

Internet Usage as a Predictor of Protest Violence in Western Nations

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Abstract

This paper investigates the relationship between internet usage and protest violence in Western nations. Study 1 builds a longitudinal regression model that predicts a nation's level of political violence. Within a sample of 12 Western nations, I find that a nation's number of internet users significantly predicts its number of quarterly violent protests. Study 2 proposes an experiment which measures the change in acceptability of protest violence for a sample of university students who are given the treatment of using a social internet technology, Twitter. I predict that the mean change in acceptability of protest violence is significantly greater for those given the treatment of using Twitter than for those who did not receive the treatment.

Internet Usage as a Predictor of Protest Violence in Western Nations

With the rapid adoption of internet technology and the recent increase in protests observed across the world, preliminary research indicates a positive relationship between internet usage and protest violence (Ortiz et al. 2013; Mooijman et al. 2018). In a longitudinal study of 155 countries, Bell et al. (2013) concludes that citizens' ability to coordinate is a significant predictor of political violence – they cite that a nation's number of internet users and mobile phone subscriptions are associated with occurrences of protest violence. This paper hypothesizes that greater internet usage predicts greater protest violence in Western nations. Using similar methods to Bell et al. (2013), I build a predictive model that estimates the relationship between internet usage and protest violence in a sample of 12 Western nations. I also propose an experiment design to provide causal estimates for the relationship between social internet technology use and protest violence.

Literature Review

As collective action is a prerequisite for protest violence, I first present literature that identifies the motivational factors involved in individuals' proclivity to participate in collective action. The social identity model of collective action (SIMCA) states that there are four main social-psychological motivators of collective action: social or group identification, group-based anger, perceived group efficacy, and violation of moral standards stemming from perceived injustice (van Zomeren 2013). Earlier models of collective action cite fraternal relative deprivation – negative emotion incurred when comparing a group's situation to that of a reference group which is perceived to have better conditions due to an unfair advantage – as a

core motivation in collective action (van Zomeren 2017). The SIMCA integrates relative deprivation as a factor in an individual's sense of perceived injustice (Cakal et al. 2011).

A considerable amount of research has focused on relating the use of internet technology and the degree to which groups engage in collective action. Alberici and Milesi (2012) studies the moderating effect computer-mediated communication has on each of the motivational factors proposed in the SIMCA. The study finds that only for subjects who reported higher frequency of engaging in online political discussion did politicized identity, group efficacy, and morality significantly predict their intention to engage in collective action ($\beta = .68^{***}$, $\beta = .53^{**}$, $\beta = .24^{*}$, respectively). However, they find that only for participants that reported less frequent online political discussion did anger affect their intent to engage in collective action ($\beta = .29$). The authors cite that in many instances verbal expression decreases an individual's feeling of anger and speculate that online communication may also act as a dissipative mechanism.

Much of the research in this area focuses on social media and its impact on collective action. The literature diverges on whether social media acts as a "stepping stone" toward collective action, or if online activism is a "substitute" for offline political participation. Jost et al. (2018) observes that individuals tweeting pro-Occupy Wall Street sentiment was predictive of their participation in an Occupy May Day demonstration ($r = .387^{***}$). When randomly surveying Hong Kong residents, Chan (2017) finds that social media news consumption is positively correlated with group-based anger ($r = .11^{**}$), perceived group efficacy ($r = .11^{**}$), and intention to protest ($r = .05^{*}$). Using descriptive methods, Lim (2012) asserts that the use of social media by Egypt's oppositional movements made a significant impact on their ability to share grievances, coordinate protests, and garner international support in their revolt against the incumbent government in 2011. When controlling for grievances, values, resources, and news

media use, Valenzuela et al. (2012) finds that the frequent use of Facebook by 18-29-year-olds in Chile significantly predicts their participation in protests ($\beta = .47^*$). Within their sample, the authors find that the use of Facebook for news and the use of Facebook for social life significantly predicted protest behavior ($\beta = .51^*$, $\beta = .52^{***}$, respectively). Surveying a sample of students in Wisconsin, Macafee and De Simone (2012) reports that students using social media for expressive purposes is significantly associated with participation in protest activities ($\beta = .495^{***}$). In support of the “substitute” hypothesis, Schumann and Klein (2015) finds that low-threshold internet actions reduce individuals’ likelihood to participate in demonstrations or panel discussions. The authors cite individuals’ feeling of contribution when performing internet activism as the mechanism that lessens their motivation to participate in offline political events.

