open civil participation) the threat of polarization in society could be diminished (Cuppen, 2018). Ignoring protest and appealing the acceptance by habituation threatens the political self-efficacy of citizens and could pose a risk not just for the current project, but also for long term trust in democratic processes. So far, cynicism does not lead to changes in protest attitude. However, when a subgroup of the population feels disconnected from the discussion, civil unrest and violent protest may occur, causing more severe consequences for further transformation processes. An increasing distrust in institutions might block the path for future energy transformation processes, regardless of necessity, environmental benefit, and even financial benefits (Walker et al., 2010). When distrust becomes so high that change itself is distrusted, the energy transformation is stalled severely.

6. Conclusion

In this paper we have investigated the antecedents of individual protest attitudes in the field of energy technology and related issues of social interest, addressing topics like, e.g., climate change, protection of the environment, nuclear power, large infrastructure technology projects, and political decisions. We found no strong influence of the topic on the attitudes towards protest and predominantly found that income, protest experience, and political efficacy determine the attitude towards protest. Thus, we conclude that factors connected to the social role of a person influence the attitude towards protest. This may be a valuable indicator for future work, which should investigate the interplay between personal factors and the flow of information. This could provide insightful results resulting in a better understanding of post-truth politics and phenomena such as the filter bubbles and their role in the formation of protest attitudes. Based on our findings, we suggest that the impact of phenomena such as filter bubbles may also be more strongly connected to personal factors than to specific topics. This should be included in future studies about the impact of new ways of information and opinion diffusion and their consequences for societal challenges such as the energy transition. Furthermore, cynicism as well as distrust in institutions and public authorities might also lead to a decrease in political participation with the danger of polarizing societies. This creates alienated subgroups. These “vulnerable subgroups” are most in danger to fall for fake news and echo chambers (Mihailidis & Viotti, 2017). When such groups become locally affected by infrastructure projects in the context of energy transformation, protest may become irrational, resistant to scientific argument, and thus unresolvable. Thus, protest should be respected as a form of political and democratic participation behavior that should be handled with care. Policy makers should incorporate the contents and messages carried by local protest and use it as a valuable form of feedback.

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Conflicts of Interest

435 The authors declare no conflict of interest.

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Appendix A. Appendix

Table A.3: Discriminant validity using heterotrait monotrait ratio (HTMT). Values below 0.9 indicate good discriminant validity according to Hair et al. (2017).

	Age	others should should	Con- spiracy Thinking	Distrust in Politics	not worth- while	Protest Impera- tive	Opinion Leader- ship	PE Cynical	PE Inter- nal	PE Exter- nal	Trust in Elites	Trust in Journal- ism	Edu- cati- on
others should	0.13												
Conspiracy Thinking	0.15	0.12											
Distrust in Politics	0.19	0.18	0.53										
not worthwhile	0.05	0.33	0.11	0.42									
Protest Imperative	0.04	0.14	0.09	0.11	0.25								
Opinion Leadership	0.08	0.28	0.06	0.20	0.17	0.08							
PE Cynical	0.32	0.05	0.63	0.82	0.25	0.05	0.07						
PE Internal	0.20	0.25	0.10	0.13	0.07	0.13	0.58	0.12					
PE External	0.10	0.17	0.32	0.81	0.35	0.24	0.22	0.68	0.22				
Trust in Elites	0.21	0.07	0.32	0.56	0.13	0.15	0.13	0.61	0.06	0.56			
Trust in Journalism	0.09	0.10	0.26	0.29	0.08	0.07	0.37	0.07	0.07	0.36	0.46		
Education	0.13	0.07	0.03	0.28	0.15	0.05	0.15	0.11	0.22	0.10	0.05		
Income	0.44	0.05	0.11	0.03	0.09	0.18	0.07	0.13	0.21	0.08	0.03	0.05	
Protest Experience	0.09	0.21	0.06	0.14	0.29	0.29	0.23	0.05	0.25	0.22	0.09	0.05	

Appendix A.1. Factor Analysis

To ensure that the protest attitudes do have the factorial structure (see Table A.4) as used in our PLS-SEM model we used exploratory factor analysis. Bartlett's test of sphericity was met ($\chi^2(351) = 9120, p < .001$). The lowest measure of sampling adequacy using the Kaiser-Meyer-Olkin criterion was $MSA = .871$.

