Routledge
Taylor & Francis Group

The effects of narratives and popularity cues on signing online petitions in two advanced democracies

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ABSTRACT

Online petitions have become a widespread vehicle for contemporary political participation. While research tends to focus on individual factors for potential petitioners that influence signing, less attention has been paid to the influence of the actual text of petitions. This paper uses data from an original web-based survey experiment in Australia and Germany to test the influence of content factors: narratives (i.e., stories based on individual experiences and emotions) and popularity cues (i.e., high numbers of signatures) across two issues: climate change and welfare policy. We find that narratives within petition texts involve readers through the mechanism of transportation and motivate them to sign petitions, as do popularity cues. The effects of narratives were found across both countries but tended to be stronger in Germany than in Australia. We argue that our novel framework can be used for future research on how the presentation of issues shape contemporary political participation.

Among the ways individuals participate in contemporary politics, online petitions have become the subject of increased academic attention. Studying why citizens sign petitions has typically been analyzed from the perspective of political participation, with a focus on individual-level factors. Research has for instance found that online petitions are more often signed by highly educated individuals (e.g., Escher & Riehm, 2017; Sheppard, 2015) and those holding engaged citizenship norms which emphasize the value of opinion expression (e.g., Dalton, 2008). This focus on individual factors, however, has the potential to obscure content factors related to the petition texts themselves that might shape whether citizens sign a petition. Petitions are predominantly shared via social media and need to gain attention amidst many other items on individuals' highly selective news feeds. Drawing on two different perspectives on persuasion, this article argues that narratives (i.e., stories based on individual experiences and emotions) and

popularity cues (i.e., high numbers of signatures) are effective drivers of petition signing behavior. Applying an experimental design, we test these assumptions in two countries, Australia and Germany, and discuss cross-national similarities and differences.

A petition is a text-driven appeal for a political resolution to the grievances of a group of citizens. Petitions originated as collective sets of citizen grievances with the state, particularly parliaments, during times of disruption or crisis. Presenting a petition was the only way that poorer, less formally organized citizens could have a voice within institutional politics (Tilly, 2008). As paper-based petitions have grown in symbolic importance and frequency over time, democracies have institutionalized formal processes for the presentation of petitions within parliaments, many of which mandate a direct government response. In the digital age, citizens' collective grievances utilize online platforms for petition creation and signing, through well-known parliamentary-auspiced portals, including the *Downing St* petitions site in the UK and the *Petitionen* site in Germany. Such platforms have evolved from, or co-exist with, paper-based petition submissions and give citizens easy access to starting and promoting petitions. Most of the existing research on online petition signing and creation involves studying these parliamentary platforms and centers politicians as targets.

More recently, two other forms of online petition platforms have emerged: petition platforms created by digital campaigning organizations to mobilize their membership, for example, *AVAAZ* and *MoveOn*; and, commercial platforms such as *Change.org* that provide an online portal for citizens to run and share their own online petitions. This expansion in online petition opportunities relies on social media platforms, especially Facebook (Yasseri et al., 2017), and facilitates simple and quick dissemination of individual grievances, increases the incidence of petition signing, and raises public awareness of petition-based campaigns. This expansion also implies that petition signing happens not as an isolated act, but ought to be seen as deeply contextualized in social media environments, where users discover petitions, and potentially sign or share them.

Recent research on signing behavior has focused on large, well-known petition platforms to classify the issue concerns of petitions, and identify the opportunity structures that facilitate petitions being responded to by their targets (Halpin et al., 2018). Yet as online petitions have increasingly moved into the social media context, the factors that underpin signing behavior are in flux and need different approaches to motivate readers to sign. Petitions often ask for individual action to address complex and collective issues, such as climate change or social welfare, but may struggle with creating the required thresholds to enable action.

We argue that using narratives is an effective approach for capturing interest and motivating individual engagement. Narratives follow a certain structure, yet it is the depiction of characters that distinguish narratives from other forms of texts (e.g., descriptions). Seeing characters in a story can help to vividly imagine the scene, identify with the characters, and see oneself immersed in the narrative (Moyer-Gusé, 2008). Consequently, narratives have been found to promote narrative-consistent beliefs and behaviors (e.g., Oschatz et al., 2021). Our study further expands this perspective by investigating how narratives may persuade readers to sign online petitions.

Furthermore, even readers who are less engaged with the subject matter of a petition may still pay attention to it for other reasons. We argue that although some users may not be motivated to take in new and complex information, they could instead be inclined to look for cues that help them to participate. A high existing number of online petition signatures may operate as such a cue, or anchor (Tversky & Kahneman, 1974), to stimulate

heuristic persuasion. Previous research has conceptualized such online content features as popularity cues (Porten-Cheé et al., 2018), and there is already evidence that popularity cues guide content selection and opinion formation (e.g., Messing & Westwood, 2014). Our study extends the scope of this research by investigating whether numerical, signature-based popularity cues promote petition signing intention.

To understand the content factors that motivate online petition signing we have developed a theoretically driven, content-level framework, building on narrative and heuristic persuasion, and linked this body of theory with research on political participation. We conducted the same experiment in two comparable advanced democracies, Australia and Germany. Our results contribute to the debate on the changing context for political participation by providing experimental evidence that individual political action is shaped by a distinctive online media-driven environment that now colors all our political experiences.

Content-level factors for signing online petitions

Noticing, receiving, and then signing petitions in the online world, where text-based and audio-visual stimuli are abundant and coalesce under news-feed conditions, requires individual attention and information processing. While developing strategic and audience-tailored communication in petitions may be challenging, they are important in obtaining individual attention and engagement, and the overall success of online petitions.