Despite considerable research on internet use and collective action, less focus has been placed on the relationship between internet use and political violence; Gohdes (2017) summarizes the limited body of literature and identifies areas of further research. When studying events of political violence across Africa, Warren (2015) finds that social media penetration is associated with increases in collective violence, especially in areas lacking mass media infrastructure. In a similar study, Pierskalla and Hollenbach (2013) asserts that cell phone coverage in African states significantly predicts the likelihood of violent conflict ($\beta = .289^{***}$).

Mooijman et al. (2018) is the only study that examines the relationship between social internet technology and protest violence in the setting of a Western nation. The researchers argue that, at least in part, an individuals’ proclivity to engage in protest violence is a function of the individual’s moralization of the protest cause and to what degree the individual perceives other group members to moralize the cause. To test this hypothesis, the researchers conducted multiple survey studies and find that both moralization and the interaction between moralization and

moral convergence predict violence acceptability ($\beta = .32^*$, $\beta = .42^{***}$, respectively). They also hypothesize that moralized social media posts predict protest violence. To test this hypothesis, they classify tweets during the 2015 Baltimore riots and find that the number of daily moralized tweets significantly predicted the number of daily violent protests. In addition, they report that the number of hourly moralized tweets predicted the number of arrests in areas of violent protest. Given social media is used to project moral sentiment and gauge moral sentiment of others (Barbera et al. 2015; Dehghani et al. 2016), the authors contend that social media use affects protest violence through increasing the moralization and moral convergence of causes.

This paper presents a predictive model of political violence to better understand the relationship between a nation's number of internet users and their number of violent protests. Within a sample of 12 Western nations, I hypothesize that a nation's number of internet users is positively associated with their number of violent protests. This paper also presents an experiment design to test whether an individual's acceptability of protest violence is altered by their use of a social media platform, Twitter. I hypothesize that individuals who are given the intervention of using Twitter will become more accepting of protest violence than individuals who did not receive the intervention.

Methods

Study 1

In study 1, I subset the panel dataset aggregated in Bell et al. (2013) to include quarterly data from 1990-2009 for 12 Western nations: France, United States, Canada, Spain, Sweden, Belgium, Netherlands, Finland, Germany, United Kingdom, Norway, and Denmark. I then build a longitudinal regression model that predicts a nation's number of quarterly violent protests:

$$y^d = A\hat{\theta}$$

$$\hat{\theta} = (A^T A)^{-1} A^T y^d$$

Where y^d is the outcome vector – quarterly national violent protests. A is a matrix that contains each nation’s quarterly observation for the intercept and each of the regressors: number of tortures, number of political killings, number of political disappearances, number of political prisoners, number of assassinations, ethnic fractionality, log GDP per capita, number of mobile phone subscriptions per 100 citizens, number of internet users, log population size, type of regime, and log media coverage. $\hat{\theta}$ is a vector of theta coefficients – each element in the vector represents the predicted change in the outcome variable, quarterly violent protests, given a one-unit change in the associated regressor. The first equation is manipulated using the least squares method to provide estimates for $\hat{\theta}$. Please refer to figure 1 for a visual depiction of the model.

