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Emotions that Make Online Petitions Successful: A Contrasting View of Private Signing and Public Sharing

Anonymous

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Extended Abstract

Past research on the relationship between emotion and political outcomes has found that anger can mobilize citizens by increasing participatory intentions [1]. The same finding has been shown for online petitions in that anger led to greater participation than sadness [2]. However, the effect of other kinds of emotions like Joy or Surprise on specific political actions remains unclear. For example, in online petitions, signing is anonymous and represents a personal action, whereas sharing is a public action that is subject to others' judgment [3].

We present a study that disentangles the two political actions by associating emotions and their role in the private and social motivations behind petition politics. Our study design has two components. First, we adopt Ekman's six emotion typology and train a deep learning-based natural language processing (NLP) model to classify these basic emotions from petition text. Second, we examine political outcomes separately focusing on private signing and public sharing of petitions and their associated emotions.

We collected 21,291 online petitions written in 481,123 sentences from the National Petition of South Korea website posted between April 1, 2019, and October 8, 2022. Only petitions that receive a minimum of 100 prior signatures can be posted to this online service. Petition signing action is anonymous. We also gathered 26,763,363 public Twitter posts mentioning these petitions as a proxy of their social media influence.

We used a KoBERT-based emotion prediction model [5] and trained it with the petition data to detect six primary emotions (Joy, Sadness, Anger, Surprise, Disgust, Fear) and Neutral text. The trained classifier yielded a reliable macro F1-score of 0.93; the best performance was seen for Surprise with an F1-score of 0.96, and the lowest was for Anger with an F1-score of 0.88. We classified the emotions of every sentence and aggregated this information to compute the average emotion of each petition. Figure 1 shows the distribution of seven labels in the data. We excluded the Neutral category in subsequent analyses.

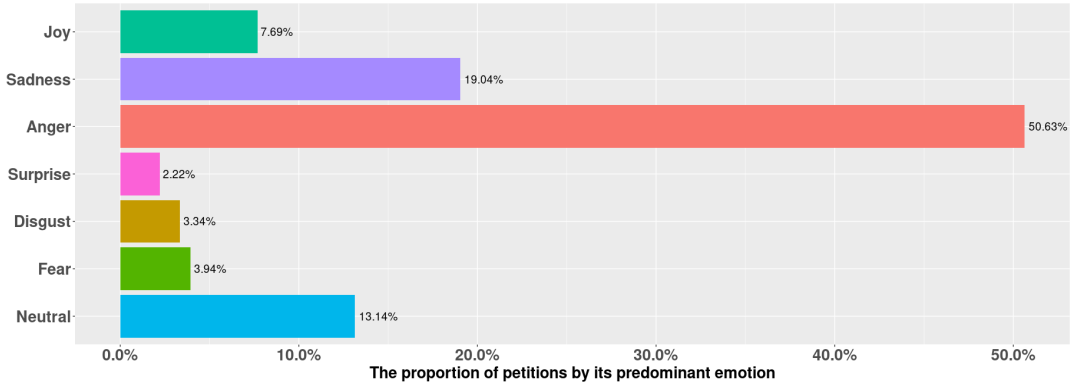

Figure 1. Prevalence of emotion types in online petitions

We then tested the impact of each emotion on the success of petitions measured in terms of total signatures using a negative binomial regression. Table 1(a) shows that all emotions affect the petition signing action. Petitions with predominant Joy and Sadness emotions received less support than other emotions. Surprise emotion had the highest mobilizing effect in incurring private online participation.

Social media shares, however, suggest a different view. Table 1(b) shows the result of zero-inflated negative binomial regression with the Twitter share count as the dependent variable. When it comes to the public endorsement, Joy and Sadness emotions incurred the highest support on social media. In contrast, petitions with predominant Anger and Disgust emotions were shared substantially less. We could not find any significant pattern with Surprise and Fear emotions.

Table 1. Impact of emotion on the success of online petitions in South Korea
(a) Impact on the number of obtained signatures
*p < .05; **p < .01; ***p < .001

Variable	Joy	Sadness	Anger	Surprise	Disgust	Fear
coefficient	-1.638***	-1.013*	0.413*	5.789***	0.742***	-2.171***

(b) Impact on the number of social media shares
*p < .05; **p < .01; ***p < .001

Variable	Joy	Sadness	Anger	Surprise	Disgust	Fear
coefficient	**2.022*** **	**1.257*** **	**-1.622*** **	0.610	**-1.290** **	-0.010

Taken together, this contrasting picture on the success of online petition by emotion type suggests that public endorsement should not be judged equally as actual votes. Today's media attention often goes to content that is voiced out loudly on social media, yet it may not reflect the true political outcomes of voters. Our finding also opens up questions regarding what mechanisms may lead to such discrepancies for online petitions. In particular, future studies can explore why aggressive emotions such as Anger and Disgust stimulate user participation in an anonymous space but hinder active participation in public space.

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