But what are these cues? Automated content analysis data of petitions on We the People and Change.org suggest that the topic plays a strong role, and specifically, that topics the audience may have developed a stronger personal attachment to or opinions on, for example sexuality or religion, attracted more signatures than less personal topics, such as on China or children (Chen et al., 2019; Hagen et al., 2016). Also, linguistic characteristics, such as intensifiers (e.g., 'wonderful'), lower the number of signatures, while expressions of achievements or harmony (e.g., '[…] can live together in peace […]') increase signatures. Other content cues, that indicate thorough preparation (e.g., […] after two years of deliberation it is time to […]) also increased the number of signatures. The sum of linguistic characteristics in petitions shape the overall tone (positive or negative) of a petition. A further experiment revealed that petitions which used negative language to blame responsible actors can spark anger and anxiety among respondents, but barely affect their willingness to sign (Koenig & McLaughlin, 2017).

Research into the content factors that drive the signing of petitions is at an early stage, thus there is a need to advance theory to better understand the logics behind successful online petitions. Relying on different theories of persuasion, we focus on story-based narrative persuasion and metrics-driven heuristic persuasion to present a rationale for their effectiveness in promoting petition signing behavior.

Theoretical framework: narrative persuasion

Story-based narrative persuasion

In communication studies, narratives are defined as 'any cohesive and coherent story with an identifiable beginning, middle, and end that provides information about scene,

characters, and conflict; raises unanswered questions or unresolved conflict; and provides resolution' (Hinyard & Kreuter, 2007, p. 778). Research has found that health or entertainment narratives in fictional or strategic media promote narrative-consistent attitudes and beliefs (for an meta-analytic overview, see Braddock & Dillard, 2016). This effect can be explained by the underlying mechanism of narrative persuasion (Green & Brock, 2000).

Within narrative persuasion theory, the factor of transportation plays a pivotal role. Transportation is defined as 'an integrative melding of attention, imagery, and feelings' (Green & Brock, 2000, p. 701) and describes the individual experience of being absorbed by a story. While counterarguing (i.e., asking 'is this true?') hinders the effectiveness of any persuasive communication, narratives may reduce defensive reactions because of their ability of 'transportation' (Green & Brock, 2000). Instead of doubting the narrative's credibility, people would be 'transported' into the story, which means to witness the story through the eyes of its characters, to emotionally engage, and potentially even identify with the characters (Green et al., 2004; Hinyard & Kreuter, 2007; Moyer-Gusé, 2008). In sum, narrative persuasion assumes that the effect of narratives on narrative-consistent beliefs and behaviors is mediated through transportation.

Although online petition texts may not have the space to develop lengthy stories, shorter narratives are often still used to draw in and involve audiences and potential supporters. As narratives involve describing episodes, problems, and solutions through cases of individual characters, they can conveniently be linked with 'easy-to-personalize' calls for action, which are part of the premises of connective action today (Bennett & Segerberg, 2013).

Narratives and online petition signing

Although there is minimal research investigating how narratives affect online petition signing directly, two studies have addressed the persuasive effects of short texts that are comparable to the text used in online petitions (other studies emphasize the effect of longer narrative stimuli, as for example science fiction films, see for example Bilandzic & Sukalla, 2019). In two experiments, Oschatz et al. (2021) investigated how a newspaper narrative on the issue of problematic working conditions of foreign migrant workers affected behavioral intentions related to the issue. Narrative depictions made participants more likely to say that they would buy higher-priced meat that is produced under better conditions, and thus promoted a buycotting form of political participation (de Zúñiga et al., 2014). Narrative persuasion was also observed in an experiment, finding that the use of narratives in public health messages promoted the intention to donate to actions to reduce obesity (Sun et al., 2019).

Responding to the lack of research on the effect of narratives in online petition texts on the subsequent engagement, we formulate three hypotheses that address the causal mechanism from exposure to narratives in online petitions through increased transportation to willingness to sign a petition: *Narratives will positively affect transportation (H1); transportation will positively affect online petition signing (H2)*; and finally, the overarching hypothesis: *the effect of narratives on online petition signing will be mediated through transportation (H3)*.

Theoretical framework: popularity cues

Metrics-driven heuristic persuasion

Text-based forms of communication like online petitions may evoke different forms of information processing. Guided by dual-process frameworks (Chaiken, 1980; Petty & Cacioppo, 1986), a thorough processing of information (central route) may start, which is typically associated with receivers who are highly involved with the content of information. We argue that systematic information processing will often not be applied to online petitions that randomly pop up in social media news feeds due to rapid diffusion through diverse networks. Consequently, attention to online petition texts may occasionally be high, but will mainly attract moderate or low levels of attention. If this low attention assumption is true, then online petition texts will be subject to heuristic more than central processing, that is, individuals may not give detailed attention to the petitions' message but might be more susceptible to other content cues. Following this argument, heuristically processing individuals would look out for cues that provide them with easy-to-grasp first impressions of the content. Social psychology labels such cues as anchors (Tversky & Kahneman, 1974), which can typically be found at the beginning of texts.

One form of information that is decisive for a deeper engagement with the petition is its relevance. We argue that anchors pointing to the number of signatures address the issue of relevance, with higher numbers of signatures pointing to a higher social relevance. In this sense, numbers of signatures function as popularity cues, which are considered as user-driven, aggregate reactions to online media items (e.g., Likes and Shares) that express endorsement and relevance assigned to content (Porten-Cheé et al., 2018). Numbers of signatures next to online petitions may function as anchor heuristics indicating at first sight how relevant and how popular a petition is. Consequently, participants may feel pressure to conform to a visible collective and popular behavior, a reaction also conceived of as a bandwagon effect (Margetts et al., 2016; Porten-Cheé et al., 2018; Sundar & Nass, 2001). In this case the individual response would be to support and sign already popular online petitions.

Popularity cues and online petition signing

While several studies have presented evidence on the effects of popularity cues on the selection of online media items (e.g., Messing & Westwood, 2014; Winter & Krämer, 2014), research on popularity cues has been minimal in studies of political participation in general, and particularly with regard to petition signing. We aim to find out whether popularity cues can be applied as an explanatory part of political participation by extending the understanding of popularity cues as a metric. We argue, in line with the 'logic of numbers', previously introduced in protest research, that the higher numbers of sign-ons on petitions attract larger audiences and potential signers (Della Porta & Diani, 2006, p. 171–173).