(All code used in building this model is included in the online submission)

Study 2

In study 2, I test the degree to which an individual’s acceptability of protest violence is altered by the use of Twitter. A sample of 400 students in an introductory psychology course at a large, public university will be recruited to participate in a study on political attitudes in exchange for course credit. At the start of the semester, participants will be asked if they have a Twitter account, and if so, how often they use it: never/inactive, monthly, biweekly, weekly, or daily. The participants will also be shown the prompt from studies 2-4 of Mooijman et al. (2018): “The Unite the Right rally (also known as the Charlottesville rally) was a far-right rally in Charlottesville, Virginia, USA, from 11–12 August 2017. The rally occurred amidst the backdrop of controversy generated by the removal of several Confederate monuments”. The participants

will then be asked to state their level of agreeance (1 = disagree completely, 7 = agree completely) with the six statements shown in Mooijman et al. (2018):

“It is acceptable to use violence against far-right protesters, the use of violence against far-right protesters is justified, violence against far-right protesters is acceptable if it means fewer future protests from the far-right, using force during a protest is wrong even if it leads to positive change, using force during a protest against the far-right is immoral even if it leads to positive change, and using violence against the far-right is unacceptable (the last three items were reverse coded).”

Approximately 36% of American adults aged 18-29 use Twitter, so I expect that at most about 250 of the participants do not use Twitter, given university students are more likely to use the platform (Greenwood et al. 2016; Mellon and Prosser 2017). Of the participants who do not already use Twitter, half will be randomly assigned to create an account; these participants will be designated as the experimental group. They will be required to submit their account link to the course instructor to attain credit. At biweekly intervals across the semester, the experimental group participants will be required to submit evidence that they spent at least 1 hour on Twitter to attain course credit – acceptable evidence can be gathered through submitting a screenshot of their time spent on Twitter that was measured through a time management application such as RescueTime (Ellis 2018). The experimental participants attain full credit provided they spend at least 5 hours on Twitter and complete the questionnaires. The control participants – those not asked to use Twitter – are only required to complete the questionnaires to receive full credit. At the conclusion of the semester, the participants will be asked the same battery of questions, however, they will be given a different prompt: “The End Domestic Terrorism rally was a far-right rally in Portland, Oregon, USA, on August 17, 2017. The rally occurred amidst the

backdrop of controversy generated by political conflict occurring in the area in recent years.” I will calculate the mean change in acceptability of protest violence for participants who were successfully given the intervention and those in the control group. I will then perform an analysis of variance to determine if there is a significant difference in the mean change of acceptability of protest violence between the experimental and control groups.

Results

Study 1

According to the longitudinal regression model built in study 1, an additional 1 million internet users predicts a 2.98 increase in a Western nation’s number of quarterly violent protests ($p = .0000$). Please refer to Table 1 for the complete list of estimated $\hat{\theta}$ values. This result is supportive of the hypothesis that a nation’s number of internet users is positively associated with its number of quarterly violent protests.

Study 2

I predict that the mean change in acceptability of protest violence for the experimental group to be .79 and the mean change in acceptability of protest violence for the control group to be .16. Please refer to Figure 4 for a visual depiction of the values. I predict that the analysis of variance will uncover a significant difference for the mean change in acceptability of protest violence between the experimental and control groups. This result is supportive of the hypothesis that individuals who are given the intervention of using Twitter will become more accepting of protest violence than individuals who were not given the intervention.

Discussion

Study 1

Study 1 tested the hypothesis that a Western nation's number of internet users is positively associated with its number of quarterly violent protests. I find that within a sample of 12 Western nations, an additional 1 million internet users predicts a 2.98 increase in the number of quarterly violent protests. This result is supportive of the conclusions from Bell et al. (2013), where they find that a nation's number internet users is positively associated with the number of quarterly violent protests in a sample of 155 countries.

However, the empirical strategy used in study 1 has significant limitations. The model is incapable of making any causal claims for the relationship between internet usage and political violence. In addition, the longitudinal regression model employs a pooled ordinary least squares method, which neglects the differences between countries with respect to the relationship between the outcome variable and regressors. The model lacks a measure for the severity of violent protests, which reduces the specificity of the study's claims. The study is restricted to the time period 1990-2009, which only provides the opportunity to observe early-stage social internet technology; there appears to be a greater capacity for the moralization of causes with video and photographic stimuli, which was less prevalent in the time period studied in comparison to current internet technology. Lastly, Hammond and Weidmann (2014) find that there is an expected level of inaccuracy associated with machine-coding events of political violence. As study 1 uses machine-coded event data, it is likely that inaccuracies exist with the data collected on violent protests.