Table A.4: Factor loadings of protest attitudes.

Factor	Loadings			Uniqueness
	1	2	3	
Item				
worthwhile_human_rights	0.84257	-0.0382	-0.0845	0.281
worthwhile_nuclear_power	0.83250	-0.0661	-0.0995	0.293
worthwhile_infrastructure	0.71096	-0.0403	-0.0893	0.485
worthwhile_peace	0.79195	-0.0802	-0.0489	0.364
worthwhile_climate_change	0.88327	-0.0377	-0.1268	0.202
worthwhile_political_decisions	0.74431	-0.0769	-0.0987	0.430
worthwhile_social_injustice	0.84580	-0.0691	-0.1354	0.262
worthwhile_animal_rights	0.82748	-0.0159	-0.0783	0.309
worthwhile_environment	0.88888	-0.0478	-0.1265	0.192
others_human_rights	-0.06923	0.8361	0.1415	0.276
others_nuclear_power	0.00126	0.7954	0.1261	0.351
others_infrastructure	-0.01540	0.7040	0.0449	0.502
others_peace	-0.09060	0.8124	0.1094	0.320
others_climate_change	-0.04545	0.8591	0.1966	0.221
others_political_decisions	0.00597	0.8130	0.1218	0.324
others_social_injustice	-0.06580	0.8191	0.1408	0.305
others_animal_rights	-0.12228	0.6901	0.1268	0.493
others_environment	-0.09029	0.8179	0.2202	0.274
must_protest_human_rights	-0.06468	0.1435	0.7407	0.427
must_protest_nuclear_power	-0.06167	0.1610	0.6920	0.491
must_protest_infrastructure	-0.11286	0.1211	0.5860	0.629
must_protest_peace	-0.08160	0.1314	0.6455	0.559
must_protest_climate_change	-0.08645	0.1134	0.7829	0.367
must_protest_political_decisions	-0.12362	0.1126	0.6571	0.540
must_protest_social_injustice	-0.07720	0.1028	0.7836	0.369
must_protest_animal_rights	-0.07439	0.1114	0.7543	0.413
must_protest_environment	-0.12705	0.0869	0.7776	0.372

Note. Varimax rotation was used

Appendix B. Sample Description

The following tables contain additional information about our sample and the measured numerical and ordinal variables (see Table B.5). 59% of the sample ($n = 274$) were female and 41% were male ($n = 190$). The levels of education are shown in Table B.6.

Table B.5: Additional descriptives for the sample description.

	Mean	SD	Median	Min.	Max.	Range	Skew	Kurtosis
Age	30.61	13.11	25.00	13.00	85.00	72.00	1.66	1.93
Political efficacy internal	3.64	0.99	3.67	1.00	6.00	5.00	-0.29	-0.16
Political efficacy external	3.09	0.96	3.00	1.00	6.00	5.00	-0.22	0.01
Political efficacy cynicism	3.94	0.93	4.00	1.00	6.00	5.00	0.09	0.27
conspiracy thinking	4.77	0.86	5.00	1.00	6.00	5.00	-0.85	1.47
Trust in journalism	3.18	0.94	3.50	1.00	6.00	5.00	-0.21	-0.11
Distrust in politics	3.39	1.11	3.50	1.00	6.00	5.00	0.48	-0.12
Trust in elites	3.19	0.88	3.33	1.00	5.67	4.67	-0.20	-0.08
Opinion leadership	2.66	0.84	2.50	1.00	5.75	4.75	0.51	0.26

Table B.6: Level of education of our sample.

Degree of Education	N	relative
Completion of compulsory basic secondary schooling	13	2.8%
General certificate of secondary education	25	5.4%
Apprenticeship	62	13.4%
Upper secondary school leaving certificate	145	31.3%
University degree	215	46.3%