Only two studies have adopted the popularity cues perspective for petition research: an experiment by Margetts et al. (2011) revealed that (very) high numbers of online petition signatures increased individual signing behavior. Relying on the previously described automated content analysis, Hagen et al. (2016) showed that for a large number

of different petitions, the number of existing signatures was a strong predictor of subsequent signatures. Our research extends this area of research through a unique experiment that provides evidence of popularity cues affecting participation in online petitions. Our hypothesis is: *High numbers of popularity cues (i.e., high numbers of online petition signatures) will have a positive effect on online petition signing (H4).*

International comparison

Finally, given the comparative nature of research, our theoretical framework needs to account for the role of national context in influencing online petitioning. While Australia and Germany are both widely accepted as advanced democracies with strong federal structures, robust parliamentary systems, and consistently high voter turnout in elections, the two countries differ with regard to their use of social media and trust in media systems.

As we argued above, citizen engagement in online petitions is highly structured by the sharing ecology of social media platforms such as Facebook and Twitter. Dominant online petition platforms, such as Change.org, urge participants to sign and share into their networks to make petitions more effective. The recently released Digital News Report (Newman et al., 2020) found that in Germany 49% of the population use Facebook, and 22% for accessing news; 13% of the population use Twitter, dropping to only 6% for accessing news. Trust in news generally is high with 56% agreeing that they trust the news they access, but trust in news on social media in Germany is especially low at 14% (Newman et al., 2020, p. 70). Australians are online more and use social media more, both in general and for news: 77% of the population use Facebook, and 39% for accessing news; and 19% of the population use Twitter, with 10% for accessing news. Trust in news generally is lower in Australia, with only 46% of the population agreeing, but trust in news on social media is similar to Germany at a low of 17% (Newman et al., 2020, p. 95). These differences can partly be attributed to Australia being an early adopter of digital technology, while there remains a suspicion of both social media platforms due to privacy concerns in Germany (Hucal, 2016).

Each country has a different collection of platforms which enable online petitioning. In particular, Germany has a well-established and successful parliamentary petition site which has long been the subject of both popular debate and academic research (e.g., Escher & Riehm, 2017). In contrast, Australia has newer and less-developed governmental petition sites, and online petitioning is, therefore, more concentrated in commercial platforms such as Change.org (Halpin et al., 2018). Despite these contextual differences, we have found that petition signing is now the most popular form of political engagement, after voting, in both countries, with around one-third of Germans and Australians having signed a petition in previous year, the vast majority of which were online (based on own survey data used in the context of this study). By comparing Australia and Germany as two countries with a differing digital communication context but similar engagement in petition signing, we can better understand the evolving role of content level factors in influencing online petition signing. That is, as online petitioning becomes a more normalized feature of citizen participation, do the narrative tropes and popularity cues which accompany them become more or less significant in mobilizing participation? As the social media sharing context is key to distributing petitions, we might expect

Australians to be more likely than Germans to respond positively to both popularity cues and narrative-driven petition texts. The international comparison in our study does not, however, achieve the same degree of internal validity as the experimental treatment due to the multiple competing explanations for any country-level differences. Therefore, we do not expect uniform effects across the study's four central hypotheses. We thus formulate an additional, more exploratory research question to highlight differences as avenues for future investigation: *How do content-level factors influencing petition signing vary between Australia and Germany? (RQ1).*

In identifying patterns of petition content cues' effects across the two national contexts we tested our hypotheses on two issues: climate change and social welfare. In many advanced democracies, these two contrasting issues have been long-term areas of concern, requiring the intervention of the state. Climate change in particular is consistently ranked of utmost importance in both Germany (e.g., Infratest dimap, 2019) and Australia (e.g., Markus, 2019). We argue that studying these two significant issues ensures some base level of familiarity and understanding, while introducing variance in the topical content to increase the generalizability of any findings to the broader political agenda.

Method

Participants

We collected data via a web-based survey experiment in Australia and Germany. The Australian data collection was part of the Cooperative Australian Election Survey. This survey was fielded between April and May 2019 and collected through the *YouGov* online panel. Data collection in Germany took place in June 2019 and was run by the *Respondi* online panel. Both surveys applied quotas regarding age, gender, and state (given both are federal countries). The final dataset included 2127 responses in Australia (female = 51%, M_{age} = 46.61) and 2014 responses in Germany (female = 51%, M_{age} = 49.32).

Experimental design, procedure, and stimulus material

After responding to some preliminary survey questions regarding political participation and attitudes, participants were told that they would be presented with a petition text. The participants were asked to read the text thoroughly, as they would have to answer questions about it later on. Participants were randomly assigned to a petition text that either addressed the climate change or the social welfare issue.

We experimentally altered the petition texts in terms of their narrative structure and the number of signatures which the petition had already received (9 signatures or 1084 signatures). Thus, the experiment applied a 2 (without narrative vs. with narrative) × 2 (few signatures vs. many signatures) factorial between-subjects design. After having been randomly assigned to one of the two issues, participants were, again, randomly assigned to one of these four conditions.

All petition texts were drafted in cooperation with the online petition platform *Open-Petition* based in Berlin to increase external validity. For the petition texts with a narrative, we presented personal stories about fictitious humans that had experienced harm. More specifically, in the text concerning climate change, heatwaves caused cardio-

vascular problems for an older adult, who had to be hospitalized. In the social welfare text, a middle-aged mother felt humiliated when she had to ask for social support at a state agency and feared that she might not be able to afford living costs. Thus, in both texts, the stories of troubled characters were used to illustrate the effects of broader and pressing social and global issues. After reading the petition text, readers were asked whether they had the intention to sign the petition to urge the targeted actors to take action. In the climate change petition, either a German or an Australian supermarket chain was asked to 'introduce a fixed share of 20% carbon-neutral food suppliers by 2020'. In the social welfare petition, the national government was urged 'to introduce a law by the end of 2019 that ensures a yearly increase' in domestic social welfare spending. Governments and companies have previously been found to be the most frequently addressed targets in online petitions (Halpin et al., 2018).