Due to the substantial limitations on study 1, there are clear opportunities for further research. I propose a similar study that implements an instrumental variable to provide causal

estimates for the relationship between broadband internet coverage and violent protests. The chosen instrumental variable is geographic elevation, as used in Jaber (2013). The proposed study would incorporate data from the time period 1990-2018 and include a measure for severity for each of the violent protests recorded. A wider range of models would also be tested, including fixed and random effects models.

Study 2

Study 2 tested the hypothesis that individuals given the intervention of using Twitter will become more accepting of protest violence than individuals not given the intervention. I predict that individuals that were given the intervention will incur a mean change in acceptability of protest violence of .79, and individuals not given the intervention will incur a .16 mean change. The increase in acceptability of protest violence for the intervention group is consistent with the results from Mooijman et al. (2018), where they found that the number of moralized tweets predicted the number of violent protests during the 2015 Baltimore riots. I predict a slight increase in acceptability of protest violence in the control group due to overall increasing affective polarization in the United States (Iyengar 2019).

Limitations are also prevalent in study 2. First, the outcome variable, acceptability of protest violence, is only a proxy measure of behaving violently at a protest. The study has low external validity, as the participant sample is comprised entirely of students at an American university. Additionally, the study exhibits selection bias, as only students who did not already have Twitter were able to be randomly assigned to the experimental and control groups.

Further research is recommended. It may be worthwhile to conduct the experiment again, with prompts concerning far-left protests. This may provide insight as to potential asymmetries between liberals and conservatives with respect to political violence.

General

This paper presents two relevant models that describe the factors involved in collective action and protest violence: the SIMCA and the moralization model found in Mooijman et al (2018). Existing research has connected internet use, and specifically social media use, to the determinants of collective action and protest violence: politicized identity, group efficacy, perceived injustice, moralization of a cause, and perceived moralization of a cause by other group members (Alberici and Milesi 2012; Mooijman et al. 2018; Barbera et al. 2015; Dehghani et al. 2016).

However, none of the studies have put forth a causal estimate, and other models may have explanatory power with respect to the relationship between internet use and protest violence. I hypothesize that the Worldview Conflict Hypothesis proposed in Brandt et al. (2019) and the Ideological Worldview Hypothesis found in Motyl et al. (2014) explain aspects of this relationship. The Worldview Conflict Hypothesis states that individuals experience negative emotion when confronted with attitudes or behaviors that they disagree with, and the Ideological Worldview Hypothesis argues that individuals will move to a geographic location where the existing population is more aligned with their political beliefs. I contend that individuals encounter more attitudes and behaviors that they disagree with due to the greater access to information and media on the internet. I argue that the salience of differing worldviews incurred by internet use increases negative affect towards outgroups, and provides motivation for individuals to seek out and move towards areas on the internet that share their political views. This creates politically homogenous spaces on the internet, of which Alberici and Milesi (2013) state that “the homogeneity of online political discussions may enhance the influence of normative moral judgements on collective behaviour intentions.” This thought is furthered in

Mooijman et al. (2018), when they state “the moral language used on online social networks can be directly linked to violent protests.” This aggregation of research provides a causal chain from which protest violence, at least in part, is induced through internet use.

Research on internet technology use and violent protest behavior is in its early stages, with more experimentation necessary to further understand the dynamics involved. My findings support the claim that greater internet use is predictive of protest violence, and I predict that social media platforms, such as Twitter, are a catalyst for protest violence. These findings have practical implications for policymakers and how they may choose to regulate companies in the technology sector. I recommend more funding to be placed toward research on this topic, as it has the potential to uncover knowledge crucial to the political stability of Western nations in the digital age.

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Tables

Table 1

 $\hat{\theta}$ Estimates

Regressor	$\hat{\theta}$	p-value
Intercept	179.98	.0892
Internet Users	2.98e-7	.0000
Tortures	3.08	.0969
Killings	-2.39	.4279
Disappearances	-74.21	.0000
Political Prisoners	-14.92	.0000
Assassinations	3.80	.2662
Ethnic Frac.	-1.74	.7738
Log GDP per cap	-0.87	.8949
Mobile phone subs	.03	.4195
Log Population	-4.23	.1076
Regime type	-2.28	.4249
Media Coverage	11.02	.0000

Note: Table 1 presents the $\hat{\theta}$ estimates for the model built in study 1. Each $\hat{\theta}$ is interpreted as the predicted change in the outcome variable, national quarterly violent protests, given a one-unit change in the regressor.