In contrast to the petition texts with a narrative, petition texts without a narrative were abstract, depersonalized, and concise. These texts did not describe the suffering of individuals in detail but instead referred to how many people were negatively affected by the respective issue.

While it requires subjective and contextual judgement to interpret a particular number of signatures as a popularity cue, we tried to define conditions of 'few' and 'many' signatures that would be effective while reflecting real-world conditions: taking into account thousands of online petitions in the US, UK, and Australia, Yasseri et al. (2017) found average numbers of signatures ranging between 200 and 370. We, therefore, firstly, decided to operationalize the many signatures condition with a number that clearly exceeded the usual average number of signatures (1084 signatures). Secondly, for the few signatures condition, we decided to work with a number that was substantially lower than the typical average number of signatures (9 signatures).

The stimulus material was initially developed in English and later translated into German. While the texts with the narrative had between 356 and 453 words, the texts without a narrative had only 170–191 words.

After having been presented with the petition text, participants were asked about their likelihood of signing the petition, and their experience of transportation by the petition narratives.

Measures

Experimental conditions

Both experimental conditions were added as dummy variables to the analysis (narrative: 0 = without narrative, 1 = with narrative; signatures: 0 = few, 1 = many).

Petition signing (willingness to sign and signing behavior)

Participants were asked to indicate how likely it would be that they would sign the petition on a 7-point Likert-type scale, 1 (*very unlikely*) to 7 (*very likely*); Issue 1: $M = 3.84$, $SD = 2.07$; Issue 2: $M = 4.17$, $SD = 2.09$.

To provide a realistic context to help interpret our findings from a comparative perspective, we also measured the frequency of online petition signing. The nominal variable asked how often participants had signed an online petition (via a website or email) in the

last year with possible responses including: 'Never', 'Once', 'At least 2 or 3 times', 'Between 4 and 10 times' and 'More than 10 times'.

Transportation

We applied a modified scale developed by Appel et al. (2015) to measure the participants' transportation. In comparison to the original scale, we firstly excluded two items referring to the imaginative dimension of transportation, that may only apply for studies using longer stimuli (e.g., movies), able to amply describe single characters. Secondly, we have slightly changed the wording of the four remaining items in order to preserve the important cognitive, emotional, and general aspects of transportation, while orienting the point of reference to petition texts rather than longer narrative forms. These steps at least partially considered that even for the condition lacking a detailed narrative, respondents were able to assess transportation in terms of shared petition features.

Specifically, participants were asked to indicate how much they agreed with four statements (e.g., 'I could picture myself in the scene of the events described in the petition', 'The narrative affected me emotionally') on a 7-point Likert-type scale, 1 (*very unlikely)* to 7 (*very likely)*. The model fit of the measurement was good for both issues (Issue 1: $\chi2(2) = 1.92$, $p = .383$, CFI = 1.00, RMSEA = 0.00, SRMR = 0.01, Issue 2: $\chi2(2) = 0.08$, $p = .96$, CFI = 1.00, RMSEA = 0.00, SRMR = 0.00) as was internal consistency (Issue 1: $M = 3.80$, $SD = 1.63$, α = 0.90; Issue 2: $M = 4.04$, $SD = 1.65$, α = 0.89).

Manipulation test

Two items from Lien and Chen (2013) were used to check for a successful manipulation of the text's narrative. For this purpose, participants were asked to indicate their agreement with two statements ('The petition had a beginning, middle, and end'; 'The petition told a story') on a 7-point Likert-type scale, 1 (very unlikely) to 7 (very likely). Both items correlated with each other (Issue 1: $r = 0.65$, $p < .001$, Issue 2: $r = 0.56$, $p < .001$) and were combined into a sum index (Issue 1: $M = 5.24$, $SD = 1.42$; Issue 2: $M = 5.35$, $SD = 1.36$). To check for a successful manipulation of popularity cues, the participants were asked to indicate how many people had already signed the petition. Response options ranged from 1 (less than 10) to 7 (more than 1000), Issue 1: $M = 4.27$, $SD = 2.51$; Issue 2: $M = 4.91$, $SD = 2.41$.

Data analysis

For hypothesis testing, we used the R-software (Version 3.5.3). Primarily, we applied the package lavaan for (multi-group) structural equation modeling (SEM). We chose SEM instead of path analysis because of the latent construct of the mediator variable transportation. Diagonal weighted least square estimation was used because of the ordinal Likert-type scale of the dependent variable. Overall, the mediation model showed a good fit for the empirical data, which is why we did not apply any post hoc alterations (Issue 1: $\chi2(13) = 42.501$, $p = .000$, CFI = 1.00, RMSEA = 0.03, SRMR = 0.02; Issue 2: $\chi2(13) = 46.704$, $p = .000$, CFI = 1.00, RMSEA = 0.04, SRMR = 0.03). We considered the model as adequate despite the significant chi-squared test because of the test's general sensitivity

to large sample sizes (Tanaka, 1987). One case was excluded from the analysis due to missing values.

Results

Manipulation check

The manipulation check showed that participants tended to recognize whether the petition texts had a narrative. Thus, the manipulation was successful for both Issue 1 (without narrative [$n = 1041$]: $M = 5.01$, $SD = 1.42$, with narrative [$n = 1016$]: $M = 5.47$, $SD = 1.38$; $t[2050] = -7.49$, $p < .001$) and Issue 2 (without narrative [$n = 1036$]: $M = 5.07$, $SD = 1.35$, with narrative [$n = 1047$]: $M = 5.63$, $SD = 1.32$; $t[2080] = -9.51$, $p < .001$).

Likewise, participants who were exposed to a petition text with a high number of signatures, indicated that they saw a higher number of signatures than participants who were exposed to a petition text with a low number of signatures. Again, the manipulation was successful for both Issue 1 (few signatures [$n = 1024$]: $M = 3.34$, $SD = 2.50$, many signatures [$n = 1033$]: $M = 6.09$, $SD = 1.62$; $t[1750] = -20.6$, $p < .001$) and Issue 2 (few signatures [$n = 1045$]: $M = 3.78$, $SD = 2.53$, many signatures [$n = 1038$]: $M = 6.04$, $SD = 1.62$; $t[1780] = -24.3$, $p < .001$).

Hypothesis tests

To test the hypothesis, we tested SEMs separately for both issues (Figure 1). In H1, we expected that individuals who were exposed to a text with a narrative would experience a higher level of transportation than individuals who were exposed to a text without a narrative. This hypothesis found support in our data for both issues (see Table 1, full sample). H2 assumed that transportation would be positively associated with the participants' willingness to sign a petition. Again, the hypothesis was supported for Issue 1 and Issue 2 (see Table 1, full sample). Also, the indirect effect of the narrative on the willingness to sign a petition, mediated through transportation (H3), was positive and significant for both issues (see Table 1). 95% Monte Carlo confidence intervals with 20,000 repetitions were used to test the significance of the indirect effects. Lastly, H4 expected that participants who saw a petition text with a higher number of signatures would be more willing to sign a petition than participants who saw a petition text with a low number of signatures, which was supported only for Issue 1 (see Table 1, full sample). For Issue 2, we found no significant effect of popularity cues on the intention to sign the petition. The SEMs for both issues were visualized in Figure 1. For an overview of the results for each hypothesis, see Table 1.

Comparison between German and Australian samples

A descriptive analysis of our data revealed that Australian petitioners were more likely to sign online than German petitioners: 89% of Australians who had signed a petition in the previous year had done so online, compared with 78% for German respondents. Australian respondents were in general more active in terms of frequency of signing: 41% of these recent petitioners in Australia signed four or
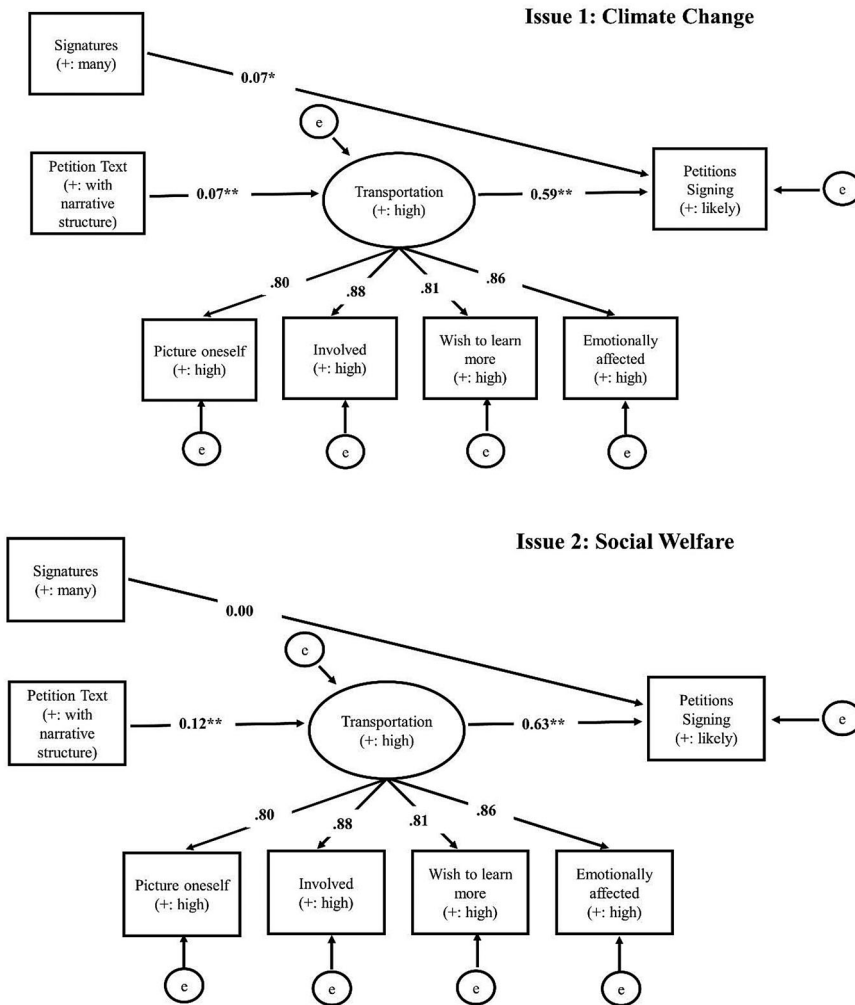
Figure 1. Structural equation models for Issue 1 (climate change) and Issue 2 (social welfare).
Note: Regression coefficients are standardized; Issue 1: $N = 2057$, Issue 2: $N = 2083$, $**p < .001$, $*p < .05$.

more online petitions over the previous year, compared with 26% of the German respondents (Figure 2). Australians engaging more in online petition signing, and more frequently, aligns with the higher Australian normalization of social media use highlighted earlier (Figure 2).

Following RQ1, we compared the hypothesized effects of the content-level factors across countries. We, therefore, conducted tests of measurement invariance to ensure that the construct of the latent mediator, which in our case is transportation, had a similar meaning across both samples (Putnick & Bornstein, 2016). We found configural invariance, metric invariance, and partial scalar invariance (Putnick & Bornstein, 2016) to stand, taking into consideration both samples separately and combined (Table 2).[1]

We also tested whether the regression paths were equal across groups. For Issue 1, we can conclude that the regression paths of the groups going to and from the latent variable

Table 1. Regression coefficients from structural equation models.