Figures

Figure 1

1. Data-Fitting

$$y^d = A\hat{\theta}$$

$$\begin{pmatrix} y_0 \\ y_1 \\ y_2 \\ y_3 \\ y_4 \\ y_{NT-1} \end{pmatrix} = \begin{pmatrix} 1 & (x_1)_0 & (x_2)_0 \\ 1 & (x_1)_1 & (x_2)_1 \\ 1 & (x_1)_2 & (x_2)_2 \\ 1 & (x_1)_3 & (x_2)_3 \\ 1 & (x_1)_4 & (x_2)_4 \\ 1 & (x_1)_{NT-1} & (x_2)_{NT-1} \end{pmatrix} \begin{pmatrix} \theta_0 \\ \theta_1 \\ \theta_2 \end{pmatrix}$$

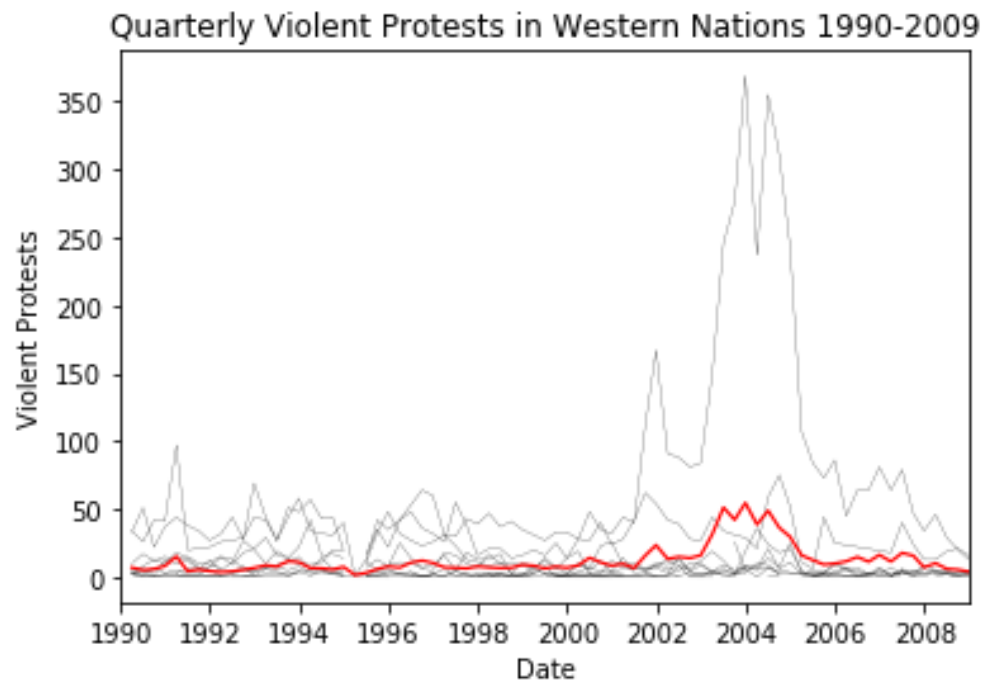
$NT \times 1 \qquad \qquad \qquad NT \times p \qquad \qquad \qquad p \times 1$