Hypotheses	Predictor	Mediator	Outcome	b	B	SE	p	95% CI Lower level	Upper level
Issue 1: Climate Change									
Full Sample									
H1	Narrative		Transportation	.07	0.21	0.04	.000	0.14	0.28
H2	Transportation		Petition signing	.59	0.81	0.03	.000	0.76	0.87
H3	Narrative	Transportation	Petition signing	.04	0.17	0.03	.000	0.11	0.23
H4	Pop Cues		Petition signing	.07	0.27	0.09	.003	0.10	0.45
Germany									
H1	Narrative		Transportation	.07	0.20	0.06	.000	0.09	0.31
H2	Transportation		Petition signing	.53	0.71	0.03	.000	0.65	0.77
H3	Narrative	Transportation	Petition signing	.04	0.14	0.04	.000	0.06	0.22
H4	Pop Cues		Petition signing	.05	0.21	0.11	.067	−0.02	0.43
Australia									
H1	Narrative		Transportation	.08	0.22	0.05	.000	0.13	0.32
H2	Transportation		Petition signing	.64	0.91	0.04	.000	0.84	0.99
H3	Narrative	Transportation	Petition signing	.05	0.21	0.05	.000	0.12	0.30
H4	Pop Cues		Petition signing	.08	0.33	0.11	.000	0.11	0.56
Issue 2: Social welfare									
Full Sample									
H1	Narrative		Transportation	.12	0.36	0.04	.000	0.29	0.43
H2	Transportation		Petition signing	.63	0.88	0.03	.000	0.82	0.93
H3	Narrative	Transportation	Petition signing	.08	0.31	0.03	.000	0.25	0.38
H4	Pop Cues		Petition signing	.00	0.00	0.03	.995	−0.18	0.18
Germany									
H1	Narrative		Transportation	.17	0.53	0.06	.000	0.42	0.64
H2	Transportation		Petition signing	.58	0.79	0.03	.000	0.73	0.86
H3	Narrative	Transportation	Petition signing	.10	0.42	0.05	.000	0.33	0.51
H4	Pop Cues		Petition signing	-.04	−0.16	0.12	.160	−0.39	0.06
Australia									
H1	Narrative		Transportation	.07	0.21	0.05	.000	0.11	0.31
H2	Transportation		Petition signing	.68	0.94	0.35	.000	0.87	1.01
H3	Narrative	Transportation	Petition signing	.05	0.20	0.05	.000	0.12	0.30
H4	Pop Cues		Petition signing	.03	0.14	0.11	.210	−0.08	0.37

Note: The loadings and intercepts (except for one released intercept) were constrained for the German and Australian sample. Issue 1: $N = 2057$, Germany: $n = 997$, Australia: $n = 1060$, Issue 2: $N = 2083$, Germany: $n = 1016$, Australia: $n = 1067$.
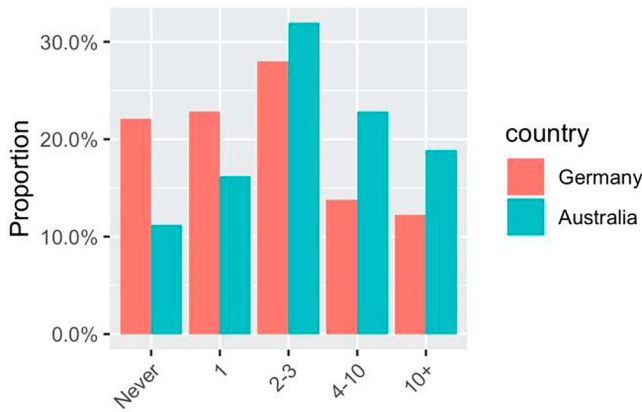
Figure 2. Online petition signing in past year (among petitioners).

did not significantly differ.[2] However, for Issue 2, the regressions paths differed significantly for the groups. In fact, for Issue 2, the effect of the narrative was larger for Germans than for Australians (see Table 1). The effect of transportation on petition signing, on the other hand, was estimated to be stronger for Australians than for Germans. The indirect effect of the narrative on petition signing mediated through transportation was stronger for Germans than for Australians. While the data did not indicate cross-country differences regarding popularity cues' effects for Issue 1, there were different regression paths for Issue 2. However, the data revealed no significant effect of popularity cues on petition signing for Issue 2 in either of the two countries.

Discussion and conclusion

Signing online petitions is now a very popular form of citizen-driven political action, as confirmed by this study in line with existing research (Margetts et al., 2016). Our unique experimental data on petition content supported our expectation that adding a narrative to a petition text increased participants' transportation, i.e., their feeling of being 'absorbed' by the narrative. Transportation was, in turn, positively associated with petition signing. For both issues, we found indirect effects, although the effect was stronger for the issue of social welfare recipients than for climate change. Moreover, willingness to sign the petition was higher when participants were exposed to petitions with many signatures compared to petitions with few signatures. However, this effect only held true for the petition on climate change and not the petition on social welfare.

Turning to our research question on the international comparison, we found that narratives affected petition signing in both countries, but in different ways when it came to the issue of social welfare. In Germany, there was a higher indirect effect mediated by transportation, while in Australia there was a lower indirect effect but a considerable effect of the mediator transportation. We interpret these results to suggest that as online petitioning becomes a more normalized part of citizen participation, it is even more important for narratives to be absorbing for their readers. In

Table 2. Tests of measurement invariance and equality of regression paths.

Model	x^2 (*df*)	CFI	RMSEA (90% CI)	SRMR	Model comparison	Δx^2 (*Δdf*)	ΔCFI	ΔRMSEA (90% CI)	ΔSRMR	Decision
Issue 1: Climate Change										
M1: Configural Invariance	2.29 (4)	1.00	0.00 (0.00, 0.04)	0.01	–	–	–	–	–	–
M2: Metric Invariance	5.15 (7)	1.00	0.00 (0.00, 0.03)	0.01	M1	2.86(3)	0.00	0.00	0.00	Accept
M3: Scalar Invariance	27.19(10)*	1.00	0.04 (0.02, 0.06)	0.03	M2	22.04**(4)	0.00	0.04	0.02	Reject
M3a: Partial Scalar Invariance	5.26(9)	1.00	0.00(0.00, 0.02)	0.01	M2	0.11(2)	0.00	0.00	0.00	Accept
M4: Structural Model	57.34(32)*	1.00	0.03(0.02, 0.04)	0.03	–	–	–	–	–	–
M5: Equal regression paths	58.20(33)*	1.00	0.03(0.01, 0.04)	0.03	M4	0.86(1)	0.00	0.00	0.00	Accept
Issue 2: Social Welfare										
M1: Configural Invariance	0.36(4)	1.00	0.00(0.00, 0.00)	0.00	–	–	–	–	–	–
M2: Metric Invariance	4.32(7)	1.00	0.00(0.00, 0.03)	0.01	M1	3.96(3)	0.00	0.00	0.01	Accept
M3: Scalar Invariance	58.12(10)**	0.99	0.07(0.05, 0.09)	0.05	M2	53.8**(3)	0.01	0.07	0.04	Reject
M3a: Partial Scalar Invariance	7.42(9)	1.00	0.00(0.00, 0.03)	0.02	M2	3.10(1)	0.00	0.00	0.01	Accept
M4: Structural Model	88.74(32)**	0.99	0.04(0.03, 0.05)	0.04	–	–	–	–	–	–
M5: Equal regression paths	93.70(33)**	0.99	0.04(0.03, 0.05)	0.04	M4	4.96* (1)	0.00	0.00	0.00	Reject

Note: Issue 1: *N* = 2057, group 1 (Germany) *n* = 997, group 2 (Australia) *n* = 1060, Issue 2: *N* = 2083, group 1 (Germany) *n* = 1016, group 2 (Australia) *n* = 1067. **p < .001, *p < .05.

other words, as readers become more familiar with the kind of stories which are common in online petitions, they may become more selective in terms of which stories they have an engaged response to. Moreover, the nature of the effect of popularity cues in the two countries was different with regard to the two different issues. Although the number of signatures did not promote willingness to sign the petition concerning social welfare, popularity cues were effective in the other issue, climate change. With regard to the issue of climate change, invariance tests showed that the regression paths in the German sample and the Australian sample were not significantly different. We can, thus, conclude that for the climate change condition – where the popularity cues were found to be effective – the number of signatures had a significant effect which did not differ across countries. Thus, citizens in different advanced democracies responded to these heuristic cues similarly. The effect of popularity cues seems to be dependent on the context of the issue. Overall, it is likely that respondents give more importance to such heuristic cues when these provide public feedback on issues that are highly relevant for them, such as climate change.

Starting with the observation that calls for political action today frequently rely on social media, online petitions have to compete for a common but scarce good: public attention. Knowing what is required to win this competition for attention will be useful for both scholars interested in understanding the antecedents of a pervasive form of political action, and for civil society actors keen to mobilize digital publics for their advocacy. We have shown that previous research has not yet shed sufficient light on the conditions under which participation in online petitions occurs. In addition to individual-level factors, petition signing is also influenced by content level factors, including the use of personalized stories and appeals, and emphasis on high numbers of previous signers. All these factors matter, and they matter at the same time, which is why we suggest further research around online petition behavior ought to systematically include such factors in their study designs.

Our framework can be applied to investigate novel factors of other forms of political participation research in the online world. Political opinion expression online could be such a behavior. The opinions that users express or hold back online are typically considered as contingent on their perceptions of the majority opinion (e.g., Soffer & Gordoni, 2018). Numeric representations of endorsements in form of popularity cues next to user posts and comments may therefore signal popular opinions that are worthy to adopt (Porten-Cheé & Eilders, 2020) and to express. In addition, narratives could be an effective driver for a wider range of participatory actions, from attending protests to contributing to crowdfunding campaigns. Therefore, the effect of storytelling as a communicative strategy for social or political movements could be tested more thoroughly by applying our proposed approach to a wider repertoire of actions.

Finally, our comprehensive methodical approach still has limitations. The price of the complexity of the experimental design in two countries meant we disregarded other relevant measures, for example the perception of a persuasive intent, which might have diminished the effects on the participants' intention to sign (Moyer-Gusé et al., 2012). Furthermore, our study tested the effect of narratives in petition texts for the first time. In order to develop narratives within the usual space constraints of petition texts, we applied longer texts in the narrative condition than in the non-narrative condition, which may have produced unintended effects due to a different

amount of potential information. Thus, future research should aim to keep petition text lengths constant.

Notes

1. Configural invariance was tested by assessing the model fit of the measurement model separately for both samples as well as for both samples combined. The confirmatory factor analyses showed a good fit of the measurement models (M1) to our combined data for both issues. Likewise, the measurement model fit both the Australian and the German sample. As configural invariance stood, we compared the configural invariance model with the metric invariance model (M2). M2 differed from M1 only regarding its constrained factor loadings. The metric invariance test investigates whether the observed variables contribute similarly to the latent variable across both groups. Consequently, only if metric invariance stands, can regression paths to and from the latent variable be compared across groups (Putnick & Bornstein, 2016). If the metric invariance model is significantly worse than the configural invariance model, in terms of the cut-off values suggested by Chen (2007) and chi-squares (Hox & Bechger, 1998), metric invariance is not supported (Putnick & Bornstein, 2016). Although there is no consensus about the cut-off values, we relied on Chen (2007) who suggests that a model is worse if its fit indices differs more than SRMR ≤ 0.030, RMSEA ≤ 0.015 and CFI < 0.01 from the respective fit indices of the nested model. For additional certainty, we calculated the difference in the chi-squares of both models and tested this difference against the chi-square distribution with the change in degrees of freedom (Hox & Bechger, 1998). In our case, metric invariance stood for both issues. Lastly, we tested for scalar invariance, which implies that the intercepts of the latent construct's items are similar across samples. Thus, the scalar invariance model (M3) constrained both the factor loadings and the intercepts and was compared to M2. Yet, the results showed that M3 is significantly worse than M2 in terms of the cut-off values described by Chen (2007). As scalar invariance did not stand, we tested for partial scalar invariance (M3a), which accepts some violations of measurement invariance (Putnick & Bornstein, 2016; Steenkamp & Baumgartner, 1998). Partial scalar invariance was achieved for both issues. Consequently, the final SEM (M4) constrained both the measurement model's loadings and intercepts (except for one released intercept).
2. M4 was compared to an equivalent SEM that constrained the regression path coefficients (M5).