2. Parameter Estimation

$$\hat{\theta} = (A^T A)^{-1} A^T y^d$$

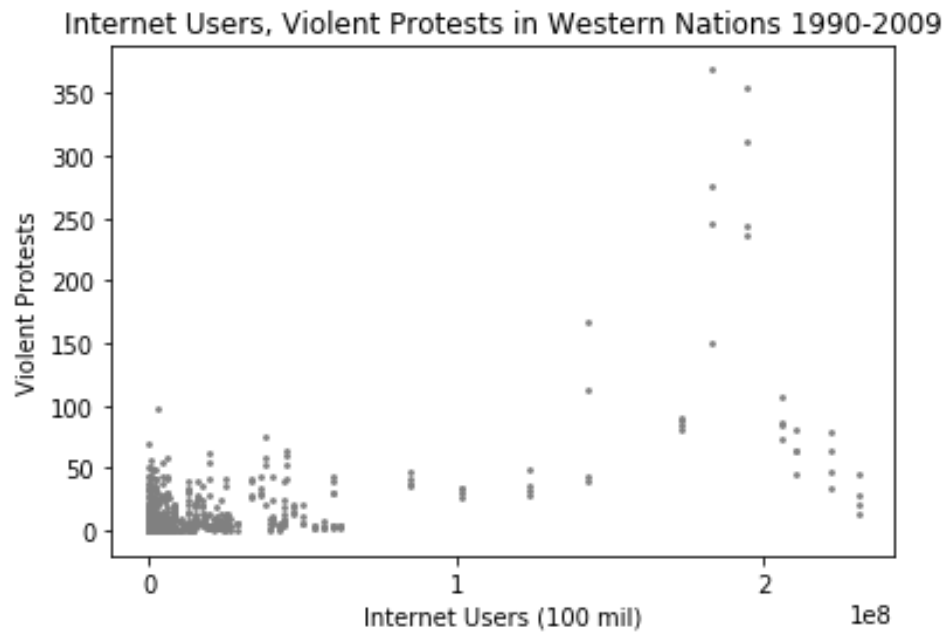
Note: This figure provides a visual depiction of the model-building steps in study 1. N is equal to number of nations in the study, and T is equal to the number of quarters. p is equal to the number of regressors, inclusive of the intercept. The outcome vector, y^d , is set equal to the A matrix of observed data multiplied by the vector of theta coefficients. Using the least squares method, the theta coefficient parameters are then estimated.

Figure 2



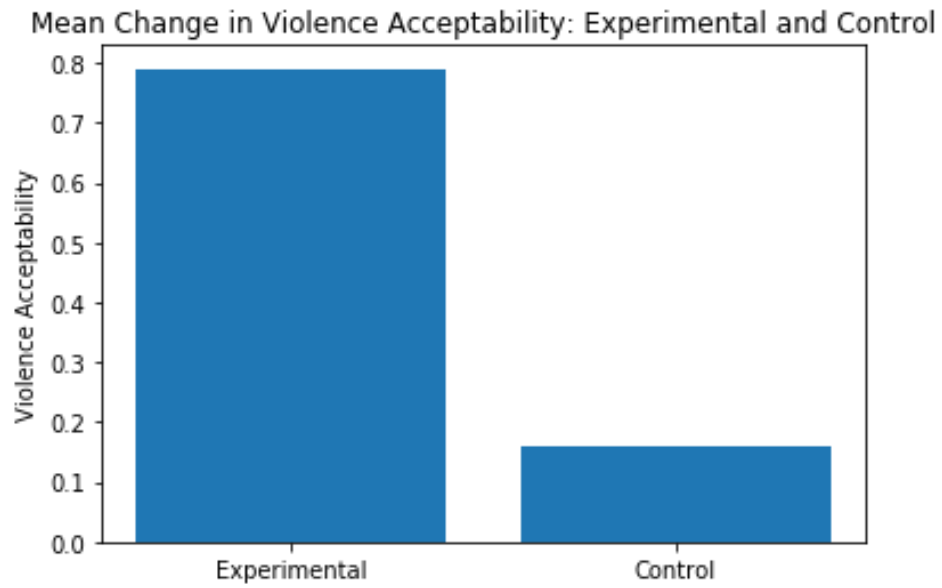
Note: This figure is a plot of the number of quarterly violent protests for each nation included in the study across the time period 1990-2009. Each gray sequence represents a nation, and the red sequence represents the mean number of violent protests across all nations.

Figure 3



Note: This figure is a scatterplot of each nation's number of internet users and number of violent protests for each quarter.

Figure 4



Note: This figure is a bar plot which represents the mean change in violence acceptability for the experimental and control groups in study 2.