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

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Appendices

Appendix 1

Condition: climate change issue, narrative condition (Australian study)

It starts with one small action – together to stop climate change!

Climate change is a threat to us all. Global warming, as a consequence of human-made climate change, has made it hotter in Australia than ever before. On January 13, the Mukinbudin Health Centre in Karratha (Western Australia) was particularly affected, as it was the hottest day on record in Karratha. Most patients arrived during the hours of extreme heat. Agnes Wilson, 78, was one of these: 'I just felt really dizzy and had a hard time breathing, it was just getting worse, so I called my daughter asking her to bring me to the hospital'.

Dr Liam Sheffield, Senior Physician at Mukinbudin's, explained that all patients had similar symptoms, such as chest pain and difficulties breathing, adding 'We have had an increase in these types of cases lately, the elderly are particularly susceptible to this complication when temperatures are this high'. People that have a weak immune system and pregnant women or people involved in hard physical work are also susceptible to consequences of extreme heat. 'It is important to stay hydrated and to drink more than you would do when temperatures are lower'.

Fortunately, the patients all recovered and further complications could be avoided with preventive treatment. 'I'm feeling better now, my chest pain is gone and I am finding it easier to breathe, but I'm always afraid when it is this hot, it really takes a toll on me. The weather just seems to get crazier and crazier lately' said Peter Taylor, 82, as he left the hospital a few days later. Karratha registered a record high temperature of 48 degrees that day.

However, record temperatures are not only a threat to older Australians, everyone can be affected by them! While high temperatures are common in Australia, January was the hottest month ever recorded in Australia, in a period that has been a particularly hot worldwide.

That is why we are calling for action! We must fight global warming and do that by aiming at those who really have an impact on our lives. That is why we are calling for Woolworths supermarkets to introduce a fixed share of 20% carbon-neutral food suppliers by 2020. Woolworths supplies a large part of the country's households, and its food suppliers are a major contributor to our country's carbon emissions.

By getting Woolworths to adopt more carbon-neutral suppliers, we can slow global warming and help prevent incidents such as the one in Karratha. Please sign our petition! If successful, we can start changing the food industry and make a real impact against climate change.

Appendix 2

Condition: climate change issue, non-narrative condition (Australian study)

It starts with one small action – together to stop climate change!

During the 2019 summer heat wave, many people suffered from dizziness and breathing problems. Older people especially suffered during the extreme heat. Australians are worried that future record high temperatures will continue to affect them.

That is why we are calling for action! We must fight global warming and do that by aiming at those who really have an impact on our lives. That is why we are calling for Woolworths supermarkets to introduce a fixed share of 20% carbon-neutral food suppliers by 2020. Woolworths supplies a large part of the country's households, and its food suppliers are a major contributor to our country's carbon emissions.

By getting Woolworths to adopt more carbon-neutral suppliers, we can slow global warming, and help prevent extreme heat exhaustion incidents. Please sign our petition! If successful, we can start changing the food industry and make a real impact against climate change.

Appendix 3

Condition: increase in social welfare issue, narrative condition (Australian study)

Social justice in Australia – maintaining dignity for all!

The sun shines brightly over the Opera House, and tourists are taking photos of what Sydney is known best for. But Sydney doesn't shine so brightly when we zoom in. We meet Andrea, who is in her mid 30s, and her little daughter. They sit in an old white Toyota Corolla on the way back from a local Centrelink in Marrickville, Sydney, where Andrea had a one-on-one meeting. Although Andrea tries to hide her frustration in front of her child, she cannot: 'I have been unemployed for over a year and I have to show up here every two weeks to report how my job applications are going. For me, that's really humiliating. I feel like I'm begging for money. But that's not my biggest problem. Work for the dole makes it worse. I work on a scheme that's 90 minutes' drive away, and the petrol costs just getting there and back are high. Everything just keeps on getting more expensive here. It's all just too much for me'.

Tim Bradshaw is a social worker at the local community center. He is familiar with cases like Andrea's. 'Well, I get that the government doesn't want to create comfortable conditions for the unemployed to motivate them to find a job. But the fact is that Newstart payments are simply too low to lead a decent life, especially in big expensive cities like Sydney. It's no exaggeration that

Newstart has not kept pace with inflation or the cost of living. Living on Newstart is just getting more and more difficult'.

Andrea brings her daughter home. Later, as Andrea heads to work, she seems calmer: 'I really try my best to find a job. But I would also just like to have some time and money to be able to meet friends for dinner or go to the cinema like other people do, without the permanent stress to make sure that my small family survives.'

This is why we are calling for action! Let's build a society where all its members are treated with dignity and are empowered to have a decent life. We are calling on the Australian Government to introduce a law by the end of 2019 that ensures a yearly increase of Newstart tied to the current inflation rate.

By getting the national government to regularly increase Newstart, we will contribute to a more equal society where everyone is provided with a basic standard of living. This means that those who need it the most are able to cover their expenses, and can be active members of the society. Please help us by signing our petition! We can change our society and help fight inequality.

Appendix 4

Condition: increase in social welfare issue, non-narrative condition (Australian study)

Social justice in Australia – maintaining dignity for all!

People without a job have to rely on the Newstart program. However, the Newstart payment is too low to cover all living expenses, especially in expensive cities like Sydney. A problem is that the increases in the Newstart amount have not kept pace with inflation or the cost of living.

This is why we are calling for action! Let's build a society where all its members are treated with dignity and are empowered to have a decent life. We are calling on the Australian Government to introduce a law by the end of 2019 that ensures a yearly increase of Newstart tied to the current inflation rate.

By getting the national government to regularly increase Newstart, we will contribute to a more equal society where everyone is provided with a basic standard of living. This means that those who need it the most are able to cover their expenses, and can be active members of the society. Please help us by signing our petition! We can change our society and help fight inequality.